PROPOSED REGULATION OF THE

STATE BOARD OF HEALTH

LCB File No. R129-98

November 2, 1998

EXPLANATION – Matter in *italics* is new; matter in brackets **[ ]** is material to be omitted.

AUTHORITY: §§2-113 and 115-119, NRS 439.200 and 444.650; §114, NRS 439.150 and 439.200.

Section 1. Chapter 444 of NAC is hereby amended by adding thereto the provisions set forth as sections 2 to 91, inclusive, of this regulation.

Sec. 2. *"Absorption trench" means a trench that is excavated into and uses the native soil for the subsequent absorption and treatment of effluent from a primary treatment unit.*

Sec. 3. *"Administrative authority" means the official who, or the board, department or agency which, is established and authorized by this state, or by a county, city or other political subdivision of this state, to administer and enforce regulations governing individual sewage disposal systems.*

Sec. 4. *"Aerobic wastewater treatment unit" means a chamber that receives sewage and, through oxidation, decomposes the sewage by the introduction of air into the wastewater to reduce both the level of total suspended solids and the level of biological oxygen demand to 30 milligram or less per liter.*

Sec. 5. *"Aggregate" means gravel, rock, drain rock or any similar medium used for absorption.*

Sec. 6. *"Alternative absorption system" means a system, other than an absorption trench, that uses the native soil for the subsequent absorption and treatment of effluent from a primary treatment*

unit. The term includes, without limitation, a capping fill trench, stepped network of trenches utilizing relief lines, leaching bed, sand filter and elevated mound system.

Sec. 7. *"Alternative treatment system" means a system, or a receptacle other than a septic tank, that is designed and constructed to:*

1. Receive the discharge of sewage from a building sewer;

2. Partially or completely treat such sewage; and

3. Discharge effluent for final disposal.

Sec. 8. *"Approved method of sewage disposal" means a method of sewage treatment and disposal that has been approved by the administrative authority.*

Sec. 9. *"Backflow" means the flow of liquid mixtures or substances into the distributing pipe of potable water from any source other than the intended source of the potable water.*

Sec. 10. *"Basal area" means the area of natural ground that is covered by the fill material of a mound system.*

Sec. 11. *"Building drain" means the piping that conveys sewage within a building or structure.*

Sec. 12. *"Building sewer" means the piping that extends from the end of the building drain and conveys sewage to a public sewer, private sewer, individual sewage disposal system or other point of disposal.*

Sec. 13. *"Capping fill trench" means a standard drain field trench, where the invert of the disposal drain pipe is at or slightly below the natural grade of the existing soil, which is covered by a soil cap composed of selected fill material and used to reduce the total trench depth.*

Sec. 14. *"Commercial system" means an individual sewage disposal system that serves one or more buildings which are not used as single-family dwellings. The term includes, without limitation,*

an individual sewage disposal system serving offices, watchmen's quarters, bunkhouses, labor camps, parking facilities for recreational vehicles, factories, multiple-dwelling structures, hotels and shopping centers.

Sec. 15. *"Domestic sewage" means liquid and water-borne waste that is derived from the ordinary living process and is of such character as to permit its satisfactory disposal into a public sewer without special treatment or into a private sewage disposal system. The term does not include industrial waste.*

Sec. 16. *"Dry well" means a covered excavation in the ground which receives the discharge of clear rain water, surface water or ground water collected in a footing or drain.*

Sec. 17. *"Effluent" means partially or completely treated sewage that flows out of a septic tank or an alternative treatment system.*

Sec. 18. *"Elevated mound system" means a soil absorption system that is elevated above the natural soil surface with a suitable fill material.*

Sec. 19. *"Engineer" means a person who is licensed by the state board of professional engineers and land surveyors to practice professional engineering.*

Sec. 20. *"Graywater" means untreated household wastewater that has not come into contact with toilet waste. The term includes, without limitation, used water from bathtubs, showers and bathroom wash basins, and water from machines for washing clothes and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.*

Sec. 21. *"Holding tank" means a watertight, covered receptacle that is designed and constructed to:*

1. Receive the discharge of sewage from a building sewer; and

2. Store that sewage until the sewage is removed by a septic tank pumping contractor.

Sec. 22. *"Impervious soil" means a layer of earth that demonstrates a percolation rate which is greater than 120 minutes per inch.*

Sec. 23. *"Irrigation ditch" means a channel that is used to supply water to land used for ranching or farming. The term does not include a channel that contributes to a water course.*

Sec. 24. *"Lot" means a single or individual parcel of land that is legally recorded and upon which a disposal system or other project subject to the provisions of NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation is located.*

Sec. 25. *"Multiple-dwelling structure" means one or more structures located on one lot which have separate units that are used as living quarters. The term includes, without limitation, a duplex, a triplex, a condominium and an apartment building.*

Sec. 26. *"Nitrate removal wastewater treatment unit" means a system that receives sewage and, through biological denitrification, chemical reduction or ion exchange, reduces the nitrate level of the effluent to less than 10 milligrams per liter, measured as total nitrogen.*

Sec. 27. *"Nonsewered toilet" means a toilet that is not connected to a sewage disposal system. The term includes, without limitation, a free standing portable toilet and a recreational vehicle and trailer equipped with holding tanks.*

Sec. 28. *"Percolation rate" means the relatively constant rate, calculated in minutes per inch, at which clear water maintained at a constant depth will seep out of a standard-size test hole that has been previously saturated.*

Sec. 29. *"Percolation test" means a procedure to measure the percolation rate.*

Sec. 30. *"Potable water" means water that is satisfactory for drinking, culinary and other domestic purposes and which meets the applicable requirements of the health authority relating to potable water.*

Sec. 31. *"Pressure distribution system" means a system of pipes that uses a pump, or a siphon if sufficient elevation head is available, to distribute effluent equally to a disposal field where the volume of effluent to be delivered to the disposal field is greater than the volume of the distribution piping.*

Sec. 32. *1. "Primary treatment unit" means a system or receptacle that is designed and constructed to:*

(a) Receive the discharge of sewage from a building sewer;

(b) Partially or completely treat the sewage; and

(c) Discharge effluent for final disposal.

