DELTA COUNTY
ON-SITE WASTEWATER TREATMENT SYSTEM REGULATIONS
(Formerly Named: "Delta County Individual Sewage Disposal System Regulations")

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Delta County On-Site Wastewater Treatment System Regulations

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I. Title, Policy and Scope

1.1 Authority: These regulations are established under the authority of Colorado Revised Statues, Title 25, Article 10, Section 101, et. seq., as amended.

1.2 Title: These regulations shall be known as the Delta County On-site Wastewater Treatment System Regulations(formerly known as the Delta County Individual Sewage Disposal System Regulations).

1.3 Policy: The Delta County Board of Health declares that the purpose of these regulations is to protect the health of the people; to help control communicable diseases; to regulate the discharge of all wastes from dwellings, businesses, industrial and public buildings; and to preserve the environment.

These regulations are designed to control the location, construction, installation, repairs, and operation of all On-site Waste Water Treatment Systems as defined herein. The Delta County Board of Health further declares that its general policy is to require the use of public sewer systems where and whenever feasible, and to limit the installation of on-site waste water treatment systems to only areas in which public sewers are not feasible. Systems currently in use that meet the requirements of these regulations will not be required by the Department to connect to available public sewer systems until the On-site Wastewater Treatment System fails or requires modification. However, as provided for by the Colorado Revised Statutes, a public sewer system provider may require connection to its system if the property is within 400 feet of their sewer.

1.4 Scope: These Rules and Regulations shall apply to all On-site Wastewater Treatment Systems as defined in section 25-10-103(12), C.R.S. as amended, of two thousand (2,000) gallons per-day capacity, or less, and which will make no discharge into waters of the State of Colorado

1.5 Area of Jurisdiction: These regulations shall be applicable to all areas of Delta County and shall be enforced by the Delta County Board of Health, the Delta County Health Officer, and/ or their authorized representatives.

1.6 State Requirements: These regulations must comply with and be as stringent as or more stringent than Regulation No. 43 – On-site Wastewater Treatment System Regulation, 5-CCR-1002-43 as adopted by the Colorado Water Quality Control Commission pursuant to 25-10-101 et.seq. C.R.S.

SECTION II: Definitions

The following definitions shall apply in the interpretation and enforcement of these regulations:

2.1 Absorption System: 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.

2.2 Absorption Trenches: One or more trenches of varying length and depth, but not over three (3) feet in width, in which sewage effluent is percolated into the soil.

2.3 Acceptable Design: A standardized design of a tank, plant or system, the installation of which is permitted by the Delta County Health Department when the applicable requirements of this regulation are met.

2.4 Adequate Sewage Disposal System: An On-site Wastewater Treatment System that is functioning in compliance with these regulations and which does not create a threat to the public health, a public nuisance or unnecessary pollution to the environment.

2.5 Aeration System: Equipment or devices for the treatment of sewage by bacterial action which is maintained by the addition of air or oxygen.

2.6 Aerobic Sewage Treatment System: An On-site Wastewater Treatment System employing biological action which is maintained by the addition of air or oxygen, and which includes the aeration plant and the method of final effluent disposal.

2.7 Applicant: Any person who submits an application for a permit to install an On-site Wastewater Treatment System.

2.8 Approval: Official consent given in writing by the Delta County Health Department.

2.9 Bed: A below-grade soil treatment area consisting of a shallow excavation greater than three feet wide containing distribution media and more than one lateral.

2.10 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.

2.11 Board of Health: The official body appointed by the Board of County Commissioners of Delta County, Colorado, to be responsible for the public health of Delta County.

2.12 Biochemical Oxygen Demand, Five-Day (BOD_5): A quantitative measure of the amount of oxygen consumed by bacteria while stabilizing, digesting, or treating

biodegradable organic matter under aerobic conditions over a five-day incubation period expressed in milligrams per liter (mg/L).

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

2.14 Building Sewer: Part of the piping of a drainage system which extends from the end of the building drain that receives the discharge from the building drain and conveys the discharge to a public sewer, private sewer, On-site Wastewater Treatment System, or other point of treatment and disposal.

2.15 Cesspool: An unlined or partially lined underground pit or underground perforated receptacle into which sewage is discharged and from which the liquid seeps into the surrounding soil. Cesspool does not include a septic tank.

2.16 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.

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

2.18 Colorado Plumbing Code: Examining Board of Plumbers Rules and Regulations (3 CCR 720-1).

2.19 Commission: The Water Quality Control Commission created by Section 25-8-201, C.R.S.

2.20 Cistern: A watertight, covered receptacle of non-toxic material which is designed for storage of potable water.

2.21 Competent Technician: A person designated by the Department who is qualified to conduct and interpret the results of soil profile test pit excavations, profile holes, percolation tests, and site evaluations.

2.22 Component: A subsection of an On-site Wastewater Treatment System; a component may include multiple devices.

2.23 Component Parts: All physical, mechanical and electrical components of an On-site Wastewater Treatment System.

2.24 Composting Toilet: A self-contained waterless toilet designed to decompose non-water-carried human wastes through microbial action and store the resulting matter for disposal.

2.25 Consistence: 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.

2.26 Constructed Wetlands: A system that utilizes various wetland plants to provide secondary treatment of wastewater through biological, physical, and chemical processes.

2.27 Convenient Sewage Disposal System: An adequate system, with appropriate plumbing fixtures connected thereto, which is available at all times to the residents of an occupied structure and located within 200 feet of said structure

2.28 Crest: The highest point on the side of a dry gulch or cut bank.

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

2.30 Department or Delta County Health Department: The Delta County Board of Health, the Delta County Health Officer, and authorized representatives as organized pursuant to 25-1-506 et.seq. Colorado Revised Statutes, as amended by resolution of the Delta County Board of Commissioners, and which is referred to as "the Department" in this regulation

2.31 Design: (A.) The process of selecting, sizing, locating, specifying, and configuring treatment components that match the site characteristics and facility use as well as creating the associated written documentation

(B.) Written documentation of size, location, specification and configuration of a system.

2.32 Design capacity: See Flow, Design

2.33 Design flow: See Flow, Design.

2.34 Designer for On-site Wastewater Treatment System: A practitioner who utilizes site evaluation and investigation information to select an appropriate OWTS and prepares a design document in conformance with this regulation.

2.35 Distribution: The process of conveying wastewater or effluent to one or more components, devices, or throughout a soil treatment area.

2.36 Distribution Box**:** 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 trenches or two or more laterals in the soil treatment area.

2.37 Domestic Wastewater : See Wastewater, domestic.

2.38 Domestic Wastewater Treatment Works: A system or facility for treating, neutralizing, stabilizing, or disposing of domestic wastewater in which the system or facility has a designed capacity to receive 2,000 gallons of domestic wastewater per day or more. 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.

2.39 Dosing: A high-rate periodic discharge into an absorption system.

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

2.41 Dosing, pressure: The delivery of effluent under pressure to a component, device or to a soil treatment area for even distribution.

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

2.43 Dosing siphon: 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.

2.44 Dosing Tank: A tank which provides for storage of wastewater from a septic tank which is fed to an absorption area at a high-rate, periodic discharge.

2.45 Drainfield: See Soil treatment area.

2.46 Drop box: A device used for serial or sequential distribution of effluent by gravity flow to a lateral of a soil treatment area.

2.47 Dry gulch: See Gulch, dry.

2.48 Drywell: 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.

2.49 Dwelling Unit:

A. Single Family: a structure containing one or more rooms, designed, occupied, or intended for occupancy as separate living quarters, with sleeping, bathroom, and cooking facilities, for the exclusive use of a single household.

B. Multi-Family: a structure containing two or more single family dwelling units each of which is designed, occupied, or intended for occupancy as separate living quarters, with sleeping, bathroom, and cooking facilities, for the exclusive use of a single household in each unit.

2.50 Effective Liquid Capacity: The available storage volume of a septic tank, which is calculated by measuring the liquid depth of the tank times the interior length and width, excluding all baffles, dividers, and interior components of the septic tank.

2.51 Effective Size: The size of granular media, where not more than 10% of the media, by weight, is finer than the size specified.

2.52 Effluent: The liquid waste discharged from an On-site Wastewater Treatment System or any of its components.

2.53 Effluent filter: See Effluent screen.

2.54 Effluent line: A non-perforated pipe that conveys effluent from one On-site Wastewater Treatment System component to the next.

2.55 Effluent screen: 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.

2.56 Environmental Health Specialist: A person who is trained in physical, biological and sanitary science to carry out inspection and educational duties in the field of environmental health.

2.57 Evapotranspiration/absorption system: An unlined On-site Wastewater Treatment System component that uses evaporation, transpiration, and absorption for dispersal of effluent.

2.58 Evapotranspiration System: A type of disposal system with a continuous impermeable liner that utilizes liquid evaporation and/or transpiration by vegetation as a means of effluent disposal.

2.59 Experimental System: Any new device or design on which further testing is required in order to provide sufficient information to determine the acceptability of the system.

2.60 Field performance testing: Data gathering on a system in actual use that is being proposed for Division acceptance.

2.61 Floodplain: An area adjacent to a stream which is subject to flooding as the result of the occurrence of a one hundred (100) year flood, which is a flood that may occur statistically in frequency of one time per 100 years, and which is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public health and safety, or to property, or is so designated by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program (NFIP). In the absence of FEMA/NFIP maps, a Colorado Registered Professional Engineer (R.P.E.) or Professional Land Surveyor (P.L.S.) shall certify the floodplain elevations.

2.62 Floodway: That area of the floodplain, exclusive of the flood fringe, and the channel of the watercourse and those portions of the adjoining floodplain which must be reserved to allow the discharge of the base flood without cumulatively increasing the water surface elevation more than one (1) foot at any point, or which is designated by the Federal Emergency Management Agency, National Flood Insurance Program. In the absence of FEMA/NFIP maps, a Colorado Registered Professional Engineer (R.P.E.) or Professional Land Surveyor (P.L.S.) shall certify the floodway elevations.

2.63 Flow, daily: The measured volume of wastewater generated from a dwelling, building or facility in a 24-hour period expressed as gallons per day.

2.64 Flow, design: 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 of time that shall be multiplied by the maximum number of units that a dwelling, building, or facility can accommodate over that time.

2.65 Flow equalization: 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.

2.66 Flow equalizer: An adjustment device to evenly distribute flow between outlets in a distribution box or other device that may be out of level.

2.67 Grease interceptor tank: 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 grease.

2.68 Ground water: That part of the subsurface water that is at or below the saturated zone.

2.69 Ground water surface: The uppermost limit of an unconfined aquifer at atmospheric pressure.

2.70 Groundwater Table: The upper surface of groundwater in the zone of saturation of a geologic formation.

2.71 Guidelines: The State Board of Health Guidelines on Individual Sewage Disposal Systems, 5 CCR 1003-6 – predecessor of Regulation 43, On-site Wastewater Treatment System Regulation, 5 CCR 1002-43.

2.72 Gulch, dry: A deep, narrow ravine marking the course of an intermittent or ephemeral stream.

2.73 Health Officer: The chief administrative and executive officer of a local public health agency, or the appointed health officer of the local board of health. Health officer includes a director of a local public health agency.

2.74 Higher level treatment: Designated treatment levels other than basic anaerobic septic tank treatment.

2.75 Holding Tank or Vault: A watertight receptacle for the retention of sewage from a building sewer or privy that is easily accessible for the periodic removal of its contents.

2.76 Individual Sewage Disposal System and the term "System" or "ISDS": A term used for On-site Wastewater Treatment Systems in Colorado regulations from 1973 until 2013.

2.77 Infiltrative surface: The designated interface where effluent moves from distribution media or a distribution device into soil.

2.78 Inspection port: An access point in a system component that enables inspection, operation and/or maintenance.

2.79 Invert: The elevation of the bottom of the inside pipe wall or fitting.

2.80 Lateral: A pipe, tubing or other conveyance used to carry and distribute effluent.

2.81 Leach field: See Soil treatment area.

2.82 Limiting condition: A layer with low permeability, ground water surface or other condition that restricts the treatment capability of the soil.

2.83 Liner: An impermeable synthetic or natural material used to prevent or restrict infiltration and/or exfiltration.

2.84 Long Term Acceptance Rate (LTAR): A design parameter expressing the rate that effluent enters the infiltrative surface of the soil treatment area at equilibrium, measured in volume per area per time, e.g. gallons per square foot per day (g/ft^2/day). The minimum absorption area (A) in square feet computed as a function of the design flow (Q) and the rate of soil acceptance over time according to the formula:

$$A = \frac{Q}{LTAR}$$

2.85 Malfunction or Malfunctioning System: An On-site Wastewater Treatment System which is not operating properly or is in conflict with the On-site Wastewater Treatment Systems Act, Article 10 of Title 25, C.R.S., as amended.

2.86 Media: A solid material that can be described by shape, dimensions, surface area, void space, and application.

2.87 Media, manufactured: A synthetic media for distribution such as polystyrene 80 blocks or beads or plastic grids.

2.88 Media, treatment: Non-or slowly-degradable media used for physical, chemical, and/or biological treatment in an On-site Wastewater Treatment System component.

2.89 Mound: An above-grade soil treatment area designed and installed with at least 12 inches of clean sand between the bottom of the infiltrative surface and the original ground elevation; that utilizes pressure distribution and includes a final cover of suitable soil to stabilize the surface and support vegetative growth.

2.90 Nitrogen reduction: A minimum 50 percent reduction of influent nitrogen strength which is the minimum objective of NSF/ANSI Standard 245 - Wastewater Treatment Systems - Nitrogen Reduction.

2.91 Occupied Structure: Any structure permanently lived in, or any structure used as a place of business or group gathering or other similar activity.

2.92 On-site Wastewater Treatment System or "OWTS" or "system": 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.

2.93 OWTS Act: The On-site Wastewater Treatment System Act, 25-10-101, et seq. C.R.S.

2.94 Owner: The person who is owner of record of the land on which an On-site Wastewater Treatment System is to be installed, repaired or used. The owner may be represented by a duly authorized agent in any matters relating to these regulations.

2.95 Percolation Test: A subsurface soil test at the depth of a proposed absorption system, or other similar component of an On-site Wastewater Treatment System, to determine the water absorption capability of the soil, the results of which are normally expressed as the average rate in minutes that one inch in a column of water is absorbed by that soil when the soil is already well soaked.

2.96 Performance standard: The 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.

2.97 Permeability: The property of a material to permit movement of water through the material.

2.98 Permit: A document issued by the Department authorizing the construction, installation, modification, and repair and use of an On-site Wastewater Treatment System.

2.99 Person: An individual, partnership, firm, corporation, association or other legal entity, and also the State or any other governmental entity.

2.100 Pressure distribution: An application of effluent over an infiltrative surface via pressurized orifices and associated devices and parts (including pump, filters, controls, and piping).

2.101 Plot Plan: An accurate drawing or map indicating the dimensions, acreage, and location of property lines, buildings, wells, On-site Wastewater Treatment Systems, water courses, geographical features and other pertinent information as required.

2.102 Potable Water: Water that meets the minimum standards of the Colorado Department of Public Health and Environment for human consumption.

2.103 Privy: A structure allowing for the disposal of excreta that is not transported by a sewer, which provides privacy and shelter and prevents access to the excreta by flies, rodents or other animals.

A. Pit privy – privy over an unlined excavation.

B. Vault privy – privy over a vault (See Section 9)

2.104 Professional Geologist: A person who is a graduate of an institution of higher education which is accredited by a regional or national accrediting agency, who has a minimum of 30 semester hours (45 quarter hours) of undergraduate or graduate work in the 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 which does not include more than two years of graduate work. Pursuant to 23-41-208 C.R.S. and 34-1-201 C.R.S.

