

R E S O L U T I O N N O . 1 1 3

WHEREAS, the Town of Rico has adopted Ordinance No. 284, codifying Title 25, Article 10 of the Colorado Revised Statutes and,

WHEREAS, Ordinance No 284, Section 3 requires a permit for a sewage disposal system and provides for amendment of the permit process by resolution,

NOW THEREFOR, be it resolved by the Board of Trustees of the Town of Rico that the permit shall be in conformance with the individual sewage disposal system act, Title 25, Article 10, Colorado Revised Statutes and the permit fee of \$25.00 shall be \$25.00,

FURTHER, the Town Clerk shall keep a copy of the requirements of the I.S.D.S. on file at Town Hall and the Town Clerk is instructed to draft an application for permit and a permit in conformance with the ordinance and I.S.D.S. regulations.

ATTEST:

TOWN OF RICO

Linda Yellowman
Town Clerk

James F. Greene
Mayor

GUIDELINES ON
INDIVIDUAL SEWAGE DISPOSAL SYSTEMS

REVISED 1994

COLORADO STATE BOARD OF HEALTH
AUTHORITY: CHAPTER 25, ARTICLE 10
Colorado Revised Statutes, 1973,
as Amended

COLORADO DEPARTMENT OF HEALTH
WATER QUALITY CONTROL DIVISION

4300 Cherry Creek Drive

DENVER, CO 80220-1530

For Biodegradable Wastes Only

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I. Scope and Applicability

A. Declaration:

In order to preserve the environment and protect the public health; to eliminate and control causes of disease, infection, and aerosol contamination; and to reduce and control the pollution of the air, land and water, it is declared to be in the public interest to establish minimum standards, rules and regulations for individual sewage disposal systems in the state of Colorado and to provide the authority for the administration and enforcement of such minimum standards, rules, and regulations.

B. Purpose:

The purpose of these guidelines as authorized and required by Article 10 Title 25, C.R.S. is to provide guidance and establish minimum standards for the location, construction, performance, installation, alteration and use of individual sewage disposal systems within the state of Colorado, and shall constitute the basis for the adoption of detailed rules and regulations by local boards of health concerning the application for and issuance of permits, the inspection, testing, and supervision of installed systems, the issuance of cease and desist orders, the maintenance and cleaning of systems, and the disposal of waste material.

These guidelines shall apply to individual sewage disposal systems.

C. Situations Where Local Health Departments Have Jurisdiction to Adopt Regulations:

1. In a county which is not part of a district or regional health department and which has, by resolution of its board of county commissioners, established and maintains a county health department or an environmental health department, pursuant to Part 5, Article 1 of Title 25, C.R.S., the board of health in said department shall have jurisdiction over the unincorporated portion of the county and over the territory of all municipalities within the county unless any such municipal corporation therein, having a population in excess of 40,000, maintains its own health department and

health department established pursuant to said Part 7, then the board of county commissioners of the county shall function as the board of health of said county (25-1-608) and shall have jurisdiction over all the unincorporated part of said county and over all parts of each county not represented by town or city organizations.

5. In incorporated towns the board of trustees and in incorporated cities the mayor and council shall act and have jurisdiction as boards of health in counties wherein the boards of county commissioners have not established their respective counties within a county or district health department pursuant to said Part 5 or within a regional health department pursuant to said Part 7.

II. Regulations Adopted by/for Local Boards of Health

A. Regulation Coverage:

Regulations adopted by local boards of health or by the state board pursuant to current guidelines of the state board and adopted in compliance with Section 25-10-104(2), (3), and (4) C.R.S., shall govern all aspects of permits, performance, location, construction, alteration, installation, and use of individual sewage disposal systems of less than 2,000 gallon per day design capacity. (Site approval and a discharge permit from the Department are required for a system with design capacity greater than or equal to 2,000 gallons per day, but local Individual Sewage Disposal System Regulations then govern all other aspects of permits, performance, construction, alteration and installation.)

- B. Local boards of health shall have one year from the effective date of these guidelines within which to amend their existing regulations or to adopt rules and regulations which shall be no less stringent than these guidelines, unless their existing rules and regulations are found upon timely submission to and approval by the Department to satisfy the stringency requirements of these guidelines, in which case they shall remain in effect.

If at the expiration of said one year period a local board of health has not obtained approval by the department of the rules and regulations pursuant to these

effect or be published as rules and regulations of the local board of health and, until made to comply with and be no less stringent than said sections and current guidelines or rules and regulations promulgated by the State Board, said guidelines or rules and regulations of the State Board shall be effective and control such matters and shall be included as part of the rules and regulations of said local board. Such determination by the Department concerning the matters of non-compliance and less stringency shall be provided by written notification received no later than the commencement of business on the 45th day following the date of final adoption, except that if such date falls on a weekend or state holiday, the notice shall have been received not later than the business day next preceding said 45th day.