2. The term includes, without limitation, a septic tank, an aerobic wastewater treatment unit, a nitrate removal wastewater treatment unit and any other alternative treatment system.

Sec. 33. *"Residential system" means an individual sewage disposal system that serves a single-family dwelling.*

Sec. 34. *"Single-family dwelling" means one or more buildings, including detached accessory structures, that are designed and used as a home by the occupants of the buildings and which are served by an individual sewage disposal system.*

Sec. 35. *"Special event" means a public gathering that is temporary and held for a specific purpose, and which:*

1. Includes, as part of the event, the preparation and serving of food by a food establishment or a temporary food establishment, as those terms are defined in NRS 446.020 and 446.067, respectively; or

2. Due to the nature of the event, requires that restroom facilities be provided.

Sec. 36. *"Water course" means the bed or channel of a water way. The term includes, without limitation, a river, creek, pond or lake, but does not include an irrigation ditch or drainage channel which experiences intermittent flow from storms or runoff from melting snow.*

Sec. 37. *"Water table" means the level in saturated soil at which the hydraulic pressure is zero.*

Sec. 38. *The following provisions and publications are hereby adopted by reference:*

1. Standards 40, 41 and 46 of the National Sanitation Foundation International. These standards are available by mail from the National Sanitation Foundation International, 3475 Plymouth Road, Ann Arbor, Michigan 48105, or by telephone at (800) 673-6275. The prices are $70 for Standard 40, $70 for Standard 41 and $60 for Standard 46.

2. Standard Specifications for Public Works Construction, 1996 edition, as sponsored and distributed by the Regional Transportation Commission of Washoe County, Washoe County, the City of Sparks, the City of Reno, Carson City and the City of Yerington. This publication is available by mail from the Regional Transportation Commission of Washoe County, 2050 Villanova Drive, Reno, Nevada 89502, or by telephone at (775) 348-0400, at a price of $35.

3. The Uniform Plumbing Code, 1997 edition, as adopted by the International Association of Plumbing and Mechanical Officials. This publication is available by mail from the International Association of Plumbing and Mechanical Officials, 20001 Walnut Drive South, Walnut, California 91789-2825, or by telephone at (909) 595-8449, at a price of $45.45, plus $2.05 for shipping and handling.

4. The Design Manual for Onsite Wastewater Treatment and Disposal Systems, which is published by the Environmental Protection Agency (reference document number PB83-219907). This document is available by mail from the National Technical Information Service, 5285 Port

Royal Road, Springfield, Virginia 22161, or by telephone at (800) 553-6847, at a price of $81.50, plus $5 for shipping and handling.

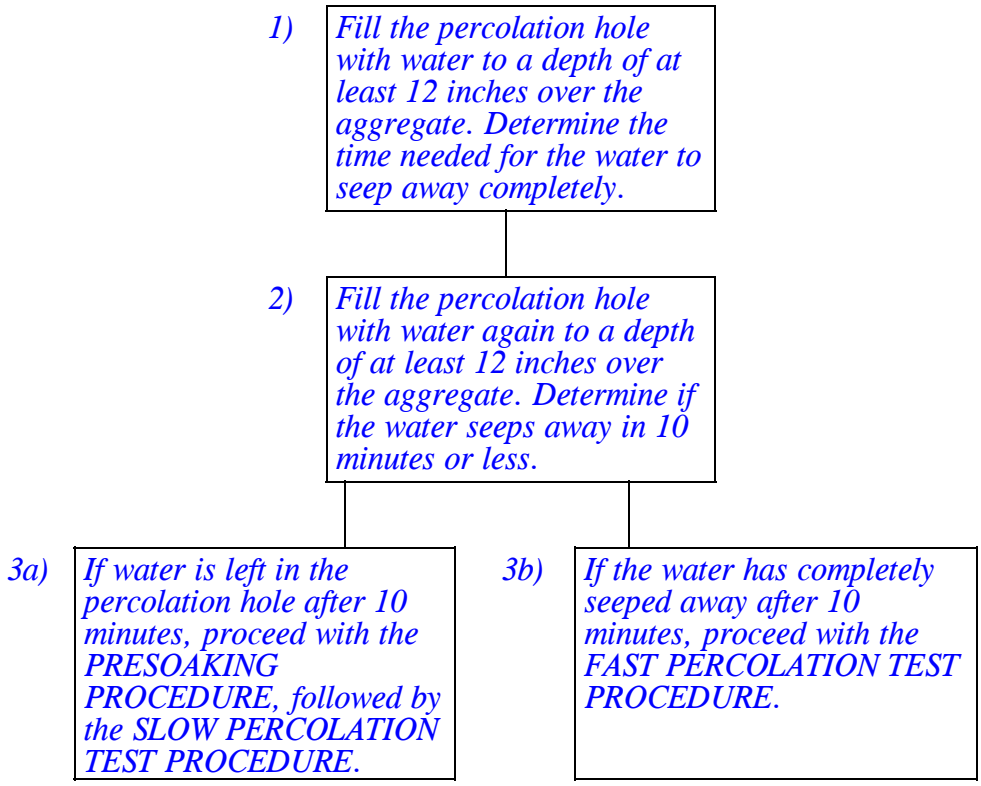
Sec. 39. *Except as otherwise provided in this section, the health authority may grant a special exemption from any provision of NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation, to an owner of an individual sewage disposal system if the special exemption:*