2.105 Proprietary product: A manufactured component or other product that is produced by a private person. It may be protected by patent, trademark or copyright.

2.106 Public domain technology: 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.

2.107 Redoximorphic: 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.

2.108 Registered Professional Engineer: An engineer licensed in the State of Colorado in accordance with 12-25-111 C.R.S., as amended.

2.109 Remediation system: A treatment system, chemical/biological additive or physical process that is proposed to restore the soil treatment area of an OWTS to good performance.

2.110 Restrictive layer: A horizon or condition in the soil profile or underlying strata that severely limits the movement of fluids. A restrictive layer may constitute a limiting soil/site condition.

2.111 Riser: A watertight vertical structure and lid allowing access to an OWTS component for inspection, cleaning, maintenance, or sampling.

2.112 Rock-plant filter: A designed system which utilizes treatment media and various wetland plants to provide treatment of wastewater through biological, physical, and chemical processes, and also called a constructed wetland.

2.113 Sand Filter: A system that utilizes a layer of specified sand as filter and treatment media and pressure distribution.

2.114 Sand filter, lined: A sand filter designed for higher level treatment that has an impervious liner and under-drain below the sand layer. 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 recirculating where part of the effluent is returned to an earlier component for additional treatment before distribution to a soil treatment area.

2.115 Sand filter, unlined: A layer of sand used as a sand filter without a liner between the sand and the existing soil on which it is placed.

2.116 Seasonal: A limited period of time in one calendar year in which the cumulative number of days of use shall not exceed one hundred twenty (120), e.g. seasonally used summer cabin, or migrant labor housing.

2.117 Seepage Pit: 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.

2.118 Septage: 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 Department that the material meets the definition for septage set forth in this subsection. Septage does not include chemical toilet residuals.

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

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

2.121 Serial Distribution: A distribution method in which effluent is loaded into one trench and fills it to a predetermined level before passing through a relief line 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.

2.122 Sewage: Any combination of liquid wastes which may include chemicals, household wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution, and which is discharged from a dwelling, building, processing or manufacturing plant, institution, industrial plant or other establishment. Sewage may or may not contain human excreta. See “Wastewater” Sec. 2.158 & 159.

2.123 Sewer Line: A pipe system capable of conveying sewage.

2.124 Sewage Treatment Works: A system or facility for treating, neutralizing, stabilizing or disposing of sewage, which system or facility has a designed capacity to receive more than two thousand gallons of sewage per day as defined in section 25-8-103 C.R.S. ”Domestic Wastewater Treatment Works”. The term "sewage treatment works" includes appurtenances such as

interceptors, collection lines, outfall and outlet sewers, pumping stations and related equipment.

2.125 Shall: As used in this document, indicates a mandatory requirement.

2.126 Site evaluation: A comprehensive analysis of soil and site conditions for an OWTS.

2.127 Site evaluator: 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.

2.128 Slit trench latrine: A temporary shallow trench for use as disposal of non-water-carried human waste.

2.129 Soil:

A. The 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;

B. The unconsolidated mineral or organic matter on the surface of the earth that has been subjected to and shows effects of: 1) pedogenic and environmental factors of climate (including water and temperature effects) and 2) macro and microorganisms, conditioned by relief, acting on parent material over a period of time.

2.130 Soil evaluation: 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.

2.131 Soil horizon: The layers in the soil column differentiated by changes in texture, color, redoximorphic features, bedrock, structure, consistency, and any other characteristic that affects water movement or treatment of effluent.

2.132 Soil morphology:

A. The 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

B. the visible characteristics of the soil or any of its parts.

2.133 Soil profile hole: A hole dug or drilled near a proposed soil treatment area to locate bedrock or ground water, if present. Observations of soil cuttings may be made.

2.134 Soil profile test pit excavation: 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.

2.135 Soil structure: The naturally occurring combination or arrangement of primary soil particles into secondary units or peds; secondary units are characterized on the basis of shape, size, class, and grade (degree of distinctness).

2.136 Soil texture: The proportion by weight of sand, silt, and clay in a soil.

2.137 Soil treatment area: The physical location where final treatment and dispersal of effluent occurs. Soil treatment area includes drainfields and drip fields.

2.138 Soil treatment area, alternating: Final treatment and distribution component that is composed of two soil treatment areas that are independently dosed.

2.139 Soil treatment area, sequencing: A soil treatment area having more than two sections that are dosed on a frequent rotating basis.

2.140 State Waters: Any and all surface and subsurface waters which are contained in or flow in or through this State, except waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all waters withdrawn for use until all uses and treatment have been completed as defined in Section 25-8-103 C.R.S.

2.141 Strength, wastewater: The concentration of constituents of wastewater or effluent; usually expressed in mg/L.

2.142 Suitable Soil: A soil which will effectively filter effluent by removal of organisms and suspended solids before the effluent reaches ground water or highly permeable earth, such as joints in bedrock, gravels or very coarse soils, and which meets percolation test or soil test pit excavation requirements for determining long-term acceptance rate and has a vertical thickness of at least four feet below the bottom of the soil treatment area unless the treatment goal is met by other performance criteria.

2.143 Surface Activity: The driving, parking, storage, loading or unloading of vehicles or equipment; or the placement of any material; or the construction of any object, either temporarily or permanently, including portable objects; or any other activity on the surface of the ground over the On-site Wastewater Treatment System which may be detrimental to the capability of the components of the system to function as designed.

2.144 Systems Cleaner: A person who engages in and holds himself 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.

2.145 Systems Contractor: A person who engages in and holds himself out as a specialist in the installation, renovation, and repair of On-site Wastewater Treatment Systems.

2.146 Temporary: This term when used in this regulation, means no more than 90 days in a calendar year, at the end of which time the use is discontinued.

2.147 Total suspended solids: The measure of all suspended solids in a liquid; typically expressed in mg/L.

2.148 Transfer of Title: The change of ownership of a property.

2.149 Treatment media: See Media, treatment.

2.150 Treatment level: Defined concentrations of pollutants to be achieved by a component or series of components of an On-site Wastewater Treatment Systems.

2.151 Treatment unit: A component or series of components where solids or pollutants are removed from wastewater or effluent from a preceding component.

2.152 Trench:
A. 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
B. excavation for placement of piping or installation of electrical wire or conduit

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

2.154 Unit: A part of a building or a separate building providing a completely independent occupied structure.

2.155 Vault: A watertight, covered receptacle, which is designed to receive and store excreta or wastes either from a sewer or 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.

2.156 Visual and tactile evaluation of soil: Determining the properties of soil by standardized tests of appearance and manipulation in the hand.

2.157 Volume, effective: 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, effective volume under normal conditions is determined relative to the invert of the inlet and the control off-level.

2.158 Wastewater, domestic: The 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.

2.159 Wastewater, high strength:
A. influent 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 entering a pretreatment component (as defined by NSF/ANSI Standard 40 testing protocol);

B. effluent from a septic tank or other pre-treatment component that has BOD_5 greater than 170 mg/L; and/or TSS greater than 60 mg/L; and/or fats, oils, and grease greater than 25 mg/L and is applied to an infiltrative surface

2.160 Wastewater Pond: A designed pond which receives wastewater exclusively from a first stage treatment unit and which provides an additional degree of treatment.

2.161 Water Quality Control Commission: The Commission created by Title 25, Article 8, Paragraph 201, C.R.S., as amended.

2.162 Water Quality Control Division or The Division: The Colorado Department of Public Health and Environment, Water Quality Control Division.

2.163 Wetland, constructed: See Rock-plant filter.

2.164 Wetlands: 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 2-1 Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand

C.R.S.	Colorado Revised Statutes
CBOD	Carbonaceous Biochemical Oxygen Demand
CSA	Canadian Standards Association
Gpd	gallons per day
IAPMO	International Association of Plumbing and Mechanical Officials
ISDS	Individual Sewage Disposal System
LTAR	Long-term Acceptance Rate
mg/L	milligrams per Liter
MPI	Minutes Per Inch
NAWT	National Association of Wastewater Technicians
NPCA	National Precast Concrete Association
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

SECTION III: General Administration and Regulations

3.1 For the purposes of administration and enforcement of these regulations, the Delta County Department of Health and its authorized employees shall act as designated agents for both the Delta County Health Officer and the Delta County Board of Health. Any and all requests for information, permits, rulings, and/or relief under these regulations deemed to be within the authority of the Delta County Health Officer or the Delta County Board of Health shall be directed to the Delta County Health Department,

Environmental Health Section, prior to the consideration of any such request by the Delta County Board of Health or the Delta County Health Officer.

3.2 General Sanitation Requirements:

A. The owner or occupant of any structure where people live, work, or congregate shall provide an adequate and convenient On-site Wastewater Treatment System or sewage disposal system in good working order.

B. Under no condition shall sewage or effluent be permitted to be discharged upon the surface of the ground, or into State Waters, unless the sewage or effluent meets the minimum requirements of these regulations and the system was designed and permitted originally as a discharging system.

C. A mobile home or recreational vehicle (R.V.) used as an occupied structure may be temporarily occupied without installing a permanent On-site Wastewater Treatment System provided each of the following stipulations are met:

1. that the mobile home or R.V. is within 200 feet of an occupied structure with an adequate approved On-site Wastewater Treatment System;

2. that properly functioning plumbing fixtures within the occupied structure are available at all times to the occupants of the mobile home or R.V.;

3. that no sewage is discharged from the mobile home or R.V.;

4. that the building drain of the mobile home or R.V. is capped;

5. that the increased usage of the existing system does not hydraulically overload it.

3.3 Inspections and Right of Entry: For the purpose of enforcing these regulations, the Health Officer or his designated agent is authorized to enter upon private property during reasonable hours, and upon giving reasonable notice to the owner or tenant, for the purpose of determining whether or not the OWTS installed thereon is in compliance with these regulations 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 On-site Wastewater Treatment System shall give the Health Officer or his designated agent free access

to the property for such survey or inspection. If access is denied, the Health Officer may apply to the District Court of Delta County for an Order authorizing entry.

3.4 Permit Application Requirements:

A. Prior to commencing construction any person who wishes to install, alter or, repair an On-site Wastewater Treatment System in Delta County, Colorado, shall obtain a permit from the Department.

B. The applicant shall furnish the following information on the OWTS permit application form provided by the Department:

1. legal description of the property, including size in acres, county parcel number, and county road address as assigned by the legal authority;
2. name of the owner of the property;
3. owner's mailing address and phone number;
4. occupant's name and address, if owner will not occupy dwelling;
5. system contractor's name, address and phone number;
6. type of facility being served by the proposed system;
7. source and type of water supply;
8. Site and Soil Evaluation and OWTS design when performed by a Registered Professional Engineer.
9. proximal depth of bedrock;
10. proximal depth to the top of the ground water table;
11. type of the On-site Wastewater Treatment System proposed;
12. plot plan with approximate dimensions;
13. owner's, applicant's, or occupant's signature and date;
14. System design with a legible, accurate site plan which shows pertinent physical features on subject property, and on adjacent properties, as noted in Table 6-2; and
15. Other information, data, plans, specifications and tests as required by the Department.
    a. 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.
    b. This requirement shall not prejudice the right of the Department to develop its own information from its own source at its own expense.

16. Height of the one hundred year flood elevation if the system is in the flood plain.

C. Permit fees shall accompany the application. The permit fees are listed in Appendix A.

D. Permit fees shall be set by formal resolution by the Board of Health in accordance with 25-10-107, C.R.S., as amended. Fees shall be set at such amounts as are deemed necessary to cover the cost of the operation of the Department's **OWTS** program. Such fees are deemed necessary to properly process the request and therefore are not refundable in the event the permit request is denied or expired according to this Regulation.

E. The Health Officer may waive the fees in cases of extreme financial hardship.

3.5 Site 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. Each site evaluation shall consist of:
   1. Preliminary investigation;
   2. Reconnaissance;
   3. Detailed soil investigation; and
   4. Report and site plan based on the information provided in the application Section 3.4.B.

B. A preliminary investigation shall review documented information relative to the site and anticipated conditions. Information gathered as part of the preliminary investigation shall 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 6-2.

5. Preliminary soil treatment area size estimate based on information on existing or planned facility and local regulations.
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. A reconnaissance visit to the property shall evaluate the topography and other surface conditions that will impact the selection and location and design of the OWTS, including:
   1. Landscape position;
   2. Topography;
   3. Vegetation;
   4. Natural and cultural features; and
   5. Current and historic land use.

D. When specific evidence indicates that subsurface conditions exist that may endanger the State waters, additional hydrological, geological, or engineering information provided by a registered professional engineer, geologist or other similarly qualified individual may be required.

E. When, in the opinion of the Health Officer, the Department possesses sufficient information to make one or more provisions of this section unnecessary, he may waive all or any part thereof.

3.6 Permit Issuance: The Department will 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, a permit will be issued and authorization to begin installation may be given.

A. Conditional approval may be authorized by the Department and shall set forth conditions precedent to the final approval of the permit, including effluent testing, cleaning or maintenance schedules, or other special conditions. No permit shall be issued and approved until the conditions have been met.

B. Permits may be granted for systems that will not be located on the same parcel as the building served provided that a legal utility easement is recorded on the deed in the public real estate records of Delta County.

C. No permits for multiple dwelling or commercial unit connections to an On-site Wastewater Treatment System on separate property parcels shall be granted unless a legal arrangement acceptable to the Department is made prior to construction, designating a responsible party for maintenance and repair of the system, and such arrangement is recorded on the public real estate records of Delta County.

D. Except as provided in 25-10-107, C.R.S., as amended, no permits shall be issued for the following systems unless the systems are designed by a Registered Professional Engineer and the design has been reviewed and approved by the Department:

1. systems disposing of effluent into State waters;
2. systems disposing of effluent upon the ground;
3. systems which service commercial business, institutions, industry, or multi-family dwellings. The Department shall determine the applicability of this exemption;
4. experimental systems;
5. soil absorption systems installed in new fill material;
6. the soil classifications are Types 0, 3A, 4, 4A, and 5 and Treatment Levels TL2, TL2N, TL3, and TL3N as specified in Table 7-1 of this regulation;
7. the maximum seasonal level of the ground water surface is less than four feet below the bottom of the proposed absorption system;
8. a restrictive layer exists less than four feet below the bottom of the proposed absorption system;
9. the ground slope is in excess of thirty percent; or
10. pressure distribution is used.

E. No permits shall be issued for systems to be repaired, altered or installed within a floodway.

F. Permits for systems installed, altered, or repaired in a flood plain shall only be issued if such system will be installed to avoid any impairment to the system or contamination from the system.

G. An On-site Wastewater Treatment System permit shall be required for expanded use of an existing system. 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.

H. A permit is required for each system when multiple systems are installed on a single property.

I. No permits for new system installations on properties located in the unincorporated portions of Delta County shall be issued until the applicant has complied with the provisions of the Delta County Development Application Ordinance, Delta County Board of Commissioners Ordinance No. 2012-02.

3.7 Registered Professional Engineer Designs: All new construction and new installation of onsite wastewater treatment systems shall be designed by a registered professional engineer, except for the following systems: outhouses, privies, slit trench latrine, composting toilets, chemical toilets, incineration toilets, vaults, and repairs, alterations or replacement of existing systems where registered professional engineer designs are not required according to Sec.3.6.D and Sec.7.0. Designs submitted to the Department by an engineer for approval shall be site specific.

A. The plans submitted by an engineer shall include the following:

1. one copy to become a part of the permit for installation drawn on paper no larger than ledger size (11 inches by 17 inches);
2. a site plan drawn to scale that includes relative elevations according to Sec.3.5;
3. a design data sheet that includes all sizing rationale according to Sec. 5.2.j;
4. a plan drawing with cross sections showing construction details;
5. a concise step-by-step construction technique, along with specifications of materials and equipment to be used;
6. a Registered Professional Engineer's stamp or seal on the plan certifying the design;
7. soils evaluations and percolation test results performed by the Engineer according to Sec. 5.1 thru 5.2.