III. Definitions

Absorption System - waste water disposal field or a leaching field and adjacent soils or other system for the treatment of sewage in an individual sewage disposal system by means of absorption into the ground and may include evapotranspiration.

Absorption Trench - one or more trenches not over three feet in width in which sewage effluent is percolated into the soil.

Aerobic Sewage Treatment System - an individual sewage disposal system employing biological action which is maintained by the addition of air or oxygen.

Applicant - any person who submits an application for a permit for an individual sewage disposal system.

Bedrock - the more or less solid undisturbed rock in place either at the surface or beneath surficial deposits of gravel, sand, or soil or a consolidated rock formation of impervious material which may exhibit jointed, fractured, or deteriorated characteristics.

Building Sewer - that part of the piping of a drainage system which extends from the end of the building drain and which receives the discharge of the building drain and conveys it to a public sewer, private sewer, individual sewage disposal system, or other point of disposal.

Competent Technician - a person designated by the local health

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

Evapotranspiration System - a type of dispersal system that wholly or primarily utilizes liquid evaporation and transpiration by vegetation as a means of effluent disposal.

Experimental System - a particular design or type of system based upon improvements, or development in the technology of sewage disposal and not otherwise provided for in paragraphs (e) to (j) of 25-10-105 (1), C.R.S.

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, and is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public or environmental health and safety or to property or is designated by the Federal Emergency Management Agency (FEMA) or National Flood Insurance Program (NFIP). In the absence of FEMA/NFIP maps, a Colorado Registered Professional Engineer shall certify the flood plain elevations.

Floodway - that area of the floodplain in which the channel of the watercourse and those portions of the adjoining floodplain which must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot at any point or as designated by the Federal Emergency Management Agency or National Flood Insurance Program. In the absence of FEMA/NFIP maps, a Colorado Registered Professional Engineer shall certify the flood way elevation and location.

Grey Water System - a system designed to collect, treat and dispose only liquid wastes from sinks, lavatories, tubs, showers, and laundry or other approved plumbing fixtures excluding toilet fixtures.

Groundwater Table - the upper surface of groundwater in the zone of saturation of geologic formation.

Guidelines - minimum requirements as described in this document.

Health Officer - the chief administrative and executive officer of a local public or environmental department, or the

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

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

Professional Geologist is a person who is a graduate of an institution of higher education which is accredited by a regional or national accrediting agency, with a minimum of thirty semester (forty-five quarter) hours of undergraduate or graduate work in a field of geology and whose postbaccalaureate training has been in the field of geology with a specific record of an additional five years of geological experience to include no more than two years of graduate work.

Registered Professional Engineer - an engineer licensed in the State of Colorado accordance with Section 12-25-111, C.R.S.

Sand Filter - a subsurface system which utilizes wastewater filtration or absorption or both, and which contains an intermediate layer of sand as filter material.

Sanitarian (Environmental Health Specialist) - a person who is trained in physical, biological, and sanitary science to carry out inspectional and educational duties in the field of environmental health.

Seepage Bed or absorption bed - a subsurface soil absorption area which is wider than three (3) feet, together with a system of approved distribution through which effluent may seep, leach or infiltrate into the soil.

Seepage Pit - a type of soil absorption system dependent upon suitable soil containing a structural internal void and designed on the basis of sidewall area.

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 allow the clarified liquids to discharge to other treatment units for final disposal.

Serial Distribution - an arrangement of absorption trenches,

finer. (A soil having a uniformity coefficient smaller than 4 would be considered "uniform" for purposes of this regulation.)

Vault - a watertight, covered receptacle, which is designed to receive and store excreta or wastes either from a sewer or from a privy and is accessible for the periodic removal of its contents.

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

IV. Administration and Enforcement

A. Permit Application Requirements and Procedures:

1. Prior to commencement of installation, alteration, or repair of a system, a written application shall be submitted to the local health department providing, as a minimum, the information called for on the application form and a permit shall have been issued by the local health department or its designated agent having jurisdiction.
2. A permit fee not to exceed that which is allowed by 25-10-101 et seq. (as amended) C.R.S. shall be required of applicants for an individual sewage disposal system, payable at the time the application is received. This fee shall be based on the average cost to the local health department for processing applications during the preceding calendar year. The fee for permits issued by the Department shall not exceed the maximum allowed by 25-10-101 et seq. (as amended) C.R.S.
3. The local board of health may make provision for the waiver of any permit fee normally required for an individual sewage disposal system.
4. If an individual sewage disposal system permit is issued, it shall expire one year after the date of issuance if construction has not commenced or as specified by local board of health regulations. Any change in plans or specifications after the permit has been issued invalidates the permit unless written approval is secured from the health officer or his/her authorized agent for such

regulations adopted thereunder or any terms and conditions of a permit.