1. Is justified by an engineer;

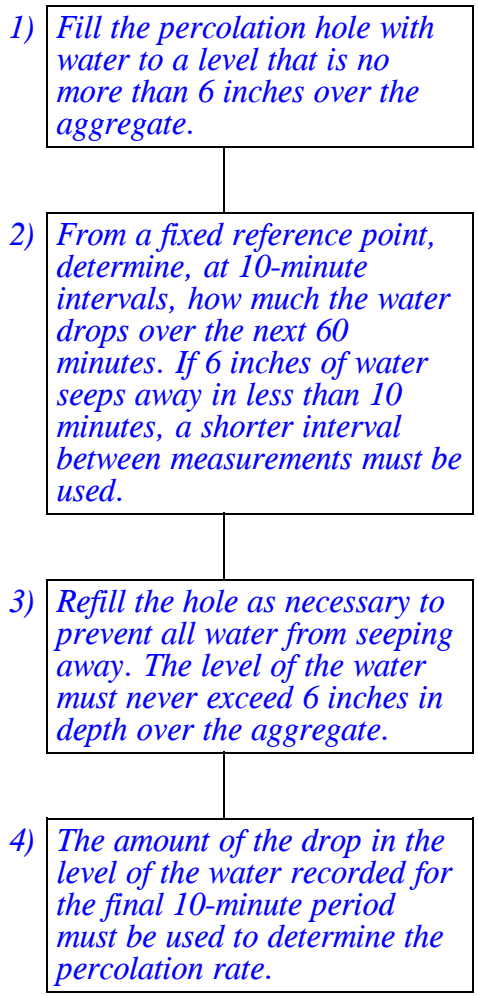
2. Involves an advance in technology, improvement in materials, or alternative method of construction or operation that, in the opinion of the health authority, will not be detrimental to the public health; and

3. Does not conflict with the provisions of subsection 1 of NAC 444.778 and paragraphs (a) to (d), inclusive, of subsection 2 of NAC 444.778.

Sec. 40. *In conducting a percolation test, the following flow chart must be used to determine which test procedure to follow:*

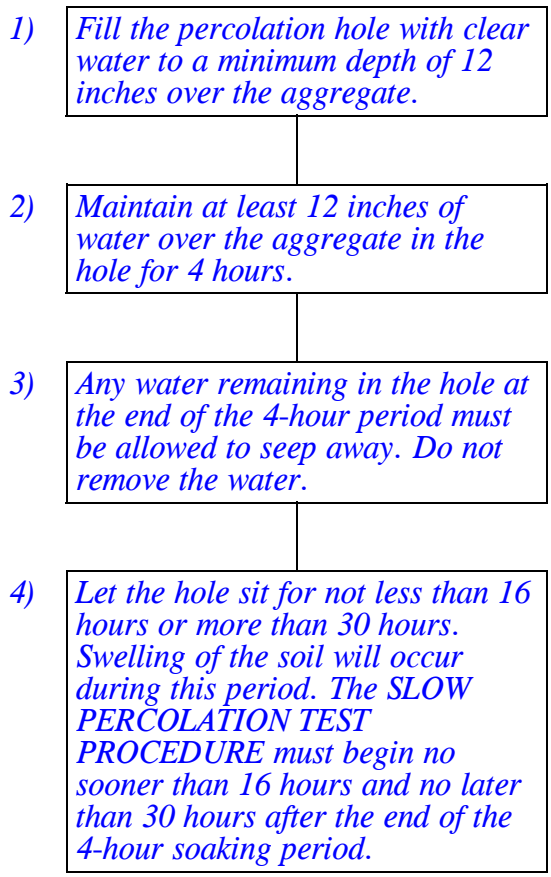


Sec. 41. *The following flow chart illustrates the fast percolation test procedure:*

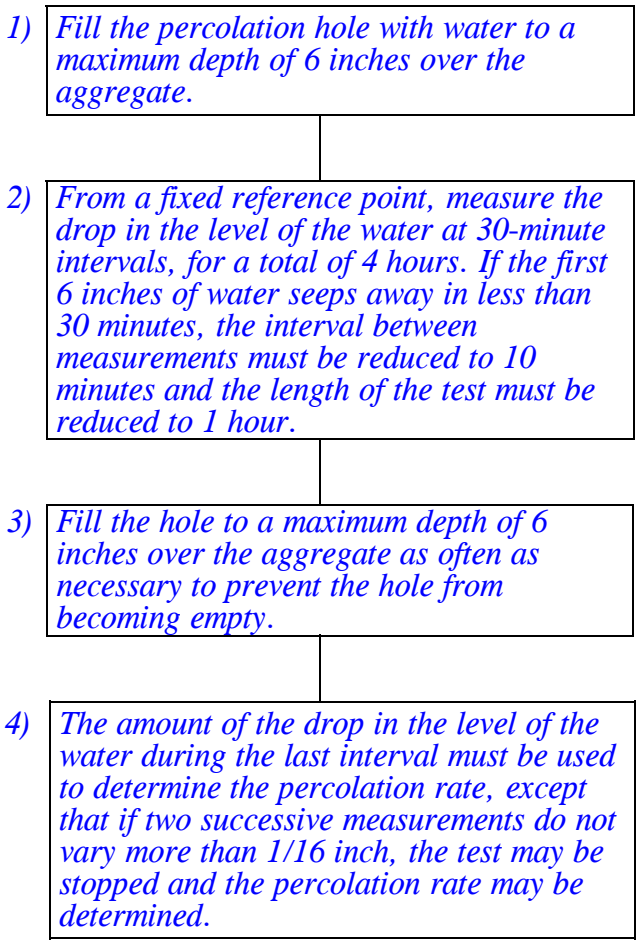


NOTE: *The minimum time in which a fast percolation test may be completed is 1 hour. The level of the water must never exceed 6 inches over the aggregate during a fast percolation test.*

Sec. 42. *The following flow chart illustrates the presoaking procedure for a slow percolation test:*



Sec. 43. *The following flow chart illustrates the slow percolation test procedure:*



Sec. 44. *The following is a sample form for a percolation test:*

Hole #_____	***Percolation Rate: _____ Minutes/Inch***			
Depth From Native Ground Surface That Percolation Test Was Conducted:				
Presoak Start Time:		*Presoak End Time:*		
Number of Hours That Soil Was Presoaked:				
Notes:				
TIME	*DEPTH TO WATER*	*INTERVAL*	*DROP OF WATER IN INCHES*	*MIN/INCH*

NOTE: TWO PERCOLATION TESTS ARE REQUIRED FOR EACH ABSORPTION AREA. THE LAST READING IS TO BE USED TO DETERMINE THE PERCOLATION RATE.