B. When construction is completed, the engineer shall provide written documentation to the Department that the system was installed according to the design specifications.

C. The Department shall make a final inspection of the system and require the engineer to complete an as-built drawing noting the location of the system components and any additional information that may be needed according to Sec. 5.2.K.

3.8 Inspection Report: When requested by an individual or lending agency, the Department will make an inspection of an existing On-site Wastewater Treatment System to determine the proper functioning of the system and issue an Inspection Report.

A. The request shall be made in writing upon forms supplied by the Department and shall be accompanied by the proper fee.

B. Systems older than 5 years of age in general usage shall have the septic tank pumped and left uncovered for inspection by the Department at the requesting party's expense. If the septic tank has been pumped in the last 5 years, as evidenced by a receipt, then this requirement may be waived.

C. The applicant may request that the Department perform a Phase II inspection that includes a Slug Test of the system, and core of the absorption area. Such testing will be at an increased fee to the applicant.

1. A Slug Test will involve the Department introducing a measured amount of water into the system over a 24-hour period after the septic tank has reached operational level. The amount of water introduced into the system will be the estimated maximum design flow commensurate with the size of the residence.

2. A core of the absorption area shall be made with a hand driven coring tool or backhoe and/or the piping scoped with a television camera all at the expense to the applicant.

3.9 Referral To Water Quality Control Division: Any system with a design capacity of over 2,000 gallons per day or that will discharge into State Waters must be designed by a professional engineer. The discharge permit application must be submitted for preliminary approval to the local board of health. Once approved by the local board of health, 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 shall be deemed full compliance with this regulation.

3.10 Inspection Notification: When construction of an OWTS has been completed but prior to covering the system, the permit applicant shall notify the Department. A representative of the Department shall make a final inspection prior to final approval of the permit.

A. During construction, the permit applicant or the installer will be responsible for keeping the Department apprised of the status of the project.

B. Systems covered without notifying the Department shall be uncovered and inspected or sufficient proof shall be provided to the Department as to the installation in order for the Department to grant final approval.

3.11 Final Approval: A final inspection of the system, by the Delta County Health Officer or designated agent, shall be conducted to find if the system is installed in accordance with these regulations. The Environmental Health Specialist shall issue final approval for the completed system. Final approval must include the following:

A. a letter certifying the construction as designed, if the system is designed by an engineer;
B. an as-built drawing;
C. final inspection certification that the system was installed according to the permit requirements and regulations or variances to the regulations, and
D. identification of the systems installer.

3.12 Inspection Failure**:** If the inspection discloses any significant departure from the description or design of the system as stated in the application and permit, or if any aspect of the system fails to comply with this regulation, approval shall be withheld.

A. Written notice of deficiencies causing the disapproval shall be given to the owner or systems installer.

B. Another inspection shall be made upon notification that the deficiencies have been corrected and the system has been brought into compliance with this regulation.

3.13 Occupancy Requirement: No person shall occupy any residential dwelling, business, commercial building, institution or any other occupied building serviced by an On-site Wastewater Treatment System or place into service any such system until final approval or provisional approval has been granted.

3.14 Provisional Approval: The Health Officer may grant a provisional approval for a system allowing occupancy of a building and use of a system when the system has been installed and found to be in satisfactory compliance with the regulations, but more information is needed such as performance, testing, sampling, etc.

A. Provisional Approval shall be granted for no longer than one year provided the system functions so that no health hazard exists, as determined by the Department.

B. The owner may request an extension of the provisional approval after the one-year period and for each year thereafter until the system has proven satisfactory performance and compliance with this regulation. The Health Officer shall hear the request and may grant an extension after a favorable review of the situation or the request may be denied.

C. Final approval and occupancy permit shall not be issued until all the stipulations of the permit are met.

D. If compliance with the stipulations of the permit cannot be demonstrated within the allotted time frame or if the system becomes a health hazard, then the system will be deemed to be in violation of these rules and regulations and appropriate action shall be taken to gain compliance.

E. If a request for an extension is denied then the owner may appeal to the Board of Health according to Section 3.19.

3.15 Permit Expiration: The OWTS Permit shall expire twelve (12) months after its issuance if construction of the system has not commenced. Any change in plans or specifications after the permit has been issued invalidates the permit, unless approval is secured from the Department for such changes. An expired permit may be reissued if:

A. There has been no change in the plans and specifications of the proposed system or no change in ownership as set out in the original application.

B. The surrounding land use has not changed so as to cause the original application not to be acceptable under these regulations.

C. The request for re-issuance is submitted to the Delta County Health Department within ten (10) days after the expiration of the original permit.

D. If a request for re-issuance does not meet the above requirements then a renewal fee as set by resolution by the Board of Health will be charged for processing the request.

E. Applications for permits shall be kept on file for one (1) year from the date of application. The application may be renewed annually for 5 consecutive years if it meets the above conditions. A new application and permit fee will be required after 5 years at the current fee amount.

3.16 Department Responsibility: The issuance of a permit and specifications of terms and conditions therein shall not constitute assumption or create a presumption that the Department or its employees may be liable for the failure of any system nor act as a certification that the equipment used in the system or any component thereof used in its operation or that the system for which the permit was issued insures continuous compliance with the provision of Article 10 of Title 25, C.R.S. as amended, the rules and regulations adopted thereunto or any terms and conditions of a permit.

3.17 Owner's Responsibility: The owner and the party in possession of real property upon which an On-site Wastewater Treatment System is used, shall be jointly and severally responsible for operation, maintenance, and for abatement of any nuisance and/or health hazard arising from the failure of the system. A person denying such responsibility shall bear the burden of proof of lack of responsibility upon establishment of ownership or possession rights in the property served by the system. The responsibility may be transferred to a public, quasi-public or political subdivision as stipulated by the terms of the permit.

3.18 Denial of a Permit or Disapproval of Plans: A written notice of the denial of a permit or disapproval of plans shall be given to the applicant by personal service or by registered or certified mail with return receipt requested.

3.19 Appeal to the Board of Health: Any person who is denied a permit, issued a Cease and Desist Order, or assessed a civil penalty for an OWTS violation may appeal to the Board of Health for a Public Hearing which shall be conducted in accordance with Section 24-4-105, C.R.S. as amended and as herein provided. An appeal may not be heard by the Board of Health until the Applicant has attempted to mediate the situation with the Health Officer.

A. Every appeal of an Order must be filed within thirty (30) days from the final date of the Order that was issued by the Health Officer.

B. The Applicant must file a request for an appeal including all the necessary information regarding the appeal in an application provided by and submitted to the Department at least 10 working days prior to a scheduled Board of Health meeting.

C. The applicant shall bear the burden of supplying the Board of Health with sufficient evidence to document that said system will be constructed and used in such a manner as to comply with the declaration and intent of these regulations and required terms and conditions in any permit issued therefore.

D. The decision shall become final upon the expiration of time for filing an appeal, or when action is taken upon an appeal, whichever is later.

E. The appeal hearing shall be held before the Board of Health and be governed by the rules of administrative procedure as prescribed by the current Colorado Revised Statutes.

F. All owners of adjoining property and interested parties that will be affected by the Board's action on the appeal, as determined by the Health Officer, shall be notified in writing at least 3 days prior to the hearing. Municipalities shall be notified at least 5 working days prior to the hearing

3.20 Variance: Upon finding that strict enforcement of these regulations would present practical or unusual hardship to the applicant and a further finding that a variance would not be injurious to the public health, the Board of Health may authorize the issuance of a variance.

A. A public hearing must be held, with notice to all adjacent property owners prior to rendering a decision on the variance request. A notice must be sent via certified mail, with a minimum 20-day reply time from the date of mailing, to all adjacent property owners.

B. Variances may be granted from the provisions of these regulations if warranted by site-specific hydrological conditions or geological conditions and if the benefits derived from meeting these regulations do not bear a reasonable relationship to the economic, environmental, or other factors which are unique to the application.

C. Variances will be granted only if it is shown that the system will not be injurious to adjacent properties, will not conflict with the purposes of these regulations, will not adversely affect the health of

any person, and will not violate Section 25-10-111 C.R.S. as amended.

D. Any request for a variance shall be made no later than thirty (30) days after the denial of the permit or disapproval of the system. A variance may be sought within thirty (30) days after facts become available which were not reasonably available to the applicant prior to that time, or at any other time upon application to the Board of Health for good cause shown.

E. The applicant shall bear the burdens of supplying the Board of Health with sufficient information to demonstrate that conditions exist which warrant the granting of a variance. An application provided by the Department shall be submitted at least **30** days prior to a Public Hearing requesting a variance. A non-refundable fee determined by the Department to cover the administrative costs associated with reviewing a variance shall accompany the application.

F. A written application shall be submitted to the Department requesting a variance, and shall include the following information:

1. A site-specific request identifying the specific criteria from which a variance is being requested.

2. Technical justification by a Colorado Registered Professional Engineer or Professional Geologist, which indicates the specific conditions which exist and/or the measures which will be taken to 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 physical barrier to the movement of effluent 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 amendment or replacement to reduce the infiltration rate of the effluent such that the travel time of 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 equivalent to that required to meet the National Sanitation foundation (NSF) Standard 40 be provided.

3. A written narrative of possible alternatives considered by the applicant in lieu of the requested variance.

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

5. A statement of the hardship, which creates the necessity for the variance. No variance will be granted for economic gain.

6. The Board of Health may request additional information from the applicant as deemed necessary to process the request.

G. Prohibitions on the granting of variance requests:

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

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

3. No variance will be issued which will result in setbacks to an offsite physical feature which does not conform to the minimum setbacks defined in Table 6-2 of these regulations without the written consent of the owner of property containing said feature. Property lines are considered offsite features.

4. No variance will be issued, which reduces the 4-foot separation to ground water or bedrock.

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

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

H. The Board of Health shall issue a written decision granting or denying the variance request. If the request is granted, the Board of Health shall identify the provision(s) of these regulations and provide an explanation of the basis for the granting of the variance, and the requirements, if any, imposed in lieu of the provisions from which a variance has been granted.

I. Government agencies that have an interest in the specific application for a variance shall be notified at least 5 working days in

advance of a variance hearing. Such agencies might include towns, sewer districts, water purveyors, et. al.

J. Findings on Appeal

1. A request for review must be made within 60 days after denial of an application by the local public health agency.

2. The applicant must bear the burden of supplying the local board of health with sufficient evidence to document that the denied system shall be constructed and used in such a manner that will result in no greater risk than that associated with compliance with the requirements of the regulation, comply with the declaration and intent of this regulation, 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.

3.21 Availability of Community Sewers: Permits to construct, extend, repair, or replace an On-site Wastewater Treatment System shall be denied if a public sewage collection system is available.

A. Except when the property is located outside the boundary of any sanitation district created under Title 32 et. seq., C.R.S., as amended, or an incorporated municipality where the structure to be served is located more than 200 feet from the applicant's nearest property line, or more than 400 feet from the building served measured through existing easements or public right-of-ways .

B. Except when the property is located within the boundary of any sanitation district created pursuant to C.R.S., as amended or incorporated municipality where the sewer service to the property is not feasible in the determination of the municipality or special district. A written letter of approval from the sanitary sewer provider must accompany the On-site Wastewater Treatment System permit application allowing the installation of an On-site Wastewater Treatment System within the boundary of its jurisdiction.

C. Permits shall be denied for areas located in a floodplain or floodway where construction of sewers has been funded by the U.S. Department of Agriculture, Rural Development, and connection of significant development to those sewers has been denied.

3.22 Acreage Requirements: For a new installation of an OWTS the lot size may vary on specific locations but in general they shall meet the minimum density and lot size standards as stated in this section and Table 3-1.

A. On all lots, adequate separation distances between different components as specified in Table 6-2 must be maintained.

B. Acreage requirements for any special or experimental systems will be specified during the review of the application for that system.

C. Any parcel upon which an On-site Wastewater Treatment System is to be installed shall be adequately sized and appropriately shaped to accommodate the system and its replacement. The area set aside for replacement shall not be utilized by permanent structures or permanent landscaping. Any lot not appropriately sized or shaped may require greater than the minimum acreage.

D. Permit requests for systems to be installed on parcels sized less than those stated in Table 3-1 require a variance as outlined in Section 3.20.

E. Permit requests for systems to be installed on parcels sized less than 1 acre and greater than ½ acre without a drinking water well or spring and an offsite drinking water supply source require a variance approved by the Health Officer.

Table 3-1: Minimum Land Density

	Residential in acres per dwelling unit, or commercial building less than 1000 gpd flow in acres per unit	Commercial buildings with sewage flow of greater than 1000 gpd in acres per structure or OWTS for multiple systems
Conventional septic tank soil absorption system with off-site water supply or cistern	**1 acre**	**2 acres**
Conventional septic tank soil absorption system with on-site water well	**5 acres**	**5 acres**
Waste water pond with on or off-site water system	**5 acres**	**5 acres**

3.23 Malfunctioning Systems: An On-site Wastewater Treatment System is malfunctioning when it is not operating properly and is not in compliance with the On-site Wastewater Treatment System Act (Article 25 Title 10

C.R.S as amended), and regulations adopted thereto. Malfunctioning systems include, but are not limited to the following:

A. soil absorption systems which seep or flow onto the surface of the ground or surface waters of the State;

B. systems which overflow from any of their components;

C. systems which fail to operate in accordance with their design and function;

D. systems which discharge effluent that does not comply with the applicable standards established by the Department, Colorado State Board of Health, or the Water Quality Control Commission;

E. cesspools;

F. septic tanks and treatment tanks that are in unsound condition, or constructed of unapproved materials;

G. systems which do not comply with the provisions of this Regulation regarding minimum separation between the maximum seasonal level of the ground water table and the bottom of a soil absorption system;

H. a system causing a public health hazard or nuisance.

3.24 Notice of Violation: Whenever the Health Officer or an authorized representative determines that there has been a violation of any provision of this regulation, he shall give notice of such violation to the responsible person or persons.

A. Such notice shall be in writing, shall describe the violation, provide a reasonable time for correction, and be addressed to the owner and occupant of the property concerned.

B. Service of such notice shall be by a member of the Sheriff's Department, a member of the Department, or by registered or certified mail, return receipt requested, deliverable to addressee only. Service by mail shall be complete upon receipt by the Department of the return receipt. If one or more persons cannot be found or served after diligent effort to do so, service may be made by posting a notice in a conspicuous place in or about the property affected by the notice, in which case the Health Officer or an authorized representative shall include in the Public Hearing Record a statement as to why the posting was necessary.

3.25 Complaints Regarding Violations of these Regulations: Citizens who believe that a person or persons are in violation of the requirements of these regulations shall report this information to the Health Department on a form specially provided for that purpose. Upon receipt of the complaint, the Environmental Health Specialist and/or an authorized representative shall investigate the matter and attempt to correct the situation, if appropriate steps are necessary as a result of the investigation.

3.26 Public Hearings on Violations: The Delta County Health Officer may convene a public hearing to hear all sides of an issue regarding a possible violation of these regulations. All parties to the issue shall be notified in writing at least 48 hours prior to the meeting.

3.27 Cease and Desist Order: The Health Officer or an authorized agent may issue an order to cease and desist from the use of any system which is found by the Health Officer not to be functioning in compliance with this regulation or otherwise constitutes a nuisance or hazard to public health.

A. Such an order may be issued only after a hearing which shall be conducted by the Delta County 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 at which the owner and occupant may be present, with counsel, and be heard.

B. The order shall require that the owner or occupant bring the system into compliance or eliminate the nuisance or hazard within a reasonable period of time, not to exceed thirty (30) days, or thereafter cease and desist from the use of the system.