9. Except as provided in these guidelines, no individual sewage disposal system permit shall be issued to any person when the subject property is located within a municipality or special district which provides public sewer service, except where such sewer service to the property is not feasible in the determination of the municipality or special district.

B. Application Review:

The application shall include such information, data, plans, specifications, statements, and commitments as required by the local board of health to carry out the purposes of Article 10, Title 25, C.R.S., as amended.

After receiving an application for an individual sewage disposal system permit, the application shall be reviewed by the local health department and an inspection shall be made by the health officer or his/her designated representative consisting of:

1. Inspection of the premises, unless previously inspected.
2. Evaluation of soil where percolation tests are required.
3. A determination as to the suitability of the site and of the proposed design based upon verification of the ground water table, suitable soil, depth to bedrock, ground slope and pertinent physical features.

C. Additional Evaluation:

When the health officer or his/her designated agent has determined that the local health department does not have sufficient information for evaluation of an application or a system, he may require additional tests or documentation.

D. Additional Hydrological, Geological, Engineering or other Information:

functioning in compliance with Article 10 of Title 25, C.R.S. and applicable rules and regulations adopted pursuant thereto and the terms and conditions of any permit issued and to inspect and conduct tests in evaluating any permit application. The owner or occupant of every property having an individual sewage disposal system shall permit the health officer or his/her designated agent access to the property to conduct required tests, take samples, monitor compliance, and make inspections.

H. Department Authority to Administer and Enforce:

Wherever the term local board of health, local health department, or health officer is used in these guidelines, said terms shall also include the Colorado Department of Health or its designated authority for the purposes of administering and enforcing the provisions of these guidelines as Colorado Department of Health Regulations where necessary to protect the public health and environment.

I. Primary Enforcement Responsibility:

The primary responsibility for enforcement of the provisions of Article 10 of Title 25, C.R.S. and the regulations adopted under said Section shall lie with the local health departments or local boards of health.

In the event that a local health department or local board of health fails to administer and enforce the provisions of said section and the rules and regulations adopted under said Article 10, the department may assume such functions of the local health department or board of health as may be necessary to protect the public health and environment. (25-10-109)

J. Experimental Systems:

Except for designs or types of systems which have been approved by the Division pursuant to C.R.S., 25-10-107 (1), the local board of health may approve an application for a type system not otherwise provided for in paragraphs (e) to (j) of subsection (1) of C.R.S. 25-10-105 only if the system has been designed by a registered professional engineer, and only if the application provides for the timely installation of a

than one year. Renewals may be scheduled to coincide with the calendar year.

The local board of health may revoke the license of a systems contractor for violation of the applicable provisions of Article 10 of Title 25, C.R.S. of the rules and regulations adopted under said section or for other good cause shown, after a hearing conducted upon reasonable notice to the systems contractor and at which the systems contractor may be present, with counsel, and be heard. (25-10-108)

2. The local board of health may adopt rules and regulations which provide for the licensing of systems cleaners. A fee not to exceed twenty-five dollars may be charged by the local health department for the initial license of a systems cleaner; a fee not to exceed ten dollars may be charged for the renewal of the license. Initial licensing and renewals thereof shall be for a period of not less than one year. Renewals may be scheduled to coincide with the calendar year.
3. The local board of health may revoke the license of a systems cleaner for violation of the applicable provisions of Article 10 of Title 25, C.R.S. of the regulations adopted under said section or for other good cause shown after a hearing conducted upon reasonable notice to the systems cleaner and at which the systems cleaner may be present, with counsel, and be heard. (25-10-108).

N. Cease and Desist Orders:

The health officer or his/her authorized representative 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 Article 10 of Title 25, C.R.S. or with applicable rules and regulations or is found to constitute a hazard to public health, or has not otherwise received timely repairs under the provisions of C.R.S., Section 25-10-106 (1)(j). Such an order may be issued only after a hearing which shall be conducted by the health officer not less than 48 hours after written notice thereof is given to the owner or occupant of the property on which the system is located and at which the owner or occupant may be present, with counsel, and be

TABLE I

QUANTITIES AND BOD STRENGTH OF SEWAGE
FOR VARIOUS TYPES OF USES

TYPE OF ESTABLISHMENT	GALLONS/PERSON/DAY (AVERAGE) (UNLESS OTHERWISE STATED)	LBS. BOD5/PERSON/DAY (UNLESS OTHERWISE STATED)
<u>Residential</u>		
Single-family dwellings (two people per bedroom)	75	.20
Separate Distribution of Flows - Individual Residential use		
Bath/Shower	14.7	.014
Dishwasher	1.8	.002
Kitchen sink	4.4	.045
Additional for garbage grinder	1.4	.052
Laundry washer	19.5	.037
Lavatory	8.4	.021
Water closet	24.8	.029
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 Parks (per space)	75 300	.20 .80
<u>Commercial</u>		
Airports (per passenger)	5	.02
(per employee)	10	.06
Barber and Beauty Shops (per chair)	100	.70*
Bowling Alleys (per lane - toilet wastes only)	5	.03*
Bus Service Areas (not including food)	5	.02
Country clubs (per member)	30	.02
(per employee)	20	.06
Dentist offices (per non-wet chair)	50	.14*