Sec. 45. *The following is a sample log for the profile of the soil:*

PROJECT	
TEST SPECIFICATIONS	
TECHNICIAN	*DATE*

DEPTH IN FEET	***DESCRIPTION OF SOIL***

TEST PIT INFORMATION REQUIRED:

DEPTH TO WATER	
SEASONAL HIGH GROUND WATER	
WAS BEDROCK ENCOUNTERED?	

IF SO, DEPTH TO BEDROCK	
TOTAL DEPTH OF TEST PIT	

NOTE: A MINIMUM OF TWO TEST PITS MUST BE EXCAVATED AND THE DATE OF THOSE TESTS MUST BE LOGGED. THE SOIL PROFILE FROM THE TEST PITS AND THE PERCOLATION RESULTS MUST BE INCLUDED AS PART OF THE PLANS SUBMITTED FOR REVIEW. A SOIL PROFILE TO A DEPTH THAT IS AT LEAST 5 FEET BELOW THE BOTTOM OF THE ABSORPTION TRENCH MUST BE PROVIDED IN THE APPROPRIATE SPACE IN THE LOG FOR THE PROFILE OF THE SOIL.

Sec. 46. *1. A septic tank pumping contractor shall keep a record of each removal and disposal of solid or liquid waste by the septic tank pumping contractor. The record must include:*

(a) The type of solid or liquid waste that was removed;

(b) The number of the license plate of the vehicle that removed the waste;

(c) The name of the employee who removed the waste;

(d) The date, time and location of the removal of the waste;

(e) The date, time and location of the disposal of the waste; and

(f) If the waste was disposed of at a waste disposal site, a receipt from the operating authority of the waste disposal site.

2. The septic tank pumping contractor shall keep a record of each cleaning by the septic tank pumping contractor of the interior of the portable receptacle or the tank of a vehicle that is used to remove or dispose of solid or liquid waste. The record must include:

(a) The name of the employee who cleaned the portable receptacle or tank; and

(b) The date, time and location of the cleaning of the portable receptacle or tank.

3. The septic tank pumping contractor shall, in each vehicle used by the septic tank pumping contractor to remove or dispose of solid or liquid waste, keep daily records of:

(a) The removal and disposal of solid or liquid waste by the vehicle; and

(b) The interior cleaning of the portable receptacle or the tank of the vehicle.

4. On or after the last day of the month in which the daily records required by subsection 3 were made, the septic tank pumping contractor may transfer the daily records from the vehicle to the location where the other records required by this section are retained.

5. A septic tank pumping contractor shall retain the records required by this section for at least 3 years after the date on which the solid or liquid waste was removed and disposed of or on which the interior of the portable receptacle or the tank was cleaned, as appropriate.

6. Upon the request of the health authority, the septic tank pumping contractor shall make the records required by this section available to the health authority.

Sec. 47. *1. A permit issued by the health authority to a septic tank pumping contractor must contain:*

(a) The name, business address and mailing address of the person to whom the permit is issued; and

(b) The number of the license plate of each vehicle and the number of tanks that are authorized for use by the septic tank pumping contractor to remove and dispose of the solid and liquid contents of septic tanks, holding tanks, grease traps, grease interceptors, portable toilets, or other sewage treatment or disposal facilities. The vehicles and tanks listed on the permit must be specifically identified in the application for the permit filed pursuant to NAC 444.820.

2. A permit is valid only for the person to whom it is issued, and for the vehicles and tanks described in the application and listed on the permit. A permit is not transferable.

Sec. 48. *A holder of a permit to operate as a septic tank pumping contractor must amend the permit pursuant to NAC 444.820 before he may:*

1. Use a vehicle or tank which is not listed on the permit to remove and dispose of the solid and liquid contents of septic tanks, holding tanks, grease traps, grease interceptors, portable toilets, or other sewage treatment or disposal facilities; or

2. Discharge solid or liquid waste at a location which was not listed on the application for the permit.

Sec. 49. *A permit to operate as a septic tank pumping contractor is valid for 1 year after the date of issuance. To renew a permit, the holder of the permit must submit a completed application for renewal to the health authority not less than 45 days before the date on which the permit expires. The health authority may require an inspection of the vehicles and tanks to be listed on the permit to ensure that the vehicles and tanks comply with the requirements of NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation. The health authority shall not schedule such an inspection until after the health authority has received a completed application and the appropriate fees from the applicant for the renewal of the permit.*

Sec. 50. *1. The operator of a special event shall provide toilet facilities at the special event for:*

(a) Persons who are working at the special event; and

(b) Patrons attending the special event.

2. Toilet facilities that are provided for a special event may include nonsewered toilets.

3. Toilet facilities that are provided for a special event must be kept clean and in good repair. An adequate supply of toilet tissue must be provided for each toilet at all times.

4. The operator of a special event shall provide facilities for the washing of hands for persons who prepare food at the special event.

5. The operator of a special event shall determine the number of toilet facilities required for the special event based on the following table:

NUMBER OF TOILET FACILITIES REQUIRED										
EXPECTED PEAK HOURLY ATTENDANCE AT THE EVENT	*EXPECTED AVERAGE NUMBER OF HOURS SPENT AT THE EVENT PER PERSON*									
	0-1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10 or more*

1-500	*2*	*4*	*4*	*5*	*6*	*7*	*9*	*9*	*10*	*12*
501-1,000	*4*	*6*	*8*	*8*	*9*	*9*	*11*	*12*	*13*	*13*
1,001-2,000	*5*	*6*	*9*	*12*	*14*	*16*	*18*	*20*	*23*	*25*
2,001-3,000	*6*	*9*	*12*	*16*	*20*	*24*	*26*	*30*	*34*	*38*
3,001-4,000	*8*	*13*	*16*	*22*	*25*	*30*	*35*	*40*	*45*	*50*
4,001-5,000	*12*	*15*	*20*	*25*	*31*	*38*	*44*	*50*	*56*	*63*
5,001-10,000	*15*	*25*	*38*	*50*	*63*	*75*	*88*	*100*	*113*	*125*
10,001-15,000	*20*	*38*	*56*	*75*	*94*	*113*	*131*	*150*	*169*	*188*
15,001-20,000	*25*	*50*	*75*	*100*	*125*	*150*	*175*	*200*	*225*	*250*

6. Upon the request of the operator of a special event, the health authority shall review the number of toilet facilities to be provided for the special event to determine whether the number of toilet facilities that will be provided for the special event is sufficient.