C. A Cease and Desist Order issued by the Health Officer shall be reviewable in the District Court for Delta County, and upon a petition filled not later than ten (10) days after the order is issued (25-10-106 (k) C.R.S. as amended) and becomes final.

3.28 Emergency Use Permit and Repair Permits: In the event that any existing system shall become a health hazard, nuisance or otherwise malfunction, the owner or occupant shall apply to the Department for an Emergency Use Permit and a Repair Permit.

A. Upon receipt of a Notice of Violation, the owner or occupant responsible for the malfunctioning system shall complete and return an application for a repair permit within two (2) business days.

B. An Emergency Use Permit may be issued which shall provide for a reasonable period of time within which repairs shall be made in accordance with this regulation to insure that the system will function properly.

C. The issuance of the Emergency Use Permit may allow the continued use of such a defective system for a period not to exceed thirty (30) days or the time stated in the repair permit.

D. Emergency Use Permits may be extended, for good cause shown, in the event repairs may not be completed in the period stated in the permit through no fault of the owner or occupant.

E. The Repair Permit may be issued in accordance with Section 3.6 of these regulations concurrently with the Emergency Use Permit or may be issued after data and plans have been reviewed if so needed. The repair permit shall be issued for the period of time as specified for emergency use permit. The permit shall be subject to all requirements of these regulations.

F. Maintenance of On-site Wastewater Treatment Systems, cleaning of lines, repairing broken pipes or pumping of tanks, may be made by the owner or occupant without permit.

3.29 Existing Systems: It is the intent of the Delta County Board of Health that all existing systems, when repaired, shall be upgraded to meet the requirements of these regulations.

A. In instances where strict enforcement of these requirements would create an undue hardship, a request for a variance may be made to the Department in accordance with Section 3.20.

B. For repair and upgrading of existing systems where lot size precludes the adherence to the distance requirements in Table 6-2, The repairs or upgrade shall be no closer to features requiring setbacks than the existing facilities. Variances requesting setbacks no closer than existing setbacks do not have to provide technical justification from a professional engineer or professional geologist.

C. Concrete one-compartment septic tanks in good condition will be allowed. Metal septic tanks shall be replaced by an approved septic tank.

D. The installation of an effluent diverter valve shall be required where a new replacement soil absorption system is constructed adjacent to the old system provided that:

1. the old soil absorption system is constructed in suitable soil;

2. the use of a diverter valve is technically feasible;

3. the old soil absorption system is of a known acceptable construction.

3.30 System 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. The Department for good cause may require at any time proof of maintenance and a schedule of cleaning of any OWTS. A good cause would include but not be limited to the following:

1. in order to prove proper maintenance of a vault;
2. In order to prove proper functioning of the system for which regular maintenance is required;
3. to prove that a malfunctioning system is not causing a public health nuisance which requires pumping of the contents;
4. when it is a requirement of the permit issued for the system;
5. for the purposes of a loan approval request.

C. The need for inspection and maintenance varies depending on usage of the system. As a guideline to insure the proper working order of a system, Table 3-2 is a suggested schedule that may be followed, unless otherwise approved by the Department.

TABLE 3-2: MAINTENANCE SCHEDULE

TYPE OF TREATMENT	INSPECTION OR MAINTENANCE	CLEANED OR PUMPED	EFFLUENT TESTING
Septic Tanks	Every year	Every 5 years, or as needed	As required by permit
Aeration Tanks	Every year	Every 5 years, or as needed	As required by permit
Vaults	Every year	As necessary	None
Privies	Every year	Level within 2 feet of cover	None
Discharging	As required by	As necessary	As required by

Systems to State Waters	permit		permit
Discharging Systems to Ground Surface	As required by permit	As necessary	As required by permit

3.31 Prohibition of On-site Wastewater Treatment Systems in Unsuitable Areas: The Board of Health may conduct a public hearing, after written notice to all affected property owners as shown in the records of the County Assessor and publication of notice in a newspaper of general circulation at least ten (10) days prior to the hearing, to consider the prohibition of permits for On-site Wastewater Treatment Systems in defined areas. The Board of Health may order such prohibition upon a finding that the construction and use of additional On-site Wastewater Treatment Systems in the defined area will constitute a hazard to the public health or water quality. In such a hearing, the Board of Health may request affected property owners to submit engineering and geological reports concerning the defined area and to provide a study of the economic feasibility of constructing a sewage treatment works.

3.32 General Prohibitions, Pursuant to 25-10-112 C.R.S., as amended:

A. No On-site Wastewater Treatment System presently in use, which does not comply with the provisions of this regulation regarding minimum separation between the maximum seasonal level of the groundwater table and the bottom of an absorption system, shall be permitted to remain in use without compliance with this regulation.

B. Construction and use of cesspools is prohibited for any occupied structure.

C. Not more than one dwelling, commercial, business, institutional or industrial unit shall be connected to the same On-site Wastewater Treatment System unless multiple connections were specified in the original application submitted and in the permit issued for the system.

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

E. No city or county shall issue to any person a permit to construct or remodel a building or structure which is not served by a sewage treatment works, until a permit for an On-site Wastewater Treatment System has been issued by the Department

F. No city or county occupancy permit shall be issued to any person for the use of a building which is not serviced by a sewage treatment works until a final inspection of the On-site Wastewater Treatment System has been made by the Health Officer, as provided for in Section III, and the installation has received the approval of the Health Officer.

G. No person shall dispose of septage removed from systems in the process of maintenance or cleaning in any way other than at an approved site and in an approved manner (Section 3.35)

3.33 Approval of Plans for Proposed Subdivisions : Plans for all proposed subdivisions shall be submitted to the Department for the review of proposed sewage disposal systems.

A. The Department may require the Subdivider to submit additional engineering or geological reports or data and to conduct a study of the economic feasibility of the sewage treatment works prior to making its recommendations.

B. No subdivision plan shall receive the approval of the Board of County Commissioners unless the Department has made a favorable recommendation regarding the proposed method of sewage disposal.

C. Appeal of an unfavorable recommendation hereunder shall be in accordance with the procedures set out in these regulations.

3.34 Testing and Sampling: The Department shall conduct reasonable periodic collection and testing of effluent samples from On-site Wastewater Treatment Systems for which monitoring of effluent is necessary in order to insure compliance with the provisions of these regulations.

A. Sampling may be required by the Department in conjunction with an enforcement action.

B. A fee not to exceed the actual costs plus locally established mileage reimbursement rates authorized by the Board of Health from the principal office of the Department to the site of the system and return, may be charged by the Department for each sample collected and tested, and payment of such charges may be stated in the permit for the system as a condition for its continued use.

C. Any owner or occupant of property on which an On-site Wastewater Treatment System is located may request the Department to collect and test an effluent sample from the system. The owner or occupant must pay for these services.

1. 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.

2. Conditions when a local public health agency can require routine monitoring:

   a. Indications of inadequate performance;

   b. Location in sensitive areas;

   c. Experimental systems; and/or

   d. Systems under product development permits.

3. 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, 21st edition.

3.35 Septage and Vault Waste Disposal: Disposal of waste materials, removed from the OWTS in the process of maintenance or cleaning, shall be at a site approved by the Board of Health and in a manner which does not create a hazard to the public health, a nuisance, or an undue risk of pollution. The site so designated shall conform to the Hazardous Materials and Waste Management Division regulations, and the Water Quality Control Division regulations of the Colorado Department of Public Health and Environment regarding the disposal of these wastes.

3.36 Penalties: Any person who commits any of the following acts or violates any of the provisions of this article commits a Class I petty offense, as defined in Section 18-1-107, C.R.S. as amended.

A. Constructs, alters, installs, or permits the use of any On-site Wastewater Treatment System without first having applied for and received a permit as provided for in these regulations or as provided for in 25-10-105 (1) (f) or 25-10-106 C.R.S. as amended.

B. Constructs, alters, or installs an On-site Wastewater Treatment System in a manner which involves a knowing and material variation from the terms or specifications contained in the application or permit.

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

D. Conducts a business as a systems contractor without having obtained a license as provided for in Section IV of these regulations or 25-10-108 (1) C.R.S. as amended.

E. Conducts a business as a systems cleaner without having obtained a license as provided for in Section IV of these regulations or 25-10-108 (2) C.R.S. as amended.

F. Willfully fails to submit proof of proper maintenance and cleaning of a system as required by these regulations or 25-10-106 C.R.S. as amended.

G. Falsifies or maintains improper record keeping concerning system cleaning activities not performed, or performed improperly.

3.37 Civil Penalties: Upon a finding by the Delta County Board of Health that a person is in violation of the provisions of these regulations, the Board of Health may assess a penalty of up to fifty (50) dollars for each day of violation.

A. When determining the amount of the penalty, the Board shall take into account the following:

1. the seriousness of the danger to the health of the Public by the violation;
2. the duration of the violation;
3. whether or not the person has previously determined to have committed a similar violation.

B. A person subject to a penalty assessed pursuant to this section may appeal the penalty to the Delta County Court.

SECTION IV: Regulations of Systems Cleaners and Installers:

4.1 Systems Contractors Licensing Requirements:

A. All contractors for construction or repair of On-site Wastewater Treatment Systems, including septic tank manufacturers (or similar other sewage disposal systems), back hoe operators who dig septic tank and/or leach lines, shall be licensed as an On-site Wastewater Treatment Systems Installer by the County if the system is installed in any portion of Delta County. This requirement does not apply to a person who installs a system on his own property for his own use or a person who installs only one system per calendar year. Suppliers delivering plastic pipe, gravel, or straw are similarly exempted from the licensing requirement. Employees of the contractor shall not be required to be licensed.

B. The initial fee for a license shall not exceed the actual costs of the Department. Each renewal then shall not exceed the actual costs by the Department and be valid for the ensuing calendar year. A license that lapses because of failure to renew or is revoked shall be subject to the fee for a new license application.

C. Licensees shall demonstrate to the Health Officer or his agent an adequate knowledge of all applicable regulations. Applications for a license shall be made on a form supplied by the Health Department.

D. The Health Officer issues each license. Licenses will be issued on a calendar year basis from January to December or any portion thereof.

E. Revocation of a license may be made when the holder violates the requirements of any applicable State or County regulations. The Board of Health will take such action after a formal hearing at which time the licensee may be present and represented by counsel. The holder of the license shall be given reasonable notice of the time and place of such hearing.

F. The Health Officer may temporarily suspend a license where continued practice by the holder could likely cause a health hazard until a hearing can be scheduled before the Board of Health. Such a suspension may not continue for a period of more than four weeks.

G. A contractor shall insure that the owner or occupant of a property has obtained the necessary permits from the Health Department prior to installing, altering, or repairing the On-site Wastewater Treatment System for that individual.

H. Requests for inspections shall be made to the Department by the system contractor not less than 24 hours prior to the time of the inspection.

4.2 <u>Systems Cleaners Licensing Requirements</u>:

A. All septic system cleaners that pump On-site Wastewater Treatment Systems shall be licensed as a Systems Cleaner by the Department if they clean systems in Delta County.

B. The initial fee for a System Cleaners license shall not exceed the actual costs by the Department. Each renewal then shall not exceed the actual costs by the Department, and be valid for the ensuing calendar year. A license that lapses because of failure to renew or is revoked shall be subject to the fee for a new application.

C. Licensees shall demonstrate to the Health Officer or his agent an adequate knowledge of all applicable regulations. Applications for a license shall be made on a form supplied by the Delta County Health Department. The Health Officer will issue each license. Licenses will be issued on a calendar year basis from January to December or a portion thereof.

D. Revocation of a license may be made when the holder violates the requirements of any applicable State or County regulations. Such action will be taken after a formal hearing by the Board of Health at which time the licensee may be present and represented by counsel. The holder of the license shall be given reasonable notice of the time and place of such hearing.

E. The Health Officer may temporarily suspend a license where continued practice by the holder could likely cause a health hazard until a hearing can be scheduled before the Board of Health. Such a suspension may not continue for a period of more than four weeks.

F. Cleaners shall maintain their equipment so that they do not create a public nuisance or health hazard.

G. Materials removed from systems by system cleaners shall be disposed of in accordance with these regulations (See Section 3.35).

H. Systems found to be malfunctioning by a cleaner shall be reported to the Department.

I. Cleaners may be required to report their activities to the Department. They shall provide all information requested by the Department which would include:

1. name and address of each person receiving service;
2. amount of sewage pumped from each system serviced;
3. location and method of disposal.

SECTION V: General Technical Requirements:

5.1. Detailed Soil Investigation

A. Soil investigations to determine the long-term acceptance rate of a soil treatment area shall conducted by a trained Environmental Health Specialist employed by the Department, a Registered Professional Engineer, or a competent technician supervised by a Registered Professional Engineer who shall assume liability for the technician.

B. Visual and tactile evaluation of two or more soil profile test pit excavations or Percolation tests shall be performed.

1. One or more soil profile holes or one or more soil profile test pit excavations shall be observed.

2. If percolation tests are performed, at least one soil profile hole shall be evaluated to determine whether current ground water levels and/or bedrock are encountered within 10 feet of the ground surface. A visual and tactile evaluation of a soil profile test pit excavation as described in Section 5.2.F may be substituted for a profile hole.

3. If visual and tactile evaluations of soil are performed without percolation tests 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 and structure, restrictive layers, evidence of seasonal high ground water, and best depth for the infiltrative surface.

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 total number of soil profile test pit excavations required is based on the judgment of the competent technician.

5.2. <u>Procedure for Performing Percolation Tests:</u>

A. The percolation testing shall be performed by a trained Department Environmental Health Specialist or under the supervision of a professional engineer.

B. 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 reasonably evenly over the proposed area. There shall be no less than one test hole provided in every 1,200 square foot area of soil treatment area.

2. If the likely depth of a proposed infiltrative surface is uncertain, percolation tests shall be performed at more than one depth to determine the depth of the infiltrative surface.

C. Dimensions of the percolation test hole shall be of a diameter of eight to 12 inches and be terminated a minimum of twelve inches and a maximum of 18 inches below the proposed infiltrative surface.

D. Change in Soil type, color or structure if present within those soils comprising the depth of soil below the infiltrative surface as required for vertical separation, a minimum of two soil percolation holes shall be terminated in the changed soil, and percolation tests shall be conducted in both holes.

E. Percolation Tests shall be conducted using the hole preparation, soil saturation and rate measurement procedures described below.

1. Preparation of Percolation Test Holes

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

b. 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.

c. Remove all loose soil from the hole.

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

2. Presoak

a. The hole shall 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.

b. 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.

3. Percolation Rate Measurement

   a. With the exception of sandy soils containing five percent or less particles passing the #200 sieve, by weight, percolation rate measurements shall be made on the day following the presoak procedure.

   b. 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 series of 30 minute intervals. The drops are used to calculate the percolation rate.

   c. 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, then 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.

4. Sandy Soils

   a. 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 hours swelling period, the time interval between measurements shall be taken as ten minutes and the test conducted for one hour. The drop that occurs during the final ten minutes shall be used to calculate the percolation rate.

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

5. Special Soil Types

   a. Billings clay loam soils exhibiting soil piping may require extra presoaking to obtain a valid percolation rate.

b. Other soils exhibiting inhibiting infiltration qualities may require special evaluation as deemed necessary by the soils evaluator.

6. Percolation Rate Determination and Reporting

a. The field percolation rate shall 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 shall be used in determining the long-term acceptance rate for the proposed system from Table 7-1.

b. The technician performing the percolation tests shall furnish an accurate scale drawing, showing the location of the soil profile holes or soil profile test pit excavations and percolation holes tied to lot corners or other permanent objects. The drawing shall meet the criteria in Section 5.2.I.1. The information in the subsections following Section 5.2.I.1.g.(1) through (5) may be included but is not required for this drawing. All holes shall be clearly labeled to relate to the information provided for the profile test pits and percolation tests.