Nursing Homes (per bed space)	100	.17
Schools, Boarding	100	.17
Schools, Day (without cafeteria, gym or showers)	15	.04
(with cafeterias, no gym or showers)	20	.08
(with cafeterias, gym and showers)	25	.10
(additional for school workers)	15	.06
Recreational and Seasonal		
Camps, day (no meal served)	15	.12
Luxury Resort	125	.17
Resort (night and day)	50	.12
Campground (seasonal occupancy - per unit)**	50	.12
Public Park (during hours when park is open)		
- Flush Toilet (per fixture per hour)	36	.04 lbs./ fixture
-Urinal (per fixture per hour)	10	.01 lbs./fixture
-Shower (per fixture per hour)	100	.10 lbs./ fixture
-Faucet (per fixture per hour)	15	.04 lbs./ fixture
Swimming pools and bathhouses	10	.06
Travel trailer parks (with individual water and sewage hookup - per unit) **	50	.12
(without individual water and sewage hookup - per unit) **	50	.12

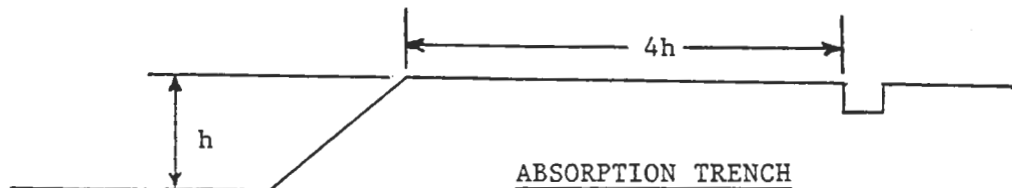
* = BOD Levels needing further verification

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

VI. Minimum Horizontal 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 streams, lakes, water courses, springs, wells, subsoil drains, cisterns, water lines, suction lines, gulches, dwellings, other occupied buildings and property lines, shall be in accordance with the following "Table of Minimum Horizontal Distances".
- B. Wells, springs or potable water supply suction lines and all other constructed units listed in the "Table" shall be installed or located in accordance with the minimum distance requirements provided in the table or such increased distances provided by the local board of health regulation.

The minimum horizontal distance required from manmade cut banks and fill areas to individual sewage disposal 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 absorption field, unless it can be demonstrated by a Registered Professional Engineer or a geologist that a mechanical or natural barrier will prevent lateral effluent surfacing. (See diagram below.)



VII. Soil Test

A. Location:

Soil percolation tests shall be performed in at least three (3) test holes in the area in which the absorption system is to be located, spaced uniformly over the proposed site, except there shall be no less than one (1) test hole in any twelve hundred (1200) square foot area of the absorption system.

B. Dimensions:

The percolation test holes shall most preferably be six (6) inches in diameter. The diameter may vary from four (4) to twelve (12) inches in width or diameter where prohibitive soil or geological conditions exist. The holes shall be terminated at the depth of the proposed absorption system and the percolation tests shall be conducted within those soils comprising the 4 feet of acceptable soils beneath bottom of absorption field.

C. Procedure:

Percolation test holes shall be filled with water to a depth of 14 inches or more at least 8 hours, but not more than 24 hours, prior to conducting the water percolation test, and shall be refilled with water if necessary to a depth of at least 14 inches prior to final measurement. Measure the time for the water to drop one inch within the lower six (6) inches of the percolation test hole. The percolation rate shall be reported in minutes per inch drop.

D. Calculation:

The field percolation rate shall be the average rate of the percolation tests after rate has stabilized in all the test holes observed in the proposed absorption area. A percolation rate of between five (5) and sixty (60) minutes per inch is required except as provided in VIII-C-b-1(1) of these guidelines.

E. Performance of Percolation Tests:

1. The percolation test shall be performed by or under the supervision of a registered professional engineer or by a competent technician of the local

normal operating conditions including erosion, 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.

2. Pipe Standards: All wastewater lines used in individual sewage disposal systems shall be constructed of compatible pipe, bonding agent, and fittings. Where plastic pipe and fittings are used, the minimum wall thickness of the pipe shall conform to ASTM Standard D 3034, or equivalent. Perforated distribution pipe surrounded by rock within a soil absorption system shall have a minimum wall thickness conforming to ASTM Standard D 2729. Corrugated polyethylene pipe with smooth interior that meets ASTM F405 and AASHTO M252 specifications or equivalent may also be used. Tile, open-joint pipe, and cast iron pipe shall not be used in individual sewage disposal systems.
3. 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 Uniform Plumbing Code.
4. Electrical Equipment, if used: All electrical work, equipment, and material shall comply with the requirements of the National Electrical Code.
5. Identification and Data Marking: A permanent type plate or other indelible marking so inscribed as to be easily read and visible for the purpose of inspection shall be provided on major components not constructed on the site where installed. Said inscription shall include the following:

Name of manufacturer.