Sec. 51. *1. Before a person may operate a service to provide nonsewered toilets, the person must obtain a permit pursuant to this section and NAC 444.820 and 444.828. A nonsewered toilet must not be used for the permanent disposal of sewage.*

2. The health authority may, at any time, inspect the area in which the nonsewered toilets are stored and cleaned to ensure that the requirements relating to cleaning and disposal are met.

3. The person operating a service to provide nonsewered toilets shall provide an area suitable for the storage and maintenance of all equipment utilized in the operation. The area must be maintained in a neat and clean condition at all times.

4. If a nonsewered toilet is removed from service, the toilet must be thoroughly cleaned by steam, pressurized hot water or other means approved by the health authority before the toilet may

be placed back into service. Water that is used to clean a nonsewered toilet must be disposed of in an approved sewage disposal system or sewage treatment facility.

5. The holding tank of a nonsewered toilet must be empty of all material while the toilet is being transported unless the toilet is designed to transport material in its holding tank and is permanently affixed to a trailer or other mobile structure.

6. A nonsewered toilet must be constructed of smooth, durable, nonabsorbent material which is easy to clean. The interior of the nonsewered toilet must be light in color and capable of withstanding repeated cleaning.

7. A nonsewered toilet must be designed to prevent the entry of rodents and insects. All vent and window openings to the outside must be covered with metal or plastic mosquito screening. The door must be self-closing. A vent or window must be provided for light.

8. The holding tank for a nonsewered toilet must be:

(a) Enclosed within the structure of the nonsewered toilet;

(b) Properly vented;

(c) Watertight;

(d) Maintained in good repair; and

(e) Accessible for cleaning and maintenance.

9. The toilet seat of a nonsewered toilet must be:

(a) Made of a smooth, impervious material; and

(b) Installed so that it can be easily cleaned or replaced.

10. While a nonsewered toilet is in service, the interior of the toilet must be cleaned at least once every 7 days and more often as needed to maintain the toilet in a clean and odor-free condition.

11. An adequate supply of toilet paper must be provided for a nonsewered toilet at all times when the toilet is in service.

12. A structure for a nonsewered toilet must be clearly and legibly marked with the name and telephone number of the operator of the service that provided the toilet.

13. The health authority may exempt a nonsewered toilet that is especially designed for use in a high-rise construction project from any provision of this section.

Sec. 52. *1. All liquid waste and wastewater must be discharged into a septic tank or other approved primary treatment unit. Graywater may be discharged separately in accordance with sections 78 and 79 of this regulation. Water from a roof or footing, water from garage and surface drainage, and processed water must be prevented from entering an individual sewage disposal system.*

2. A primary treatment unit must be of sufficient size to provide adequate treatment during a period of maximum inflow.

3. A primary treatment unit must be accessible. If the top of the primary treatment unit is more than 18 inches below the surface of the ground, a manhole extension that is at least 24 inches in diameter and extends from the top of the unit to within 18 inches of the surface of the ground must be used for each access into the unit.

4. To prevent differential settling, a primary treatment unit must be placed on undisturbed soil, or on at least 4 inches of sand overlying a firm and uniform base.

5. An alternative treatment system, other than those described in sections 59 to 64, inclusive, of this regulation, may be used if approved by the health authority. An alternative treatment system must have a minimum capacity that is equal to the required minimum capacity of the appropriate septic tank as calculated pursuant to sections 54 to 58, inclusive, of this regulation.

Sec. 53. *1. The plans for an individual sewage disposal system designed for commercial use which has a capacity of less than 5,000 gallons per day must be submitted for review to the health authority for the county in which the proposed system will be located. If the capacity of the system is 5,000 gallons or more per day, the plans for the system must be submitted for review to the division of environmental protection of the state department of conservation and natural resources.*

2. An individual sewage disposal system that is or will be used as a commercial system must be designed by an engineer.

3. Except as otherwise provided in NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation, an individual sewage disposal system with design flow capacities of less than 5,000 gallons per day must meet all of the minimum setback requirements and design criteria specified in NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation.

Sec. 54. *A septic tank that is used as a primary treatment unit or in conjunction with an alternative treatment system must meet the requirements of NAC 444.804 to 444.810, inclusive.*

Sec. 55. *1. The minimum capacity for a septic tank that serves a single-family dwelling is based on the number of bedrooms in the dwelling, and is determined as follows:*

Number of Bedrooms	*Minimum Liquid Capacity of Tank (in Gallons)*
3 or less	*1,000*
4	*1,200*
5 or 6	*1,500*

If the single-family dwelling has more than six bedrooms, 150 gallons for each additional bedroom must be added to 1,500 gallons.

2. An absorption system designed for a septic tank may be based on the minimum required size for the septic tank.

Sec. 56. *1. The minimum capacity of a septic tank that is used to serve a multiple-dwelling structure must be calculated based on the number of units in the structure, in accordance with the following table:*

Number of Units Within the Multiple-dwelling Structure	*Minimum Septic Tank Capacity (in Gallons)*
2	*1,200*
3	*1,500*
4	*2,000*
5	*2,250*
6	*2,500*
7	*2,750*
8	*3,000*
9	*3,250*
10	*3,500*

2. If there are more than 10 units in a multiple-dwelling structure, 250 gallons for each such additional unit must be added to the minimum capacity determined pursuant to subsection 1.

3. Each unit in a multiple-dwelling structure shall be deemed to contain one bedroom. If there are more than 10 bedrooms in a multiple-dwelling structure, excluding the number of bedrooms deemed to be contained in the units that compose the structure, 150 gallons for each such additional bedroom must be added to the minimum capacity determined pursuant to subsection 1.

Sec. 57. *1. The minimum capacity of a septic tank that is used to serve a hotel or motel must be calculated based on the estimated flow of sewage from the hotel or motel, which shall be deemed to be 60 gallons per day for each bed within the hotel or motel that is a double bed or larger in size. If the total estimated flow of sewage from the hotel or motel:*

(a) Is 1,500 gallons or less per day, the minimum capacity of the septic tank is equal to the total estimated flow times 1.5.