7. Percolation Test Waiver - If the applicant demonstrates to the satisfaction of the local public health agency that the system is not dependent upon soil absorption, the requirement of percolation tests may be waived.

8. Alternate Percolation Testing

a. 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.

b. Prior approval from the Department of alternate percolation test procedures is required.

F. Visual and tactile evaluation of soil requirements:

1. 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.

2. 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.

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

4. 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 shall be conducted.

5. The minimum depth of the soil profile test pit excavation must be to the periodically saturated layer, to the bedrock, or four feet below the proposed depth of the infiltrative surface, whichever is encountered first.

6. The soil type at the proposed infiltrative surface of the soil treatment area or a more restrictive soil type within the treatment depth shall be used to determine the long-term acceptance rate from Table 7-1. The treatment depth is four feet for the treatment level below the infiltrative surface.

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

G. Soil descriptions for determination of a limiting layer shall include:

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

2. Depth to the bedrock;

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

a. Redoximorphic features and other indicators of water levels, or

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

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

H. Percolation Holes, Profile Holes, and Profile Test Pits Excavations – Marking - The engineer or technician conducting the percolation tests must, upon completion of the tests, flag or otherwise mark each hole to

allow easy location by others. Percolation holes and profile test pits must remain open until after evaluation by the Department.

I. Report and Site Plan

1. A written report shall describe the results of the preliminary investigation, reconnaissance, and detailed evaluations. The report may be in text and/or tabular form and shall 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. The name, address, telephone number, e-mail address, and 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 drill hole or excavation, soil description and classification, depth to ground water encountered during drilling or excavation, type of equipment used to drill the profile hole or excavate the soil profile test pit, date of soils investigation, name of investigator and company name.

   e. Setback distances to features listed in Table 6-2;

   f. Setback distances to features listed in Table 6-2, 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. Minimum drawing size shall be 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 shall indicate dimensions, have a north arrow and graphic scale and include:

(1) 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;

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; and

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

J. 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 shall include a brief description of the facility and its proposed use, basis and calculations of design flow, and influent strength.

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

a. Assumptions and calculations for each component;

b. A scale drawing showing location of each OWTS component and distances to water, physical and health impact features requiring setbacks;
c. Layout of soil treatment area, dimensions of trenches or beds, distribution method and equipment, distribution boxes, drop boxes, valves, or other components used;
d. Depth of infiltrative surface of soil treatment area, depth of the septic tank, depth of other components;
e. Specifications of each component. Specifications for septic tanks or other buried components must include loads due to burial depth, additional weight or pressure loads, and highest elevation of ground water. Resistance to local water composition such as high sulfates shall be included in the specification if such conditions exist at the site;
f. References to design manuals or other technical materials used;
g. Installation procedures;
h. Operation and maintenance manuals or instructions; and
i. Other information that may be useful such as photos and cross-section drawings.

K. As-Built Drawings: Scale drawing showing the OWTS as installed, including its 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.

l. Site protection: During construction, the proposed soil treatment area and replacement area, if any, must be protected from disturbance, compaction, or other damage by staking, fencing, posting, or other effective method.

M. Qualifications for a Competent Technician
1. Percolation Tests
a. Competencies needed:
(1) set up equipment;
(2) perform and run percolation tests according to the procedure in this regulation; and
(3) record results and calculate percolation rates.
b. Delta County will approve training for percolation testing.
2. Visual and Tactile Evaluation of Soil
a. Competencies needed:
(1) Identify soil types by hand texturing and observation;
(2) Identify presence or absence of soil structure;
(3) Identify grade of soil structure;
(4) Recognize evidence of highest seasonal water surface;
(5) Identify layers and interfaces that will interfere with effluent movement;

(6) Determine the most promising depth for infiltrative surface of OWTS and for percolation tests, if used; and

(7) Understand basic principles of OWTS siting and design.

b. Possible demonstrations of competence in visual and tactile evaluation of soil:

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

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

5.3 Suitable Soil: A suitable soils are listed as Soil Types 1, 2, 2A, and 3 as specified in Table 7-1 of this regulation and shall meet the following criteria:

A. has at least a four foot depth of permeable stratum above bedrock and the maximum seasonal ground water table;

B. has the capacity to adequately disperse the designed effluent loading as determined by a field percolation rate of between 5 minutes per inch and 60 minutes per inch, or by other approved soil tests (Soils of a sandy texture with a percolation rate faster than 5 min./inch are acceptable.);

C. does not exhibit inhibiting swelling characteristics;

D. does not visibly exhibit a jointed or fractured pattern of underlying bedrock;

E. acts as an effective filter within its depth for the removal of pathogenic organisms.

5.4 Location of the Depth of the Maximum Seasonal Ground Water Table: The depth of the maximum seasonal ground water table shall be determined by the following:

A. direct visual observation and measurement of infiltrated water in a test hole during the time of year when the ground water table is the highest;

B. a test hole evaluation showing a dry condition estimated or measured to be at least four feet below the bottom of the proposed soil absorption system during the highest seasonal ground water fluctuation may be considered prima facia evidence that the maximum seasonal ground water table will be sufficiently below the bottom of the proposed absorption system;

C. the Department may require a ground water test hole to be monitored for 1 year prior to issuing a permit for an installation in a suspected high ground water area to determine the maximum seasonal water table;

D. by other scientific methods approved by the Department.

5.5 Calculation of Sewage Flow and Characteristics:

A. The Department may require the installation of a meter to measure flow into the facility or the OWTS. Where gallons per day and pounds of biochemical oxygen demand (BOD_5) can be obtained by measurement of actual flow and strength of waste from existing facilities, those values shall be used.

B. For new facilities Table 5-1 shall be used as a guide, which represents average flow and BOD_5.

C. A figure of two (2) persons per bedroom shall be used for calculating the flow from dwellings

D. In no event may the system be designed for less than the anticipated maximum daily sewage flow, even though present occupancy may be considerably less.

TABLE 5-1 Estimate of Average Daily Wastewater Flow and BOD_5 Load per Person Unless Otherwise Noted

RESIDENTIAL WASTEWATER	AVERAGE GPD	BOD_5 IN POUNDS PER DAY
Single-family dwellings, **OR** Single-family dwellings or auxiliary buildings by fixture type	**100**	.20
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
Total with kitchen sink garbage grinder	75	.20
Hotels and motels per room without private baths	50	.15

Hotels and motels per room with private baths	75	.15
Multiple-family dwellings or apartments	75	.20
Boarding and rooming houses	50	.15
Mobile home	75	.20
Mobile home park per space	300	.80
COMMERCIAL WASTEWATER	**AVERAGE 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	.70*
Bowling alleys per lane - toilet wastes only	5	.03*
Country club per member	30	.02
County club per employee	20	.06
Dentist offices per non-wet chair	50	.14*
Doctor offices per doctor	250	.80*
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	.50*
Stores and shopping centers per square foot of retail space	.1	.01*
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	**AVERAGE**	**BOD_5 IN POUNDS**

	GPD	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	**AVERAGE GPD**	**BOD_5 IN POUNDS PER DAY**
Churches	5	.01
Hospitals per bed space	250	.20
Nursing homes per bed space	100	.17
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	**AVERAGE 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 campsite**	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 **	50	.12

Travel trailer park without individual water and sewage hookup per unit **	50	.12

* =BOD_5 Levels need further verification
** = Laundry facilities are to be calculated on a per commercial washer basis in accordance with the other elements of this table.

5.6. Sewage Flow from Auxiliary Buildings

A. If a single-family home has an auxiliary building, other than a dwelling unit, 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 shall 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 shall be sized on the basis of Table 6-2 and a septic tank detention time of 48 hours.

5.7. Sewage Flow from Multi-Family and Commercial On-site Wastewater Treatment Systems

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

1. Table 5-1; 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 shall include:

a. 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 shall 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 shall be the design flow.

b. 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.

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

5.8 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 shall be at least equal to the full capacity of the facility.

C. The stored flow shall 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 pressure distribution shall be used. The soil treatment area reduction for timed pressure distribution shall 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.

SECTION VI: Component Design Criteria

6.1 General Design Features: The following general design features shall be included in all system components:

A. Reliability: On-site Wastewater Treatment Systems shall be designed and constructed such that each component shall function, when installed and operated, in a manner not adversely affected by the normal operating conditions including corrosion, vibration, shock, climatic conditions, and usual household chemicals used. Each component shall be free of non-functional protrusions or sharp edges, or other hazards, which could cause injury to persons, animals, or properties. Design shall be such as to

exclude flies and rodents and to prevent the creation of nuisances and public health hazards and shall provide for efficient operation and maintenance.

B. Plumbing Codes: Plumbing fixtures, grease-traps, building sewers, vents, sewer lines and other appurtenances shall be designed, operated and maintained so as to comply with the minimum requirements of the Colorado State Plumbing Code (3 CCR 720-1) or other local plumbing codes in force on the date of the OWTS Permit Application.

C. Pipe Standards: All piping used in On-site Wastewater Treatment Systems shall be constructed of compatible materials, bonding agents, and fittings.

1. Pipe and fittings used shall have a minimum wall thickness meeting ASTM standard 3034 PVC sewer pipe, SDR 35.

2. In areas of settling or heavy vehicle traffic, such as parking lots and driveways, or where instances of sewer line setback distances are granted a variance for any reason, pipe with a minimum wall thickness meeting ASTM D2241 (SDR-PR) SDR 32.5, Class 125 PVC Pressure Pipe (Schedule 40), shall be used.

3. Tile pipe, open joint pipe, and cast iron pipe are not approved for use in an OWTS.

4. Pressure pipe must be rated for the intended use to accommodate the pump discharge pressure.

5. Corrugated polyethylene pipe with smooth interior that meets ASTM F405 or AASHTO M252 specifications or equivalent may be used.

D. Bedding: All system piping, except for distribution laterals within the soil treatment area, shall be bedded with select material before final inspection by the local public health agency. Select bedding material shall 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. Electrical Equipment, if used: All electrical work, equipment, and material shall comply with the requirements of the current National Electrical Code as designated by the State Electrical Board Rules and Regulations (3 CCR 710-1).

1. A local electrical permit may be required.

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

F. Accessibility for Inspection and Maintenance:

1. Septic tanks shall have risers over each access manhole and all risers shall extend to or above final grade.

2. Each treatment component of an OWTS shall 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.

3. Riser Lids

a. Each riser lid brought to the surface shall have a secure closing mechanism, such as a lock, special headed bolts or screws, or sufficient weight to prevent unauthorized access.

b. A secondary plug, cap, cover or screen shall be provided below the riser cover to prevent tank entry if the cover is unknowingly damaged or removed.

4. Components that require access for maintenance shall 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.

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

G. Indicators of Failure of Systems Utilizing Mechanical Apparatus: A signal device shall be installed which will provide a recognizable indication or warning to the user that the system or component is not operating or is operating but malfunctioning. This indication or warning shall be in the form of a visual or audible signal, or both and shall 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. Serviceability: Components shall be so designed and constructed that when installed in accordance with manufacturer's recommendations, they shall be capable of being easily maintained, sampled, drained, pumped, inspected and cleaned.

I. 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 shall 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 shall be constructed. Monitoring wells shall 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.

J. Component Operating Instructions:

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

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

K. Surface Activity: The surface of the ground over the On-site Wastewater Treatment System or any part thereof, must be restricted to activity or use which will allow the system to function as designed and which will not contribute to compacting of the soil nor to structural loading detrimental to the capability of the component to function as designed. During construction, equipment shall be kept off of the ground surface above the soil treatment area and out of the excavation to prevent compaction. If compaction occurs, the disturbed or compacted soil shall be re-evaluated and new percolation tests may be performed to the disturbed or compacted soil and the system redesigned if the parameters have changed.

L. New and replacement systems installed in a flood plain shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the systems into floodwaters.

6.2 <u>Wastewater Pumping System and Siphon Systems</u>:

A. Non-clog pump openings shall have at least 2-inch diameter solids-handling capacity where raw sewage is pumped or at least 3/4-inch diameter solids-handling capacity if previously settled effluent is pumped.

B. Automatic liquid level controls shall be provided to start and shut-off pumps at a frequency required by the design.

1. Floats must be mounted on a stem separate from the pump discharge piping to allow for removal, adjustment, and replacement of the float without removing the pump.

2. Float switches and pumps must be certified to the applicable UL or CSA electrical safety standard, bear the seal of approval of CSA, UL or an equivalent certification program and be constructed of corrosion resistant materials.

C. Pressure pipe shall be of sufficient strength to accommodate pump discharge pressure and the pipe shall be sized to maintain a velocity of 2 or more feet per second.

D. Automatic air release valves shall be installed at high points in the pressure line where necessary to prevent air locking.

E. Location of Pump or Siphon

1. A pump may be, or a siphon shall be, installed in a separate tank following the septic tank and be of sufficient volume to allow pump or siphon cycling commensurate with the design capacity. The use of a three-compartment septic tank, sized to provide effective volume in the first two compartments with the pump in the third compartment, is acceptable.

2. The second compartment of the septic tank shall not be used as the pump tank unless it can be demonstrated to the satisfaction of the Delta County Health Department that the minimum 48-hour time will not be decreased and the pump is screened or provided with an approved filtering device to assure that only liquid effluent will be discharged.

F. The discharge line from the pumping chamber shall be protected from freezing by burying the pipe below frost level or sloping the pipe to allow it to be self-draining. Drainage shall be provided through the bottom of the pump or through a weep hole located in the discharge line prior to exiting the tank.

G. The pumping chamber shall be sized to provide sufficient space to permit the service and maintenance of all equipment contained therein. Pipe

unions or quick disconnect connections extended above the high water level shall be provided to allow easy removal of the pump for servicing. A rope or other mechanism extended above the high water level of the tank shall be provided to lift the pump out of the tank for repairs.

H. The access opening in the pumping chamber shall be at least twenty (24) inches in diameter. A riser of corrosion-resistant materials the same diameter shall be installed to extend the access opening to the finished grade. A lid shall be provided which shall be securely fastened to prevent unauthorized entry. The access riser must have a watertight connection to the pump or dosing chamber/compartment to prevent infiltration or exfiltration.

I. Pumps must be certified to the applicable UL or CSA electrical safety standard, bear the seal of approval of CSA, UL or an equivalent testing program and be constructed of corrosion resistant materials.

J. Grinder pumps must also be certified to NSF/ANSI Standard 46 and bear the seal of approval of the NSF or equivalent testing and certification program.

K. Splice Box

1. Splice boxes shall be located outside the pump system access riser and be accessible from the ground surface.

2. No wire splices shall be made inside the tank, dosing chamber or riser. Wire splicing shall be completed with corrosion-resistant, watertight connectors.

L. Controls

1. The pump system shall have an audible and visual alarm notification in the event an excessively high water condition occurs.

2. The pump shall be connected to a control breaker separate from the high water alarm breaker and from any other control system circuits.

3. The pump system shall have a switch so the pump can be manually operated.

4. The pump system for pressure dosing and higher level treatment systems shall have a mechanism for tracking either the amount of time the pump runs or the number of cycles the pump operates.

5. Control panels shall be UL listed.

6.3. Effluent Screens

A. Effluent screens may be installed in septic tanks in new installations and repairs where the septic tank is replaced.

B. If a pump or dosing siphon is used to remove septic tank effluent from the final compartment of the septic tank, an effluent screen must be provided prior to the pump or siphon inlet. A pump vault equipped with a filter cartridge may be considered equivalent to an effluent screen preceding the pump.

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

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

6.4. Grease Interceptor Tanks

A. All commercial food service facilities and other facilities generating fats, oils and greases in their waste must install a grease interceptor tank.