Model or serial number designation.

Maximum design capacity of the unit and the

both.

11. 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.
12. Sampling Access: Where a required final effluent sample cannot be easily obtained, a sampling well shall be constructed. The sampling well shall be accessible and provided with a properly secured cover.
13. Instructions: The manufacturer shall provide clear, concise instructions covering the unit which, when followed, will assure proper installation and safe and satisfactory operation.
14. Surface Activity: The surface of the ground over the individual sewage disposal 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 compaction of the soil nor to structural loading detrimental to the capability of the component to function as designed.
15. Distribution Box: A distribution box, if used, shall be of sufficient size to equally distribute effluent to the lateral lines and shall be constructed with the inlet invert at least one (1) inch above the level of the outlet invert.
16. Sewage Pumping System Where Applicable:
 - a. Non-clog pump opening shall have at least 2 inch diameter solids handling capacity where raw sewage is pumped or not more than 1/2 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.
 - c. Pressure pipe shall be of sufficient strength to accommodate pump discharge pressure and the

<u>Number of Bedrooms</u>	<u>Tank Capacity (gallons)</u>
2	750
3	1000
4	1250
Each Additional	250

b. Septic tank design criteria:

- (1) Except for grey water systems the effective liquid capacity shall be no less than 750 gallons.
- (2) Inlet invert shall be at least 3 inches higher than the outlet invert.
- (3) Outlet tee or baffle shall extend above the surface of the liquid to within one inch of the underside of the tank top and shall extend at least 14 inches below the outlet invert.
- (4) The distance from the outlet invert to the underside of the tank top shall be at least 10 inches.
- (5) Liquid depth shall be a minimum of 30 inches and the maximum depth shall not exceed the tank length or 60 inches, whichever is less.
- (6) A septic tank shall have two or more compartments or more than one tank may be used in series to provide the following capacity arrangement. The first compartment of a septic tank shall hold no less than 1/2 of the required effective capacity.
- (7) The transfer of liquid from the first compartment to the second or successive compartment shall be made at a liquid depth of at least 14 inches below the outlet invert, but not in the sludge

- a. For a system treating and disposing of effluent through a soil absorption system, the method for calculating minimum absorption area shall be based upon the amount of suitable soil and the capacity of the soil to absorb liquids as established by the percolation test and upon design criteria and construction standards for such type of absorption system as set forth in these guidelines.
- b. Unless designed by a registered professional engineer and approved by the local board of health (approval may be given by the local health department if authorized by regulations of the local board of health for such systems treating exclusively domestic wastes), no such system may be permitted in areas exhibiting any of the following conditions:
 - (1) Where the soil percolation rate is slower than one inch in sixty minutes or faster than one inch in five minutes except that a percolation rate faster than one inch in five minutes in soils of sandy texture may be permitted, or the percolation may be slowed by soil treatment.
 - (2) Where the maximum seasonal level of the groundwater table is less than four feet below the bottom of the proposed absorption system.
 - (3) Where bedrock exists less than four feet below the bottom of the proposed absorption system.
 - (4) Where the ground slope is in excess of thirty percent.
- c. Soil building or replacement will be permitted to bring the soil within the requirements of suitable soil.
- d. Absorption Area Formulas: In the course of developing local ISDS Regulations, the Local Board of Health is to determine that to be used within its jurisdiction.

C.1.b.(1) above.

e. Allowable Absorption Area Reductions and Increases:

- (1) Adjustment for Deep Gravel: The length of an absorption trench or seepage 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:

$$L = \text{length required prior to adjustment} \times \frac{(W + 2)}{(W + 1 + 2d)}$$

Where: W = width of trench in feet
d = depth of gravel below distribution pipe in feet.

- (2) Flow reduction for the use of permanently installed devices may be allowed at the discretion of the local health officer or his/her designated agent, but in no case shall the maximum daily flow used for design purposes allow greater than 20% reduction.
- (3) Reduction in soil absorption area may be allowed for gravelless soil absorption systems upon approval of the Department and at the discretion of the local health officer or his/her designated agent.
- (4) The absorption area calculated as in subparagraph "d.(1.)" above may be increased by an additional twenty (20%) percent if wastes from a garbage grinder are discharged into the system and by not more than an additional forty (40) percent if wastes from an automatic clothes washing machine are discharged into the system.
- (5) If dosing is used in conjunction with an absorption trench or seepage bed system, a reduction of twenty-five percent (25%)

*Long term resting provided by alternating fields is desirable and recommended in these soils