(b) Is more than 1,500 gallons per day, the minimum capacity of the septic tank is equal to the total estimated flow times 0.75, plus 1,125 gallons.

2. For the purposes of this section, two twin beds shall be deemed to be equivalent in size to one double bed.

Sec. 58. *1. The minimum capacity of a septic tank that is used to serve a commercial structure which is not otherwise covered by section 56 or 57 of this regulation must be:*

(a) Calculated based on the estimated flow of sewage from the commercial structure, in accordance with the table set forth in subsection 2; and

(b) Calculated based on the number of fixture units in the commercial structure that will be served by the septic tank, in accordance with the table set forth in subsection 3.

The calculation that produces the greater septic tank capacity must be used to design the individual sewage disposal system for the commercial structure.

2. To determine the estimated flow of sewage from the commercial structure pursuant to paragraph (a) of subsection 1:

(a) Examine the following table and determine the occupancy or occupancies that most closely correlate to the intended occupancy of the commercial structure:

TYPE OF OCCUPANCY	*ESTIMATED FLOW OF SEWAGE (GALLONS PER DAY)*
Airports	*15 per employee and 5 per customer*
Automobile washes	*5 per passenger vehicle*
Bowling alleys	*75 per lane*

Camps:	
Campground with central comfort station	*35 per person*
With flush toilets, no showers	*25 per person*
Day camps (no meals served)	*15 per person*
Summer and seasonal	*50 per person*
Churches:	
Sanctuary only	*5 per seat*
With kitchen facilities	*7 per seat*
Dance halls	*5 per person*
Factories:	
With showers	*35 per employee*
Without showers	*25 per employee*
With cafeteria facilities	*Add 5 per employee*
Hospitals	*250 per bed*
With kitchen facilities	*Add 25 per bed*
With laundry facilities	*Add 40 per bed*
Institutions (Residential):	
General	*75 per person*
Nursing homes	*125 per person*
Rest homes	*125 per person*
Laundries:	
Self-service (open a minimum of 10 hours per day)	*50 per wash cycle*
Commercial	*Per manufacturer's specifications*
Mobile home parks	*250 per space*
Offices	*20 per employee*
Picnic parks (with toilets only)	*20 per parking space*
Recreational vehicles:	
With water hookups	*100 per space*

Without water hookups	*75 per space*
Restaurants and cafeterias	*20 per employee*
With toilets	*Add 7 per customer*
With cocktail lounge	*Add 2 per meal served*
With garbage disposal	*Add 1 per meal served*
With kitchen waste	*Add 6 per meal served*
With kitchen waste, disposable service	*Add 2 per meal served*
Schools:	
Teaching staff and other employees	*20 per person*
Kindergarten or elementary school	*15 per pupil*
Junior high school, middle school or high school	*20 per pupil*
With gym and showers	*Add 5 per pupil*
With cafeteria	*Add 3 per pupil*
Boarding school (including all waste)	*100 per person*
Service stations:	
With toilets	*1,000 for first bay*
Each additional bay	*Add 500*
Stores:	
Staff	*20 per employee*
With public restroom	*1 per 10 square feet of floor space*
Swimming pools (public)	*10 per person*
Theaters and auditoriums:	
Indoor	*5 per seat*
Drive-in	*10 per space*

(b) If the estimated flow of sewage for the intended occupancy is 1,500 gallons or less per day, the minimum required capacity of the septic tank is equal to the estimated flow times 1.5.

(c) If the estimated flow of sewage for the intended occupancy is more than 1,500 gallons per day, the minimum required capacity of the septic tank is equal to the estimated flow times 0.75, plus 1,125 gallons.

3. To determine the number of fixture units in the commercial structure that will be served by the septic tank pursuant to paragraph (b) of subsection 1:

(a) Examine the following table and, for each type of fixture to be served by the septic tank, determine the number of such fixtures to be used and multiply that number by its corresponding number of fixture units.

TYPE OF FIXTURE	*FIXTURE UNITS*
Bathtub	*2*
Bidet	*2*
Dental unit or cuspidor	*1*
Drinking fountain	*1*
Floor drain	*2*
Interceptor:	
For items such as grease, oil or solids	*3*
For items such as sand or waste from automobile washes	*6*
Laundry tub	*2*
Machine for washing clothes	*2*
Receptor:	
Indirect waste receptor for items such as refrigerators, coffee urns or water stations	*1*
Indirect waste receptor for items such as commercial sinks, dishwashers or air washers	*3*
Shower, single stall	*2*

Sink:	
Bar, private (1 1/2 in or 38.1 mm minimum waste)	*1*
Bar, commercial (2 in or 50.8 mm minimum waste)	*2*
Commercial, industrial or school, including dishwashers, wash-up sinks, and wash-up fountains (2 in or 50.8 mm minimum waste)	*3*
Flushing rim, clinic	*6*
Residential, with or without dishwasher (2 in or 50.8 mm minimum waste)	*2*
Service	*3*
Mobile home park trap (one for each trailer)	*6*
Urinal, pedestal, trap arm only	*6*
Urinal, stall, separate trap	*2*
Urinals, wall mounted (2 in or 50.8 mm minimum waste), washout, separate trap	*2*
Urinal, wall mounted, washdown or siphon jet, integral trap, trap arm only	*2*
Urinal, wall mounted, blowout, integral trap, trap army only	*6*
Wash basin (lavatory) single	*1*
Wash basin, in sets	*2*
Water closet, public installation, trap arm only	*6*

(b) Add together the numbers calculated pursuant to paragraph (a) for each type of fixture. The sum represents the maximum number of fixture units that will be served by the septic tank. Based on that number, determine the minimum required capacity of the septic tank pursuant to the following table:

MAXIMUM NUMBER OF FIXTURE UNITS SERVED	*SEPTIC TANK CAPACITY (GALLONS)*
20	*1,000*
25	*1,200*
33	*1,500*
45	*2,000*
55	*2,250*
60	*2,500*
70	*2,750*
80	*3,000*
90	*3,250*
100	*3,500*

(c) If there are more than 100 fixture units, 25 gallons must be added to the minimum required capacity of the septic tank for each such additional fixture unit.