B. Grease interceptor tanks shall treat only those portions of the total wastewater flow in which grease and oils are generated.

6.5 Construction of Tanks:

A. Materials: All septic tanks shall be constructed and installed to withstand earth and hydrostatic pressures when full and empty.

B. Plans and specifications must be submitted and approved for all tanks fabricated on the site.

1. Concrete septic tanks constructed on site shall be constructed of Portland type II, sulfate resistant cement which shall achieve 3,000 p.s.i. concrete. Welded wire mesh of not less than 10 gauge with openings of 6 inches or 10 inches shall be placed in minimum four-inch thick walls and floor. At places where wire was cut, it shall lap the joints 6 inches and shall be tied. One number 3 reinforcing steel bar shall be placed horizontally below the inlet and outlet on the tank. The septic tank lid or cover shall be at least 4 inches (nominal) thick. Welded wire mesh of 4" x 4" or 6" x 6" opening and of not less than 10 gauge shall be embedded in the cover, plus #4 rebar crossways 30 inches from each end on inside of access hole.

2. Metal or coated metal or tanks constructed on-site with cement block, brick, wood or stone tanks are not approved for new installations.

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

1. Name of manufacturer;

2. Model or serial number, if available;

3. Effective volume and unit of measure;

4. Maximum depth of earth cover and external loads the tank is designed to resist; and

5. Inlet and outlet identifications, if relevant.

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

1. All fiberglass, fiberglass-reinforced polyester, and plastic tanks shall meet the minimum design and structural criteria of IAPMO/ANSI Z1000-2007 (American Standards for Prefabricated Septic Tanks)

2. Tanks must 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.

3. All tanks shall 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.

4. Tanks shall be structurally sound and support external forces as specified in the standard referenced above when empty and internal forces when full. Tanks shall not deform or creep resulting in deflection of more than five percent in shape as a result of loads imposed.

5. All tanks shall be constructed of sound, durable materials and not be subject to excessive corrosion, decay, frost damage, or cracking.

6. All seams or connections to risers shall be sealed to be watertight.

6.6. Design of Septic Tanks:

A. A septic tank shall 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 shall hold no less than one-half of the required effective volume.

B. The inlet invert shall not be less than 2 inches above the outlet invert.

C. A baffle and/or tee shall be provided to divert the incoming sewage downward. The baffle or tee shall penetrate at least 6 inches below the liquid level, but the penetration is not to be greater than that allowed for the outlet device.

D. The outlet shall be fitted with a tee and/or baffle. The outlet device shall extend a minimum of 14 inches below the invert of the outlet.

E. The outlet shall be modified to accommodate an effluent screen if required. 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.

F. The transfer of liquid from the first compartment to the second or successive compartment shall be made at a liquid depth of between 35 and 40 percent of the liquid depth measured from the liquid surface and not in the sludge zone.

G. Proportions of septic tanks:

1. The minimum depth shall be 30 inches and the maximum depth shall not exceed the length of the tank.

2. The distance from the outlet invert to the cover shall be at least 10 inches.

3. The tank may have various shapes provided the capacity, inlet, outlet and depth requirements are met, and it has a uniform horizontal flow throughout its length.

4. A septic tank shall 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, shall 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.

H. An access hole above the inlet and outlet shall be provided. The inlet side shall have at least one hole that must be a minimum twenty (20) inches in diameter opening.

I. Watertightness

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

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

3. Testing of septic tanks must be performed and evaluated as specified in section 9 of ASTM C1227-12 (Standard Specification for Precast Septic Tanks) for concrete tanks or in Standard IAPMO/ANSI Z1000-2007 (American Standards for Prefabricated Septic Tanks) for other prefabricated septic tanks.

4. Each unit shall be inspected in the field for conditions that may compromise its watertightness.

5. The inspection in the field shall be conducted by the Department and be performed after the tank installation but before backfilling.

6. 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.

J. Concrete Septic Tank Structural Design

1. Concrete septic tanks shall comply with the structural design criteria of ASTM C1227-12 (Standard Specification for Precast Septic Tanks).

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

3. Certification by a professional engineer must be submitted to the Division for acceptance.

6.7 <u>Installation of Tanks</u>:

A. Tanks are to be installed on a solid base and shall be level.

B. Roof drains, foundation drains, area drains, or cistern overflows are not to enter the tank or any part of the treatment systems.

C. The building sewer to a tank shall be laid with a minimum fall of 1/8 inch per foot (1/4 inch fall per foot is recommended). Bends in the building sewer shall be limited to 45 degree ells, or long-sweep quarter-bends. A two-way clean out shall be installed at the junction of the building drain and building sewer within 5 feet from the foundation and every 100 feet there-after. All piping must be adequately supported and bedded with select materials to prevent failures.

D. The inlet and outlet pipes of the tank shall be grouted and sealed with waterproof materials at their connection to the tank if rubber boot fittings are not used.

E. Back-filling around tanks shall be accomplished in a manner to prevent settlement and avoid undue strain on the tank and the pipes entering and leaving the tank.

F. 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 shall be anchored in a manner sufficient to provide stability when the tank is empty. Risers shall be included in the buoyancy calculations.

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

    2. 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 shall be prepared by the professional engineer.

G. Tank slab lids or mid-seam tanks shall be sealed to be watertight.

H. Connections between tank and risers shall be sealed to be watertight.

6.8. <u>Abandonment of Tank</u>

A. A tank may be completely removed and the parts disposed of safely.

B. If the tank will remain in place:

    1. The tank shall be pumped to remove as much waste as possible;

    2. The bottom of the tank shall be broken so the tank neither floats nor fills with water;

3. The top must be collapsed and the sides may be broken into the void;

4. The remaining void shall be filled with gravel, sand or compacted soil; and

5. The filled excavation will be graded to surroundings, allowing for settling.

C. The Department may require abandonment of a tank that is deemed to be a hazard

6.9 Minimum Capacities of Tanks:

A. For a one or two family dwelling, the minimum capacity for septic tanks shall be determined by the number of bedrooms being served according to Table 6-1.

Table 6-1 Minimum Septic Tank Size Based on Number of Bedrooms

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

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

C. Mechanical plants, components, and aerobic treatment tanks shall be sized according to the manufacturer's recommendation for the intended installation or engineers design specifications.

6.10 Distribution Box: A distribution box, if used, shall be of sufficient size to accommodate the necessary field lateral lines to equally distribute effluent to them. It shall be constructed with the inlet invert at least one (1) inch above the outlet inverts, with all outlet inverts on the same level. The distribution box shall be installed level and supported on a firm base to minimize settling when backfilled. Flow equalizers or similar devices shall be used to adjust the flow between lines. Access to the box shall be provided with a manhole riser with access lid at or above grade if the top of the box does not reach final grade.

6.11 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 lines in sequential distribution shall be designed and installed so that they may be capped off for resting periods.

6.12 Stepdown/Relief Line: 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.

6.13 Aerobic Sewage Treatment System: All treatment units permitted by the Department for installation in Delta County shall be reviewed and approved by the Water Quality Control Division according to the Technology Review and Acceptance requirements of 5 CCR 1002-43.13.

6.14 Requirements for Mechanical Plants:

A. General Requirements: On-site Wastewater Treatment Systems utilizing mechanical apparatus and furnished for installation in Colorado shall comply with the minimum requirements of criteria and construction standards set forth in these regulations.

B. Specific Requirements: No such unit utilizing mechanical apparatus and which is designed for discharge either upon the ground or beneath the ground surface or which may adversely affect State waters shall be permitted unless:

1. The system is installed within a geographic area wherein a public, quasi-public, or private entity, or political subdivision is continually responsible for the efficient operation and maintenance of said unit, or
2. The operator of the system insures such an efficient operation of all mechanical and electrical component parts provided prior to and during continuing use insures efficient operation and maintenance.

C. Colorado Department of Public Health and Environment Requirements: No manufactured units utilizing mechanical apparatus shall be permitted unless the Colorado Department of Public Health and Environment has certified the treatment system according to 5 CCR 1002-43.13.

6.15 Disinfection of Effluent (when required):

A. Disinfectant shall be introduced into the effluent by an automatic proportioning device.

B. A contact basin shall be provided for disinfection of effluent which meets the following requirements:

1. a minimum of 60 minutes detention time;

2. a free residual chlorine (or equivalent) of 1.0 ppm, tested at the exit of the effluent pipe of the basin;
3. thorough mechanical mixing or a basin having a length to width ratio of 40:1, with a sharp crested weir spanning the entire width of the basin outlet. Other designs shall be approved when proof acceptable to their effectiveness is approved by the Colorado Department of Public Health and Environment according to 5 CCR 1002-43.13 certification.

6.16 Horizontal Distances, Setbacks, and Minimum Distances Between Components of a System and Physical Features:

A. Minimum horizontal distances from the various components of a system to pertinent terrain features, including lakes, streams, water-courses, springs, wells, subsoil drains, cisterns, waterlines, suction lines, gulches, dwellings, other occupied buildings, and property lines, are listed in Table 6-2.

B. The minimum horizontal distance required from manmade cut banks and fill areas to On-site Wastewater Treatment System components discharging effluent into or onto the surrounding soil shall be four (4) times the height of the bank, measured from the bottom of the soil absorption system, unless it can be demonstrated by a Registered Professional Engineer or a geologist that a mechanical or natural barrier will prevent lateral effluent surfacing.

C. Soil absorption systems shall be at least 10 feet from the brow of a natural embankment to the edge of the excavated area. Where there is a chance of lateral flow of effluent seeping from the embankment, the Health Officer or his designated representative may require a Registered Professional Engineer to design a barrier to be installed to prevent such an occurrence.

D. The minimum distances specified in Table 6-2 shall be maintained between the system components and the physical features described. Where soil geological or other conditions warrant, greater distances may be required.

E. System components should not extend into the areas of the root systems of nearby trees.

F. For repair or upgrading of existing systems where the size of the lot precludes adherence to these distances, the repaired system components shall not be closer to water-bearing features or components, than the existing facilities.

Table 6-2 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 Line	Potable Water Supply Cistern	Dwelling Occupied Building	Property Lines[4] Piped or Lined Irrigation Ditch	Subsurface Drain, Intermittent Irrigation Lateral, Drywell, Stormwater Infiltration Structure	Lake, Water Course, Irrigation Ditch, Stream, Wetland	Dry Gulch, Cut Bank, Fill Area (from Crest)	Septic Tank
Septic Tank, Higher Level Treatment Unit, Dosing Tank, Vault	50[2]	10[2]	25	5	10	10	50	10	--
Building Sewer or Effluent Lines	50[2]	10[2]	25[2]	0	10[2]	10[2]	50[2]	10[2]	--
STA Trench, STA Bed, Unlined Sand Filter, Sub-surface Dispersal System, Seepage Pit	150[3]	25[2]	25	20	10	25	50[3]	25	5
Lined Sand Filter	60	10[2]	25	15	10	10	25	10	5
Lined Evapo-transpiration Field or Outside of Berm of Lined Wastewater Pond	60	10[2]	25	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 Evapotranspiration System, Outside of Berm of Unlined Wastewater Pond, or System Not Relying on STA for Treatment Other than Aerosol	150	25[2]	25	15	10	25	25	15	10

Vault Privy	50	10[2]	25	15	10	10	25	10	--
Slit Trench Latrine, Pit Privy	100	50[2]	25	N/A	25	25	100	25	N/A
System Not Relying on STA for Treatment and Utilizing Aerosol Methods	100[3]	10[2]	50	125	10	0	25[3]	10	10

Table 6-2 Footnotes

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 shall 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 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 conveyance pipe is encased for a minimum distance of 10 feet on each side of the crossing. A length of pipe shall be used with a minimum schedule 40 rating of sufficient diameter to easily slide over and completely encase the water conveyance. Rigid end caps of at least schedule 40 rating 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 shall 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 shall be sealed with an approved underground sealant compatible with the piping used.

(3) Add eight (8) feet additional distance for each 100 gallons per day of the design flow over 1000 gallons per day as specified in the table 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. Flows equal to or 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 process.

(4) When a system is installed adjacent to a County road the property line shall be measured from the edge of the right-of-way, which in most cases is 30 feet from the centerline of the road.

Table 6-3 **On-site Wastewater Treatment System Design Consideration and Treatment Requirements – Separation Distances from Soil Treatment Area**

Item	OWTS Design Consideration	Septic Tank Treatment Level 1 (TL1)
	Horizontal Separation Distance	
1	Distance from the soil treatment area to an on-site well or spring used for potable purposes	Greater than or equal to 150 feet
2	Distance from a soil treatment area to a pond, creek, lake, or other surface water feature	Greater than or equal to 50 feet
3	Distance from the soil treatment area to dry gulch or cut bank	Greater than or equal to 25 feet
	Vertical Separation Distances	
4	Depth in feet from soil treatment area infiltrative surface to a restrictive layer or ground water	4 feet (3 feet with pressure dosing)

6.17 Systems in Floodplains: New, repaired, or altered systems that are located in a 100 year floodplain shall meet or exceed the requirements of the Federal Emergency Management Agency and the local emergency agency, and shall be installed to avoid any impairment to them or contamination from them. No systems are permitted in a Floodway (See Section 3.6.E).

A. The soil interface of a soil absorption system shall be elevated above the base flood elevation.

B. Pumping chambers, septic tanks, treatment tanks, or other system components shall be waterproofed to prevent infiltration of flood waters into them.

C. System components shall be constructed to prevent any discharge of their contents when inundated by floodwaters.

D. Sewers and effluent lines shall be protected with backflow devices to prevent the backflow of sewage into the structure or system components.

E. Systems elevated and backfilled shall be protected from erosion when inundated by floodwaters.

SECTION VII: Requirements for Onsite Soil Treatment Systems

7.0 Limitations: Systems shall be designed by a registered professional engineer and approved by the Department under the following conditions:

A. Where the soil percolation rate is slower than one (1) inch in sixty minutes.

B. When the percolation is faster than one (1) inch in five minutes as described as Soil Type 0 of Table 7-1 of this regulation.

C. Where the maximum seasonal level of the groundwater table is less than four (4) feet below the bottom of the proposed absorption system. (See Section 5.4)

D. Where bedrock exists less than four (4) feet below the bottom of the proposed absorption system.

E. Where the ground slope is in excess of thirty percent (30%).

F. Where the system is to be installed in new fill material.

G. Where pressure distribution is used.

7.1 General:

A. All soil absorption systems, which include but are not limited to absorption trenches, beds, sand filter trenches, chambered, and sub-surface filters, shall have the equivalent of at least four (4) feet of suitable soil for effluent absorption above bedrock or the maximum seasonal ground water table elevation.

B. Construction of soil absorption systems shall not be performed in excessively wet soils. Excavation shall be done when the soil is dry enough so that the soil structure damage will be minimized. Smeared glossy soil surfaces shall be roughed up prior to the placement of distribution media.

C. The infiltrative surface and distribution lines must be level.

D. The infiltrative surface must be no deeper than four feet unless adequate treatment at a deeper level can be demonstrated and is approved by the Delta County Health Department. The depth will be measured on the downslope side of the trench or bed.

E. 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.

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

G. A final cover of soil at least ten inches deep suitable for vegetation 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.

H. Following construction, the ground surface must be graded to divert stormwater runoff or other outside water from the soil treatment area. The

area must be protected against erosion. Subsurface drains upslope of the soil treatment area may be installed to divert subsurface flow around the area.

I. Backfilling and compaction of soil treatment areas shall 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.

7.2 Distribution Lines Required: All soil treatment systems, unless available space dictates otherwise or chambers are used, will have at least two (2) distribution lines.

A. Distribution between lines in a soil treatment area must be as even as possible. Uneven settling of portions of the distribution system following construction must be addressed by provisions in the design to adjust flows between lines.