2. Absorption Area Construction

- a. Absorption Trench and Seepage Bed: an absorption trench or seepage bed shall be of sufficient width and length or dimension to provide the required absorption area. The bottom of the trench or bed and distribution lines shall be level. Perforated distribution pipe which shall be required for an absorption trench or seepage bed shall be placed the entire length of the trench or bed and shall be surrounded by clean graded gravel, rock or material of equal efficiency which may range in size from 1/2 inch to 2 1/2 inches and shall be placed from at least 2 inches above the top of the distribution pipe to at least 6 inches below the bottom of the distribution pipe. The separating distance between soil absorption systems shall be a minimum of six (6) feet sidewall-to-sidewall. The separating distance between parallel distribution lines in a seepage bed shall not exceed 6 feet and a distribution line shall be located within 3 feet of each sidewall of the seepage bed. Pipe for gravity distribution shall be no less than 3 inches in diameter and preferably less than 100 feet in length. The terminal ends of lines shall be capped unless looped or air vented. The top of the placed gravel or such material used shall be covered with a layer of hay, straw or similar pervious material. An impervious covering shall not be used. Tile or open joint pipe shall not be used.

A final cover of soil suitable for vegetation at least 10 inches deep shall be placed from the top of the hay, straw or similar pervious material to the finished surface grade of an absorption trench or seepage bed. The final cover shall be graded to deflect runoff water away from the disposal area.

Machine tamping, rolling or hydraulic compaction of final cover shall not be

vertical stand pipe will be attached to the end of the distribution line with a tee fitting. It shall extend to the bottom of the drywell and up to the finished grade and fitted with a removable cap to be used as an inspection pipe. The absorption area of the dry well shall be computed on the basis of percolation rates, or the long term acceptance rates of each stratum penetrated. The weighted average of the results shall be used to obtain a design value. The effective area of the pit will be calculated by adding the area of the side walls below the horizontal inlet line and the area of the bottom of the pit, excluding any impermeable stratum penetrated. Dry wells so sized may only be permitted in soils with a percolation rate faster than sixty (60) minutes per inch. Drywells shall be separated by a distance equal to the depth of the excavation or ten (10) feet, whichever is greater.

3. Serial Distribution System: A serial distribution system may be used in all situations where a soil absorption system is permitted and shall be used where the ground slope does not allow for suitable installation of a single level absorption field, unless a distribution box or dosing chamber is used. The horizontal distance from the side of the absorption system to the surface of the ground shall be adequate to prevent lateral flow and surfacing of effluent above ground. When a serial distribution system is used, the following design and construction procedures shall be followed.
 - a. The bottom of each absorption field and its distribution line shall be level.
 - b. There shall be a minimum of 10 inches of ground cover over the gravel fill.
 - c. An absorption field shall follow approximately the ground surface contours so variation in absorption field depth will be minimized.
 - d. There shall be a minimum of 6 feet (horizontal measurement) of undisturbed earth between adjacent absorption field trenches and between

evapotranspiration of septic tank effluent:

$$\text{Area (in square feet)} = \frac{\text{Design Flow (in gallons per day)} \times 586}{\text{Lake Evaporation Rate at the Site (in inches per year)}}$$

- h. As an alternative, a system may be designed 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. The design shall also provide wicks (sand structures which penetrate through the rock media to the bottom of the bed) equal to 10 to 15 percent of the bed surface area. The wicks shall be uniformly spaced throughout the bed. Adequate surface area shall be provided to evaporate/transpire total annual average daily flows at a rate equivalent to local net lake evaporation over the remaining period of the year. (If the system is designed as a percolation/evapotranspiration system, the amount of storage and ET capacities may be reduced by the volume of effluent percolating into the soil.)
- i. Sand utilized in Evapotranspiration or Evapotranspiration/Absorption beds for cover shall meet the following gradation requirements and be approved by the design engineer:

<u>Sieve Size</u>	<u>Percent (%) Passing</u>
4	100
40	50-55%
200	<15

Note: Except for dwellings, if the system is designed for summer use only, as determined by the local health department, multiply the above area by 0.6 to obtain the required area.

5. Sand Filter:

LOADING RATES FOR A SAND FILTER

<u>Type of Service</u>	Application Rate
	Gallons per Square Foot per Day
Without Garbage Grinder	1.15
With Garbage Grinder	.95

- d. A dosing tank shall be provided where the total filter area exceeds 1,800 square feet. The size of the dose, or the net capacity of the dosing tank, shall be at least 75 percent of the volume of the distributors.

6. Wastewater Pond:

- a. A wastewater pond, where permitted by the local board of health, may be used to provide an additional degree of treatment following first stage treatment. The pond shall be designed for a loading not to exceed 0.46 pounds of BOD₅ per 1,000 square feet of water surface area. Special design shall be required in each case in which non-domestic kinds of individual sewage disposal system wastes will be received.