Sec. 59. *1. An aerobic wastewater treatment unit requires routine maintenance. The owner of an individual sewage disposal system that will include an aerobic wastewater treatment unit shall include in the design plans submitted to the administrative authority a maintenance agreement with a service provider that covers the anticipated life span of the individual sewage disposal system.*

2. The maintenance agreement for the individual sewage disposal system must include, without limitation, a yearly inspection of the system, and the components thereof, which verifies that the system is:

(a) Functioning correctly; and

(b) Producing effluent which has levels of total suspended solids and biological oxygen demand that are each 30 milligrams or less per liter.

3. An aerobic wastewater treatment unit that produces effluent with a level of total suspended solids or biological oxygen demand that is more than 30 milligrams per liter must be repaired or replaced in accordance with this section and sections 60 and 61 of this regulation before the unit may be used.

4. If the administrative authority determines that the degradation of ground water or the constraints of the site warrant the need for an effluent which is of higher quality than that which would be provided by a septic tank, the administrative authority may require that the individual sewage disposal system include an aerobic wastewater treatment unit. If the administrative authority requires the use of an aerobic wastewater treatment unit pursuant to this subsection, the owner shall not construct or install on that site an individual sewage disposal system that does not include an aerobic wastewater treatment unit.

5. If the administrative authority requires the use of an aerobic wastewater treatment unit pursuant to subsection 4, the owner shall, in addition to submitting the design plans for the individual sewage disposal system to the administrative authority, apply to the administrative authority for an annual permit to operate the aerobic wastewater treatment unit. A permit for an aerobic wastewater treatment unit is valid for 1 year after the date of issuance. The owner shall include with the completed application for a permit or the renewal of a permit:

(a) The required fee for the permit; and

(b) A copy of a current maintenance agreement for the individual sewage disposal system and the aerobic wastewater treatment unit.

6. The administrative authority shall issue or renew, as appropriate, a permit for an aerobic wastewater treatment unit:

(a) If the required fee has been paid;

(b) If there is a current maintenance agreement with a service provider for the individual sewage disposal system that includes the aerobic wastewater treatment unit; and

(c) If the individual sewage disposal system:

(1) Has not been used, the system has been otherwise approved and inspected by the administrative authority; or

(2) Is in use, the owner submits a report by the service provider for the individual sewage disposal system which states that the service provider has inspected the system at least once during the previous 12 months, the system is functioning correctly, and neither the level of total suspended solids nor the level of biological oxygen demand has exceeded 30 milligrams per liter.

7. A person who elects to use an aerobic wastewater treatment unit that is not otherwise required by the administrative authority pursuant to this section is exempt from the requirements for an annual permit set forth in subsections 5 and 6.

Sec. 60. *1. An aerobic wastewater treatment unit must be approved by:*

(a) The National Sanitation Foundation International pursuant to its Standard 40;

(b) Any other equivalent nationally recognized testing laboratory approved by the health authority; or

(c) The health authority.

2. The owner of an individual sewage disposal system that includes an aerobic wastewater treatment unit shall include with the application for review of the system by the administrative authority:

(a) Evidence that the unit has been approved pursuant to subsection 1; or

(b) The procedures used to test the unit.

3. The use of an individual sewage disposal system that includes an aerobic wastewater treatment unit must be consistent with the approved design application and intended use for such a system.

4. An aerobic wastewater treatment unit must conform with all applicable provisions of the Nevada Administrative Code and is subject to any other requirements for design that are determined necessary by the administrative authority.

5. An administrative authority may authorize a reduction in the size of the absorption area if the administrative authority requires the use of an aerobic wastewater treatment unit pursuant to subsection 4 of section 59 of this regulation. Any reduction in the size of the absorption area must be justified by an engineer based on the conditions of the soil and constraints of the site. No direct surface discharge is permitted.

6. Except in those cases where an aerobic wastewater treatment unit is required pursuant to subsection 4 of section 59 of this regulation, an aerobic wastewater treatment unit must not be used where electrical service is unreliable, dependable maintenance is not available, or intermittent use of the aerobic wastewater treatment unit will adversely effect the functioning of the individual sewage disposal system.

7. The design plans for an aerobic wastewater treatment unit must include a schematic detailing a 24-hour operating alarm system for the aerobic wastewater treatment unit.

8. A manual for the operation and maintenance of an aerobic wastewater treatment unit must be submitted to the administrative authority with the design plans. The administrative authority shall

not approve an aerobic wastewater treatment unit if an operation and maintenance manual has not been submitted with the design plans and approved by the administrative authority.

Sec. 61. *1. The construction of an aerobic wastewater treatment unit must be inspected and verified by an engineer or, if the unit is designed by a homeowner as part of a residential system for his home, the homeowner. The inspections must be conducted when:*

(a) The absorption trenches have been excavated or, if an elevated mound system is to be used, when the basal area of the mound has been scarified;

(b) The distribution piping has been placed in the aggregate;

(c) The system has been covered with soil; and

(d) All the pumps, switches, alarms, aeration units and other components associated with the individual sewage disposal system have been installed. The engineer or homeowner, as appropriate, shall verify that the operational liquid levels are set as specified by the design plans.

2. For a residential system designed by a homeowner that includes an aerobic wastewater treatment unit:

(a) The homeowner shall contact the administrative authority for an inspection of the system; and

(b) The administrative authority shall inspect the construction of the system,

before the covering is placed on the system, to ensure that the system complies with the approved plans.

3. If an individual sewage disposal system that includes an aerobic wastewater treatment unit is designed by an engineer, the engineer shall, within 30 days after the date on which the construction of the system is completed, submit a letter to the administrative authority stating that the system was constructed in accordance with the approved plans.