B. Distribution lines shall be a maximum of 150 feet long.

C. Distribution lines longer than 100 feet shall be pressure dosed or the application of the effluent shall be at the center of the line.

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 lines may be looped.

E. Inspection Ports

(1) An inspection port accessible from ground surface must be installed at the terminal end of each line. The bottom of the inspection port tube must extend to the infiltrative surface and not be connected to the end of the distribution pipe. Inspection ports in chambers may be installed according to manufacturer's instructions if the infiltrative surface is visible or can be measured from the inspection port.

(2) Additional inspection ports connected to distribution pipes may be installed.

(3) The top of inspection ports may be below the final grade of the surface if each has a cover at the surface such as a valve box for a lawn irrigation system.

7.3 Soil Treatment Area:

A. Percolation rates, soil type, soil texture, and soil structure shall be the basis of determining the long term soil acceptance rate according to Table 7-1.

B. 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 that are permissible in repairs.

C. The soil absorption area shall be calculated using long-term acceptance rates.

D. A minimum of 2 bedrooms shall be used to calculate the area for a residence.

E. Where the percolation rate is found to be faster than five minutes per inch in soils of sandy texture (See 7.0.B), the minimum percolation rate of 5 minutes per inch shall be used to design the system.

F. Long Term Acceptance Rates (LTAR): The minimum absorption area (A) in square feet shall be computed as a function of the design flow (Q) and the long-term acceptance rate (LTAR) according to the formula:

$$A = \frac{Q}{(LTAR)}$$

1. Adjusted Soil Treatment Area = Required Soil Treatment Area x Size Adjustment Factor(s).2. Size adjustment factors for types of storage/distribution media are in Table 7-3.

3. Size adjustment factors for methods of application are in Table 7-2.

Table 7-1 Soil Treatment Area Long-term Acceptance Rates by Soil Texture, Soil Structure, Percolation Rate

Soil Type	USDA Soil Texture	USDA Soil Structure-Shape	USDA Soil Structure-Grade	Percolation Rate (MPI)	Septic Tank Treatment (TL1)
0	Soil Type 1 with more than 35% Rock (>2mm); Soil Types 2-5 with more than 50% Rock (>2mm)	--	0 (Single Grain)	<5	Minimum 3-foot deep unlined sand filter required[2]
1	Sand, Loamy Sand	--	0	5-15	0.80*
2	Sandy Loam, Loam, Silt Loam	PR (Prismatic) BK (Blocky) GR (Granular)	2 (Moderate) 3 (Strong)	16-25	0.60*
2A	Sandy Loam, Loam, Silt Loam	PR, BK, GR 0 (none)	1 (Weak) Massive	26-40	0.50*
3	Sandy Clay Loam, Clay Loam, Silty Clay Loam	PR, BK, GR	2, 3	41-60	0.35*
3A	Sandy Clay Loam, Clay Loam, Silty Clay Loam	PR, BK, GR 0	1 Massive	61-75	0.30*
4	Sandy Clay, Clay, Silty Clay	PR, BK, GR	2, 3	76-90	0.20*
4A	Sandy Clay, Clay, Silty Clay	PR, BK, GR 0	1 Massive	91-120	0.15*
5	Soil Types 2-4A	Platy	1, 2, 3	121+	0.10*

NOTE: Shaded areas require system design by a professional engineer.

***** Long-term Acceptance Rate (LTAR); Gallons per day per square foot

2 Unlined sand filters in these soil types shall provide pathogen removal. Design shall conform to Section 8.1.D Unlined Sand Filters

4. For the purpose of Table 7-2, a “baseline system,” i.e. adjustment factor of 1.00, is considered to be septic tank treatment applied by gravity to a gravel-filled trench.

5. The maximum reduction from all combined reductions shall be no greater than 50 percent of the baseline system required for a soil treatment area.

6. Adjustment for deep gravel: The length of an absorption trench or bed may be calculated by allowance for the sidewall area of additional depth of gravel in excess of six (6) inches below the bottom of the distribution pipe according to the following formula:

$$\text{Adjusted Length} = L \times \frac{w + 2}{w + 1 + 2d}$$

Where:
L = length of trench prior to adjustment for deep gravel
W = width of trench or bed in feet
D = additional depth in feet of gravel in excess of the minimum required six inches of gravel below the distribution pipe

Table 7-2 Size Adjustment Factors for Methods of Application in Soil Treatment Areas

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 7-3 Size Adjustment Factors for Types of Distribution Media in Soil Treatment Areas

Type of Soil Treatment Area	Type of Storage/Distribution Media Used in Soil Treatment Area		
	Rock or Tire Chips	Manufactured Media Other Than Chambers	Chambers
Trench or Bed	1.0	0.9	0.7

7.4 Trenches

A. Trenches must be three feet wide or less.

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

C. Perforated distribution pipe used in a trench must be as close to the center of the trench as possible.

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

7.5 Beds

A. Maximum width for a bed must be 12 feet

B. The separating distance between beds must be a minimum of six feet sidewall-to-sidewall.

C. The separating distance between parallel distribution lines in an absorption bed must not exceed six feet and a distribution line must be located within three feet of each sidewall and end wall of the absorption bed.

7.6 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 line 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.

7.7 Storage/Distribution Media

A. Rock and Pipe

(1) The pipe must be surrounded by clean, graded gravel, rock, or other material of equal efficiency which may range in size from 3/4 inch to 2 1/2 inches. At least six inches of gravel, rock or other material must be placed below the pipe. The gravel, rock or other material must fill the trench around the pipe and at least two inches above the top of the distribution pipe.

(2) 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.

B. Tire Chips

(1) The pipe may be surrounded with clean, uniformly-sized tire chips.

(2) Tire chips must be nominally two inches in size and may range from 1/2 inch to a maximum of four inches in any one direction.

(3) Wire strands must not protrude from the tire chips more than 0.75 inches.

(4) Tire chips must be free from balls of wire and fine particles less than two mm across.

(5) The top of the tire chips used must be covered with non-woven permeable geotextile meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material. An impervious covering must not be used.

C. Chambers

(1) Chambers must be installed with the base on the infiltrative surface.

(2) Installation must be according to manufacturer's instructions.

(3) Effluent may be distributed by gravity or pressure dosing.

D. Manufactured Media

(1) Manufactured media must be installed with the base on the infiltrative surface.

(2) Installation must be according to manufacturer's instructions.

(3) Effluent may be applied by pressure distribution only if the manufacturer specifies suitability of the product for that use.

E. Pressure Distribution

(1) Design of pressure distribution systems must include:

a. Dose size and frequency for flows and soil or media long-term acceptance rate;

b. Pipe diameter and strength requirements;

c. Orifice size and spacing; and

d. Distal pressure head.

(2) Cleanouts must be installed at the end of each line.

F. Drip-lines

(1) 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.

(2) Drip-lines must be installed on manufacturer's spacing recommendations.

(3) Drain-back must be provided for all drip lines, pipes and pumps.

(4) Provisions must be made to minimize freezing in the distribution lines, drip-lines, relief valves, and control systems.

(5) Provisions must be made for back-flushing or other cleaning.

G. Alternating and Sequencing Zone Systems

(1) Alternating Systems

a. An alternating system must have two zones that must be switched on an annual or more frequent basis.

b. Each section must be a minimum of 50 percent of the total soil treatment area. Size adjustment factors for methods of effluent application or type of distribution media shall not be allowed.

c. A diversion valve or other approved switching mechanism 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.

(2) Sequencing Zone Systems

a. Sequencing zone systems have more than two soil treatment area sections that are dosed on a frequent rotating basis.

b. Where soil conditions are similar between the sections, each section area shall 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.

H. Dosing: Dosing may be used for soil treatment area distribution. The dose must be sized to account for the daily flow and the dosing frequency.

I. Soil replacement must be permitted to bring the soil within the requirements of suitable soil. Added soil must meet the specifications of sand filter media, as specified in Section 8.1.B. All added soil must be completely settled prior to installation of components as specified and approved by the design engineer. The loading rate for sand filters must be used. Pressure distribution must be used.

J. Repairs

1. When space is not available or if there are other site limitations that preclude other soil treatment area options for OWTS repairs, wide beds, deep gravel trenches, and seepage pits may be considered for repairs only. Other options are vaults or higher level treatment systems, if the local board of health permits them.

2. Wide Beds: For repairs, beds wider than 12 feet may be installed.

4. Seepage Pits are not approved for new soil treatment systems in Delta County.

K. Seepage Pits may be used for repairs.

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

2. If the risks are not low, higher level treatment must be attained prior to discharge to these systems for final disposal.

3. A seepage pit shall consist of a buried vertical cylinder with holes in the wall.

    (a) Pits must be provided with both vertical sidewall and top supporting structural concrete or other material of equal structural integrity.

    (b) The excavation must be larger than the cylinder by at least 12 inches on each side.

    (c) The over-excavated volume must be filled with rock ranging in size from 1/2 inch to 2 1/2 inches.

    (d) 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.

    (e) 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.

    (f) 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 area inside the vertical cylinder.

4. 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.

5. The construction of new seepage pits for the treatment and dispersal of on-site wastewater on new sites is prohibited unless:

    (a) The seepage pit is designed by a professional engineer; and

    (b) The design includes higher level treatment.

SECTION VIII: Design Criteria for Onsite Wastewater Treatment Systems

8.0. General

A. Higher level treatment systems must be designed by a professional engineer.

B. Higher level treatment systems may be public domain technology systems or proprietary systems.

1. Public domain technology systems must be designed, installed and maintained according to established criteria and additional criteria established by these regulations. When design criteria are not specifically provided in this regulation, 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.

2. Proprietary systems must be designed, installed, and maintained according to manufacturer's instructions and additional criteria identified in the Technology Review and Acceptance process, by the Water Quality Control Division pursuant to 5 CCR 1002-43-13.

C. Soil treatment areas for higher level treatment systems must be pressure dosed.

D. Systems must be capable of accommodating all anticipated flows and organic loads.

E. 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.

F. 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.

8.1 Sand Filters:

A. Sand filters, such as a lined intermittent sand filter or recirculating sand filter, may be used as a pre-treatment system where the treated effluent is collected and dispersed to a soil treatment area or where site conditions require importing treatment media, such as an unlined sand filter, a soil replacement system, or a mounded system.

B. Intermittent (Single Pass) Sand Filters

1. General

a. The filtering material shall be clean, coarse sand, all passing a screen having four meshes to the inch. The sand may have an effective size between 0.25 and 0.6 mm. with a uniformity coefficient of 4.0 or less. Material meeting ASTM 33, for concrete sand, with one percent or less fines passing 200 mesh sieve may be used.

b. The sand below the distribution lines must be at least two feet deep.

c. Distribution system

(1). Dispersal of effluent to the surface of the sand filter must be by a pressurized distribution system for equal distribution.

(2). Pipes used to disperse the effluent must be surrounded by washed coarse screened gravel or crushed stone. All of the gravel or stone must pass a 2 1/2-inch screen and must be retained on a 3/4-inch screen.

(3). Manufactured media may be used as an alternative to gravel or stone.

(4). The separation distance between parallel distribution lines must not exceed six feet, and a distribution line must be located within three feet of each filter sidewall.

(5) Application Rates

(i) When receiving wastewater that meets TL1 treatment level, a maximum sand filter application rate of 1.0 gpd/ft^2 must be used.

(ii) An intermittent sand filter must not be used to treat wastewater that does not conform to TL1 treatment level or better.

C. Lined Sand Filters

1. Lined sand filters must have an impervious liner on the sides and bottom of the filter. The liner must consist of a 30 mil thickness PVC material or equivalent.

2. A minimum four-inch diameter under-drain pipe must be used. The under-drain pipe must be surrounded by washed coarse screened gravel or crushed stone. All of the gravel or stone must pass a 2 1/2 inch screen and must be retained on a 3/4-inch screen. Manufactured media may be used as an alternative to gravel or stone.

3. Under-drain effluent collected below the sand filter dispersed to a soil treatment shall be sized with a long-term acceptance rate as shown in Table 7-1.

D. Unlined (Open Bottom) Sand Filters

1. The bottom of the sand filter receiving septic tank effluent must be no less than two feet above the high ground water surface or bedrock for installations in which effluent percolates downward through the soil.

2. Under-drain effluent collected below the sand filter dispersed to a soil treatment shall be sized with a long-term acceptance rate as shown in Table 7-1.

E. Recirculating Sand Filters

1. A recirculating sand filter must have an impervious liner on the sides and bottom of the filter. The liner must consist of a 30 mil thickness PVC material or equivalent.

2. A minimum four-inch diameter under-drain pipe must be used. The under-drain pipe must be surrounded by washed coarse screened gravel or crushed stone. All of the gravel or stone must pass a 2 1/2-inch screen and must be retained on a 3/4-inch screen. Manufactured media may be used as an alternative to gravel or stone.

   a. Filter media effective size (D10) must range from 1.0 to 1.50 mm and the uniformity coefficient (D60/D10) must be less than 4.0. Fines passing a 200 mesh sieve must be less than one percent.

3. Sand depth must be a minimum of two feet.

4. Typical loading rates are 3.0 to 5.0 gpd/ ft^2. Rate must not exceed 5.0 gpd/ ft^2.

5. Design re-circulation ratios may be 3:1 to 5:1.

6. Under-drain effluent collected below the sand filter dispersed to a soil treatment shall be sized with a long-term acceptance rate as shown in Table 7-1.

8.2. <u>Constructed Wetland Treatment (Rock Plant Filter)</u>:

A. A constructed wetland treatment system shall be designed by a registered professional engineer.

B. The design shall be site specific and include specifications for: loading, capacity, liner material, filter media, density and species of plant material, effluent level, final

discharge type, and other pertinent information. The plans shall be submitted to the Department for approval according to Section 3.7.

C. The treated effluent from a rock plant filter must be distributed to a soil treatment area.

8.3. Soil Absorption Mounds:

A. A registered professional engineer shall design mounds, and the design shall be site-specific, which shall include specifications for fill material, basal area, size calculations, absorption area calculations, distribution networks, cap, topsoil, final grading, and other pertinent information to the construction of the system. The plans shall be submitted to the Department for approval according to Section 3.7.

B. The distribution system shall be designed for the uniform effluent application throughout the mound.

C. The effluent distribution line shall be graded to drain back into the dosing chamber, or buried below the frost line.

D. The final slope of the back-fill of the mound shall be no greater than 3 to 1 (three (3) feet horizontally to one (1) foot vertically).

E.. The mound shall be planted with a vegetative cover to limit erosion.

F. The basal area and linear loading rate must be determined from the loading rate for the soil type under the mound and the slope of the site.

8.4. Evapotranspiration Disposal of Effluent: An evapotranspiration system may be used exclusively or in combination with a soil treatment system.

A. An evapotranspiration system shall be designed by a registered professional engineer who shall furnish design data for a complete review of the design according to Section 3.7.

B. Data to be furnished must include, but shall not be limited to: dimensions; distribution system design; specifications of gravel and wicking sand if used, liner material if used, and bedding; properties of the soil under the evapotranspiration system and provision for vegetation cover.

C. When high groundwater table, bedrock, fractured rock, or highly pervious material (percolation faster than 5 minutes per 1 inch) endanger the underground water, a durable and impermeable liner shall be installed in the bed to prevent the sewage effluent from entering the underlying formation or groundwater table. Prior to installation of the liner, sharp objects and projections shall be removed to protect the integrity of the liner. All seams shall be sealed.

D. An evapotranspiration system shall be located in an area where there is exposure to sunshine. A biological or external heat source shall be provided to prevent freezing.

E. The system bed shall be crowned and covered with a minimum of four (4) inches of selected back fill material and with a vegetative cover.

F. Bed area shall be protected to prevent damage from vehicular or pedestrian travel. The ground surface shall be graded to deflect precipitation and other outside water away from the disposal area.