Maximum water depth in the pond shall not exceed 5 feet. The inside slope of the pond, dike or embankment shall not be steeper than 2:1, (2 feet measured horizontally for each foot measured vertically). A center inlet shall be provided.

- c. Unless four feet of unsaturated soil exists beneath the bottom of the pond, said pond shall be constructed in impervious soil or be sealed to prevent excess seepage of wastewater. Only ponds exhibiting an

exfiltration rate of 1×10^{-6} cm/sec. or less shall be deemed adequate to prevent excess

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 as requested by the health officer or his/her designated representative. The design shall include estimates of effluent quality at the inlet and outlet. Sampling ports, or some other means of effluent sampling, to demonstrate compliance with Section IX of these Guidelines, shall be required by the local health department. Sampling is to be paid for by the owner.

D. Additional Design Criteria (Other Facilities):

1. Grey water system: A grey water system shall meet at least all minimum design and construction standards for a septic tank system based on the amount and character of wastes for the fixtures and the number of persons to be served.
2. Vault: A vault, if permitted by the local board of health, shall have a minimum 1000 gallon effective capacity and may be permitted under limited use occupancy for water carriage sewage systems on property which cannot accommodate a sewage treatment system. A signal device shall be installed to indicate when pumping is necessary.
3. Vault Privy: A vault privy, if permitted by the local board of health, shall be built to include: fly-tight construction, a superstructure affording complete privacy, an earth mound around the top of the vault and below floor level, which slopes downward away from the super-structure base, a floor and riser of concrete or other impervious material, and with seats and covers of easily cleanable, impervious material, and hinged. All venting shall be fly-proofed with No. 16 or tighter mesh screening. Effective capacity of the vault shall be no less than 400 gallons.
4. Pit Privy: A pit privy constructed in soil, if permitted by the local board of health, shall be built to include: fly-tight construction; a superstructure affording complete privacy and a self-closing door; an earth mound around the top of the compartment and below the floor level, which

shall conform to these guidelines.

- b. Such systems shall be designed by a registered professional engineer. An application for such a system shall be reviewed by the local board of health unless disposal is through an absorption system and the wastes are exclusively domestic type wastes, in which case review shall be by the local health department if authorized by regulations of the local board of health for such systems.
- c. Systems shall receive only such biodegradable wastes for treatment and disposal as are compatible with those biological treatment processes as occur within the septic tank and the soil matrix.

8. Composting Toilets:

- (1) Deposits of feces, urine, and readily decomposable household garbage that are not diluted with water or other fluids may be retained in a compartment, in which aerobic composting will occur. The compartment may be located, subject to local board of health or other applicable regulations or codes, within a dwelling or building provided the unit complies with the applicable requirements of these guidelines, and provided the installation will not result in conditions considered to be a health hazard as determined by the local health department. The effective volume of the receptacle must be sufficient to accommodate the number of persons served.
- (2) Adequate additional volume shall be provided for the use of composting materials which shall not be toxic to the process or hazardous to persons and which shall be used in sufficient quantity to assure proper decomposition.
- (3) Compartment and appurtenances related to the unit shall include fly-tight construction and exterior ventilation as

regulations and standards of the Colorado Department of Health and of the local board of health.

IX. Treatment Systems Other Than Those Discharging Through a Soil Absorption or Sand Filter System and Non-discharging Systems

A. General:

Those systems which will discharge effluent directly to the atmosphere, the ground surface or below ground, or which employ aerobic principles of sewage treatment or a dispersal system, may be permitted only if designed by a registered professional engineer. This Article IX shall not apply to systems discharging below ground through a soil absorption system or sand filter system or to a non-discharging system.

B. Review of Application:

The local 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 local board of health determines a potential health hazard or private or public nuisance or undue risk of contamination exists. The local board of health may, by regulation, authorize the local health department to review applications and issue permits for systems which do not permit the drainage of effluent off the property of origin. For systems discharging to State waters, see XII.

C. The following minimum performance criteria shall be required for all systems pursuant to this Article IX:

1. 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, the effluent at the point of sampling shall meet each of the following standards:

a. 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

and the level of effluent discharge.

- b. The arithmetic mean of the standard 5-day biochemical oxygen demand (BOD₅) shall not exceed sixty (60) milligrams per liter when averaged over any three (3) consecutive samples.
 - c. The arithmetic mean of the total suspended solids shall not exceed one hundred (100) milligrams per liter when averaged over any three (3) consecutive samples.
4. To determine compliance with the standards contained in this section IX samples shall be taken at least once per week but no more frequently than once per day.

D. Methods of Analysis - Sampling Points:

All effluent samples shall be analyzed according to the methods prescribed in the 18th Edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). The point of sampling shall be a location that is representative of final discharge from the system.