G. The following formula may be used as a minimum guide for determining the area necessary for total evapotranspiration of septic tank effluent:

$$\text{Area (Square Feet)} = \frac{\text{Flow (Gallons per Day)} \times 586}{\text{Lake Evaporation Rate at the Site (in. per year)}}$$

H. As an alternative, a system may be designed and sized on the basis of a monthly water balance for the system. Such a design would provide for total storage of average daily flows for all periods in which evapotranspiration is not shown to occur.

I. If the design provides wicks (sand structures which penetrate through the rock media to the bottom of the bed), they must be equal to 10 to 15 percent of the bed surface area. The wicks must be uniformly spaced throughout the bed.

J. The capillary sand used in an evapotranspiration system shall be approved by the design engineer. The sand shall meet the gradation requirements as specified in Table 8-1:

Table 8-1 Evapotranspiration Sand

Sieve Size	Percent Passing
4	100%
40	< 50-70%
200	< 15%

K. Adequate surface area must be provided to evaporate/transpirate total annual average daily flows at a rate equivalent to local net lake evaporation including over the part of the year when the evaporation rate is not measured.

L. If the system is designed as an evapotranspiration/absorption system, the amount of storage and evapotranspiration capacities may be reduced by the volume of effluent absorbed by the soil based on the long-term acceptance rate for that soil type.

M. Except for dwellings, if the system is designed for summer use only, as confirmed by the Delta County Health Department, the surface area may be multiplied by 0.6 to obtain the required area.

N. Evapotranspiration beds and evapotranspiration-absorption beds may be wider than 12 feet.

8.5. Wastewater Pond:

A. Construction of new wastewater ponds for single-family homes is prohibited.

B. A septic tank must precede the wastewater pond.

C. The depth of the design volume of the wastewater pond must be five feet.

D. A wastewater pond must have two feet of free board above the design volume of the pond.

E. A wastewater pond must be fenced to keep out livestock, pets, vermin, and unauthorized people.

F. Wastewater ponds must be designed on the basis of monthly water balance including design flow, precipitation, evaporation, and seepage.

G. 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.

G. 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.

H. Wastewater ponds must be designed by a professional engineer.

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

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

1. Be designed by a professional engineer

2. 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

3. Receive authorization by rule as 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.

SECTION IX: Other Sewage Disposal Systems:

9.1 Design criteria and construction standards: Vaults, privies, slit trenches, incineration toilets, chemical toilets, and gray water systems shall as a minimum:

A. exclude flies, rodents, and other animals from access to human excreta;

B. prevent nuisances and health hazards;

C. prevent water pollution or any other significant environmental degradation;

D. systems provided for in this section shall be prohibited in any areas where the installation would create a public nuisance.

9.2. Vaults: Vaults may be permitted for temporary use, occasional use, or seasonal use.

A. Vaults may not be used where a property can accommodate an OWTS with a soil treatment system.

B. Vaults for full time use may be permitted when a failing OWTS cannot be replaced.

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

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

E. 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 adequately-sized OWTS.

F. Variances may be granted for specialized commercial uses.

G. Vaults shall have a minimum 1000-gallon effective volume or be capable of holding a minimum of the two-day design wastewater flow, whichever is larger.

H. Vaults shall meet the same installation standards as apply to septic tanks except that no effluent outlet shall be provided.

I. A mechanical signal device visual or audible or both shall be installed to indicate when the tank is filled to a maximum of 75 percent capacity, in order to indicate when pumping is necessary.

J. 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.

E. Pumping receipts shall be retained by the owner and made available to the Department as proof of proper waste disposal.

9.3. Vaulted Privies: It is the intention of the Board of Health that privies will not normally be used for permanent sewage disposal for continuously occupied structures.

A. Privies may be permitted for seasonal use where there is no piped water supplied to the occupied structure or for public parks or for campground spaces.

B. The construction of the privy shall include the following:

1. a fly-tight vault with a minimum 400 gallon capacity;

2. proper ventilation and construction to prevent access to the excreta by flies, rodents and other animals;

3. a superstructure over the vault affording complete privacy with a self closing door;

4. mounded soil over the top of the vault;

5. floor and riser of concrete or other impervious material;

6. toilet seat and lid made of easily cleanable impervious material, hinged, self-closing, and fly-proof;

7. all venting fly-proofed with No. 16 or small mesh screening.

9.4 Pit Privies: Pit Privies shall only be permitted for use on a temporary or seasonal basis in unincorporated areas of the county.

A. The use of pit privies on parcels of less than five (5) acres or in non-recreational subdivisions shall be prohibited.

B. The use of pit privies shall be limited for use for primitive cabins, parks and campgrounds on parcels greater than 5 acres where there is no water supply or plumbing.

C. Pit privy construction shall include:

1. fly tight construction;

2. a superstructure affording complete privacy with a hinged self-closing door;

3. an earth mound around the top of the compartment and below the floor level, which slopes downward away from the super-structure base;

4. a floor and riser of concrete or other impervious material;

5 toilet seats and covers of easily cleanable, impervious material, hinged, self-closing and fly-proof;

6. all venting fly-proofed with No. 16 or smaller mesh screening;

7. 400 gallons effective capacity of the pit;

8. an adequately vented pit located in suitable soil where the maximum seasonal level of the ground water table will be no closer than four (4) feet below the bottom of the pit;

9. Filled pits shall be covered with at least two (2) feet of soil.

9.5 Slit Trench Latrine:

A. Slit trenches shall only be allowed for temporary recreational or emergency situations when other approved sanitary means are unavailable. Other agencies may have more stringent regulations that must be adhered to.

B. A slit trench latrine must be considered a temporary convenience to be used no longer than seven days

C. A slit trench latrine must be located only in a place that does not adversely affect public health or the environment. The location must provide ample privacy and should be exposed to several hours of sunlight each day. A slit trench latrine must not be located:

   a. In a building;

   b. In a covered or partially covered location such as a cave or overhanging cliff; or

   c. On a slope of greater than 30 percent.

D. A slit trench latrine must be installed only in suitable soil

E. Slit trenches shall be dug approximately one foot wide and two feet deep for the required length. Excrement and tissue deposited in the trench shall be covered with

two (2) inches of soil at least once a day. A superstructure of a temporary nature shall be provided to afford privacy.

F. Slit trenches shall be back-filled with at least one foot of soil to grade to match its surroundings when all intended use has been discontinued.

9.6 Incinerating, Composting and Chemical Toilets

A. The Department may permit incinerating, composting and chemical toilets.

B. Permitting of an incinerating or composting toilet may also be subject to the jurisdiction of the Colorado Plumbing Board.

C. An incinerating or composting toilet may be used for toilet waste where an OWTS is installed for treating wastewater remaining after removal of toilet waste.

9.7 Incinerating Toilets:

A. An approved incinerating toilet must be designed and installed in accordance with all applicable federal, state, and local air-pollution requirements and manufacturer's instructions.

B. Subject to local board of health or other applicable regulations or codes (e.g., Colorado Plumbing Code if a local code does not exist), the compartment may be located within a dwelling or building provided the unit complies with the applicable requirements of this regulation, and provided the installation will not result in conditions considered to be a health hazard as determined by the Department.

C. The compartment and appurtenances related to the unit must include fly-tight and vector-proof construction and exterior ventilation.

9.8 Composting Toilets

A. 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.

B. 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.

C. 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 Department. Disposal methods must prevent contamination of water and not cause a public health nuisance. Disposal using solid waste practices is recommended.

D. If a system will be installed where low temperature may be a factor, design and installation must address the effects of the low temperature.

E. Composting toilets must be operated according to manufacturer's specifications.

F. Only manufactured composting toilets shall be permitted which shall bear the seal of approval of the National Sanitation Foundation or an equivalent testing and certification.

9.9 Portable Chemical Toilets

A. A portable chemical toilet may be used by permit from the Department 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.

C. The toilet shall be constructed with a sewage receptacle of easily cleanable and impervious material, which is accessible or removable for thorough cleaning and disinfection.

D. Small businesses without plumbing fixtures may provide chemical toilets for their employees or patrons.

E. Large group gatherings may provide chemical toilets for a temporary gathering.

SECTION X: Treatment Systems other than Septic Tank Soil Treatment Systems and Non-Discharging Systems

10.1 State Waters: For systems that discharge to State Waters see Section 3.6.D and 5 CCR 1002-43.2.C.

10.2 General: Systems which will discharge effluent directly to the atmosphere, the ground surface or below ground, or systems employing dispersal methods, may be permitted if designed by a registered professional engineer in compliance with construction standards and performance criteria as set forth in these regulations. System plans shall be reviewed by the Department.

10.3 Review of Application: The Board of Health shall review all applications for such systems which may result in discharge or drainage of effluent from the property of origin. No permit shall be issued for such a system if the Board of Health determines that a potential health hazard or private or public nuisance or undue risk of contamination exists. The Board of Health shall authorize the Department to review applications and issue permits for systems which do not permit the drainage of effluent off the property of origin.

10.4 Performance Criteria

A. If effluent discharge is made into the atmosphere or upon the ground surface in areas in which the possibility exists for occasional direct human contact with the effluent discharge, effluent at the point of sampling shall meet each of the following standards:

1. The geometric mean of the fecal coliform density shall not exceed twenty five (25) per one hundred (100) milliliters when averaged over any five (5) consecutive samples, and no single sample result for fecal coliform shall exceed two hundred (200) per one hundred (100) milliliters.

2. The arithmetic mean of the standard 5 day carbonaceous biochemical oxygen demand ($CBOD_5$) shall not exceed ten (10) milligrams per liter when averaged over any three consecutive samples.

3. The arithmetic mean of the total suspended solids shall not exceed ten (10) milligrams per liter when averaged over any three consecutive samples.

B. If the effluent discharge is made into the atmosphere or upon the ground surface in an area so restricted as to protect against the likelihood of direct human contact with the discharged effluent, the effluent at the point of sampling shall meet each of the following standards:

1. The geometric mean of the fecal coliform density shall not exceed five hundred (500) per one hundred (100) milliliters when averaged over any five (5) consecutive samples, and no single sample shall exceed five thousand (5,000) fecal coliform per one hundred (100) milliliters.

2. The arithmetic mean of the standard 5 day carbonaceous biochemical oxygen demand ($CBOD_5$) shall not exceed twenty-five (25) milligrams per liter when averaged over any three consecutive samples.

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

C. To determine compliance with the standards contained in this section, the required sampling frequency for fecal coliform, $CBOD_5$, and total suspended solid levels must be performed at least once per month when the system is in operation and the results submitted to the Department for compliance with the permit requirements.

10.5 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.

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

SECTION XI: Technology Review and Product Development:

11.1 OWTS technologies must either be public domain, including but not limited to rock and pipe distribution systems, sand filters with pressure distribution and mound systems, with criteria for design, installation, maintenance and use as described in this regulation, or proprietary products that have received Water Quality Control Division review and approval before the Department may permit them for use. Proprietary products are reviewed and approved by the Water Quality Control Division according to 5CCR 1002-43 Section 43.13.

11.2 Product Development: The Delta County Health Department may approve a product development permit. The owner and the manufacturer or his agent must satisfy the requirements listed in Section 11.1 in addition to meeting the requirements for issuance of an On-site Wastewater Treatment System Permit as required by this regulation.

11.3 Department Denial: The Department shall not arbitrarily deny any person the right to consideration of an application for such a system and shall apply reasonable performance standards in determining whether to approve such an application.

11.4 The Delta County Health Department may issue a Product Development Permit for a proprietary treatment component or series of components or a permit may be issued for an experimental design. It must be shown that a complete system, meeting the requirements of this regulation and the site, can be installed in the event the proprietary treatment component sequence fails to perform or the experimental design fails. The product or design under development may then be added to the treatment system, allowing the product developer or designer to gather data about the system's performance in the field.

A. Before a product development permit is issued, the Water Quality Control Division must determine that the product to be tested qualifies for testing under the product development evaluation based on information submitted to the Division according to 5-CCR 1002-43; Section 43.13.

B. A completed application for a product development permit/ experimental design permit must be submitted to the Delta County Health Department at least 30 days in advance of installation.

C. An application for a product development permit or experimental design permit must include the following:

1. 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;

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

3. Documentation signed by the owner of the proposed product development site or experimental design site allowing access to the Delta County Health Department and Division for inspection of the site.

D. The Delta County Health Department may stipulate additional requirements for the product development permit necessary to assure the performance of the OWTS.

E. A product development permit/ experimental design permit is a site-specific permit. Product development testing at multiple sites requires a product development permit for each site.

F. During the term of the product development permit, all data collected is to be submitted to the Water Quality Control Division and the Delta County Health Department .

G. The Delta County Health Department may revoke or amend a product development permit, or the experimental design permit if the continued operation or presence of the system or system component under development:
   1. Presents a risk to the public health or environment;
   2. Causes adverse effects on the proper function of the OWTS on the site;
   3. Leaks or discharges effluent on the surface of the ground; or
   4. If the developer of the product fails to comply with any requirements stipulated on the permit by the Delta County Health Department or the Water Quality Control Division.

H. If the product development permit or experimental design permit is revoked, the product developer must install the replacement system.

SECTION XII: Severability, Saving Clause and Effective Date:

12.1 Severability: If any provision adopted hereunder or its application to any person or circumstances is held invalid, unconstitutional, void, or inoperative, such holding shall not affect other provisions or applications of the Regulations adopted hereunder. The Board of Health hereby declares that in these regards, the regulations adopted hereunder are severable, and that the Board of Health would have adopted the remaining regulations hereof not withstanding such holding.

12.2 Saving Clause: The repeal of any regulation adopted hereunder shall not deny any right, action or cause of action which arose under existing regulations.

12.3 Effective Date: These regulations shall become effective 45 days after final adoption and a notice of their adoption shall be recorded in the office of the Delta County Clerk and Recorder.

SECTION XIII: Adoption:

13.1 Amendments: The Board of Health may make minor and administrative changes in these regulations without a formal advertised public hearing. No major revision of these regulations may be made without a formal advertised public hearing. Notice of the hearing giving time and place must be placed in a newspaper of general circulation in the county at least one time twenty (20) days prior to the date of the hearing. Any changes or revisions to the proposed regulations shall be made after the public hearing and prior to final adoption, after which no further public hearing shall be required regarding the changes or revisions.
eneral circulation in the county at least one time twenty (20) days prior to the date of the hearing. Any changes or revisions to the proposed regulations after the public hearing and prior to final adoption, after which no further public hearing shall be required regarding the changes or revisions.

13.2 All rules adopted by the Board of Health must comply with the rules adopted by the Water Quality Control Commission pursuant to subsection (1) of sections 25-10-105 and 25-10-106 C.R.S. as amended.

13.3 All rules adopted by the Board of Health must be transmitted to the Water Quality Control Division no later than five days after final adoption. The rules shall become effective forty-five days after final adoption by the Board of Health unless the Water Quality Control Division notifies the Delta County Board of Health before the forty-fifth day that the rules or amendments are not in compliance with 25-10-104, 25-10-105 or 25-10-106 C.R.S. as amended. Any portions of the local regulations determined by the Division not to be in compliance with the OWTS Act and 5CCR 1002-43 shall not take effect or be published as regulations of the Board of Health. For those portions of these regulations that do not comply, the Board of Health may submit revisions to the Division. Only after the Division has determined that the Board of Health's revised regulations comply with the OWTS Act and 5CCR 1002-43 may the Board of Health's revised regulations take effect and be published.

13.4 Adopted: May 20, 2014 by the Delta County Board of Health.

Effective Date: July 4, 2014

Chairman of the Board of Health

Amended: June 16, 2015 by the Delta County Board of Health

Effective Date: August 1, 2015

Chairman of the Board of Health