X. Manufactured Units Utilizing Mechanical Apparatus for Treatment of Sewage

- A. Individual Sewage disposal 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 guidelines.
- B. 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,

- d. Any person may participate in the public hearing by presenting written or oral testimony at the discretion of the Division. No person shall be denied an opportunity to participate at the hearing without good cause shown.
 2. If the Division determines, based upon reasonable performance standards and criteria that the system's reliability has been established, then the Division shall certify the system and shall notify each local board of health of said certification.
 3. Upon notice of certification, a local health officer or his/her designee shall be entitled to consider a permit application for the certified system in the same manner as applications for systems which treat and dispose of effluent through an absorption system.
 4. The Division's determination on whether to grant certification shall be final agency action for the purposes of the State Administrative Procedure Act, Sections 24-4-101 to 108, C.R.S. (1982).
 5. A denial of certification shall be in writing with the reasons for denial contained therein.
- C. The Division shall certify any system employing new technology for subsurface discharge without holding a public hearing pursuant to subparagraph B.1. when the system bears the National Sanitation Foundation Standard 40 Certification or meets an equivalent testing program's standards.
- D. Certification pursuant to this section shall not relieve the holder thereof or the user of a certified system from the responsibility of complying with these guidelines and any applicable rules and regulations adopted pursuant to law.
- E. If, at any time after an individual sewage disposal system employing new technology has been certified pursuant to this Section XI, the Division receives information that the system so certified does not meet the standards in these Guidelines or in any way constitutes a public health hazard, the Division may, in its discretion, hold a public hearing to revoke

against damage or impairment of their efficiency by flooding, foaming, or surcharging.

- C. Covers, Barriers, or Other Protection: All systems must be installed to include protection of openings against entrance of insects and rodents.

XIV. Operation and Maintenance

- A. Responsibility: The owner and the party in possession of real property upon which an individual sewage disposal system is used, shall be jointly and severally responsible for operation and maintenance of the system unless jurisdiction for responsibility has been transferred to a public, quasi-public, or political subdivision. The person denying such responsibility shall bear the burden of proof for such denial upon establishment of ownership or possessory rights in the property served by the system.
- B. Service Label: For treatment plants utilizing mechanical apparatus or under a service policy, a clearly visible, permanently attached label or plate giving instructions for obtaining service shall be placed at a conspicuous location.
- C. Maintenance and Cleaning: When directed by the local health department, for the purpose of obtaining compliance with rules and regulations, the owner or user of a system shall provide for maintenance and cleaning of an individual sewage disposal system and shall notify the local health department upon completion of any maintenance work and report to said department and submit such evidence of compliance with any maintenance and cleaning schedule in the form and as the department requires.
 - 1. The local board of health may adopt rules and regulations for the scheduling of maintenance and cleaning of systems and practices adequate to insure proper functioning of acceptable systems, and may require proof of proper maintenance and cleaning, pursuant to any such schedules and practices, to be submitted periodically to the local department of health by the owner of the system.
- D. Monitoring and Sampling:

may require the tank or vault to be removed and disposed of properly.

XV. Findings on Appeal

- A. Any applicant whose permit application has been denied by the health officer may request review of the application by the local board of health.
- B. A request for review shall be made within 60 days after denial of an application by the local health officer.
- C. The applicant shall bear the burden of supplying the local board with sufficient evidence to document that the denied system will be constructed and used in such a manner as to comply with the declaration and intent of these guidelines and all applicable state and local rules and regulations and required terms and conditions in any permit issued pursuant thereto.
- D. Such review shall be conducted pursuant to the requirements of C. R. S., 24-4-105.

For purposes of administration and enforcement of the "Individual Sewage Disposal Systems Act" (Article 10 of Title 25, C.R.S., the following provisions of said Act specifying general prohibitions and penalties, and are set forth for ease of reference but not as guidelines herein:

Section 25-10-111, C.R.S. General Prohibitions

- 1) No city, county, or city and county shall issue to any person a permit to construct or remodel a building or structure which is not serviced by a sewage treatment works, until a permit for an individual sewage disposal system has been issued by the local health department.
- 2) No city, county, or city and 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 individual sewage disposal system has been conducted and final permit issued by the local health department, as provided for in Section 25-10-106 (1)(h) C.R.S. and the installation has received the approval of the local health department.
- 3) No individual sewage disposal system presently in use

- (d) Conducts a business as a systems contractor without having obtained the license provided for in Section 25-10-108 (1) C.R.S., in areas which the local board of health has adopted licensing regulations pursuant to said Section;
- (e) Conducts a business as a systems cleaner without having obtained the license provided for in Section 25-10-108 (2) C.R.S., in areas which the local board of health has adopted licensing regulations pursuant to said Section;
- (f) Willfully fails to submit proof of proper maintenance and cleaning of a system as required by rules and regulations adopted pursuant to Section 25-10-106, C.R.S.