Sec. 62. *1. A nitrate removal wastewater treatment unit requires routine maintenance. The owner of an individual sewage disposal system that will include a nitrate removal wastewater treatment unit shall include in the design plans submitted to the administrative authority a maintenance agreement with a service provider that covers the anticipated life span of the individual sewage disposal system.*

2. The maintenance agreement for the individual sewage disposal system must include, without limitation, a yearly inspection of the system, and the components thereof, which verifies that the system is:

(a) Functioning correctly; and

(b) Producing effluent which has nitrate levels that are 10 milligram or less per liter, measured as total nitrogen.

3. A nitrate removal wastewater treatment unit that produces effluent with a level of nitrate that is more than 10 milligrams per liter, measured as total nitrogen, must be repaired or replaced in accordance with this section and sections 63 and 64 of this regulation before the unit may be used.

4. If the administrative authority determines that the degradation of ground water or the constraints of the site warrant the need for an effluent which is of higher quality than that which would be provided by a septic tank, the administrative authority may require that the individual sewage disposal system include a nitrate removal wastewater treatment unit. If the administrative authority requires the use of a nitrate removal wastewater treatment unit pursuant to this subsection, the owner shall not construct or install on that site an individual sewage disposal system that does not include a nitrate removal wastewater treatment unit.

5. If the administrative authority requires the use of a nitrate removal wastewater treatment unit pursuant to subsection 4, the owner shall, in addition to submitting the design plans for the

individual sewage disposal system to the administrative authority, apply to the administrative authority for an annual permit to operate the nitrate removal wastewater treatment unit. A permit for a nitrate removal wastewater treatment unit is valid for 1 year after the date of issuance. The owner shall include with the completed application for a permit or the renewal of a permit:

(a) The required fee for the permit; and

(b) A copy of a current maintenance agreement for the individual sewage disposal system and the nitrate removal wastewater treatment unit.

6. The administrative authority shall issue or renew, as appropriate, a permit for a nitrate removal wastewater treatment unit:

(a) If the required fee has been paid;

(b) If there is a current maintenance agreement with a service provider for the individual sewage disposal system that includes the nitrate removal wastewater treatment unit; and

(c) If the individual sewage disposal system:

(1) Has not been used, the system has been otherwise approved and inspected by the administrative authority; or

(2) Is in use, the owner submits a report by the service provider for the individual sewage disposal system which states that the system has been inspected at least once during the previous 12 months, the system is functioning correctly and the nitrate level is 10 milligrams or less per liter.

7. A person who elects to use a nitrate removal wastewater treatment unit that is not otherwise required by the administrative authority pursuant to this section is exempt from the requirements for an annual permit set forth in subsections 5 and 6.

Sec. 63. *1. A nitrate removal wastewater treatment unit must be approved by:*

(a) The National Sanitation Foundation International pursuant to its Standard 40;

(b) Any other equivalent nationally recognized testing laboratory approved by the health authority; or

(c) The health authority.

2. The owner of an individual sewage disposal system that includes a nitrate removal wastewater treatment unit shall include with the application for the review of the system by the administrative authority:

(a) Evidence that the unit has been approved pursuant to subsection 1; or

(b) The procedures used to test the unit.

3. The use of an individual sewage disposal system that includes a nitrate removal wastewater treatment unit must be consistent with the approved design application and intended use for such a system.

4. A nitrate removal wastewater treatment unit must conform with all applicable provisions of the Nevada Administrative Code and is subject to any other requirements for design that are determined necessary by the administrative authority.

5. An administrative authority may authorize a reduction in the size of the absorption area if the administrative authority requires the use of a nitrate removal wastewater treatment unit pursuant to subsection 4 of section 62 of this regulation. Any reduction in the size of the absorption area must be justified by an engineer based on the conditions of the soil and constraints of the site. No direct surface discharge is permitted.

6. Except in those cases where a nitrate removal wastewater treatment unit is required pursuant to subsection 4 of section 62 of this regulation, a nitrate removal wastewater treatment unit must not be used where electrical service is unreliable, dependable maintenance is not available, or

intermittent use of the nitrate removal wastewater treatment unit will adversely effect the functioning of the individual sewage disposal system.

7. The design plans for a nitrate removal wastewater treatment unit must include a schematic detailing a 24-hour operating alarm system for the nitrate removal wastewater treatment unit.

8. A manual for the operation and maintenance of a nitrate removal wastewater treatment unit must be submitted to the administrative authority with the design plans. The administrative authority shall not approve a nitrate removal wastewater treatment unit if an operation and maintenance manual has not been submitted with the design plans and approved by the administrative authority.

Sec. 64. *1. The construction of a nitrate removal wastewater treatment unit must be inspected and verified by an engineer or, if the unit is designed by a homeowner as part of a residential system for his home, the homeowner. The inspections must be conducted when:*

(a) The absorption trenches have been excavated or, if an elevated mound system is to be used, when the basal area of the mound has been scarified;

(b) The distribution piping has been placed in the aggregate;

(c) The system has been covered with soil; and

(d) All the pumps, switches, alarms, aeration units and other components associated with the individual sewage disposal system have been installed. The engineer or homeowner, as appropriate, shall verify that the operational liquid levels are set as specified by the design plans.

2. For a residential system designed by a homeowner that includes a nitrate removal wastewater treatment unit:

(a) The homeowner shall contact the administrative authority for an inspection of the system; and

(b) The administrative authority shall inspect the construction of the system,

before the covering is placed on the system, to ensure that the system complies with the approved plans.

3. If an individual sewage disposal system that includes a nitrate removal wastewater treatment unit is designed by an engineer, the engineer shall, within 30 days after the date on which the construction of the system is completed, submit a letter to the administrative authority stating that the system was constructed in accordance with the approved plans.

Sec. 65. *1. A dosing tank must be used if:*

(a) It is necessary to raise the elevation of the wastewater for further treatment or disposal of sewage;

(b) Intermittent dosing of the disposal field is desired;

(c) A pressure distribution system is used; or

(d) More than 500 lineal feet of absorption trench is required for the individual sewage disposal system.

2. An individual sewage disposal system which proposes, or is required, to use a dosing tank must be designed by an engineer.

Sec. 66. *1. A dosing tank must have sufficient volume to provide for the volume desired for dosing and a reserve volume. The reserve volume, which is equal to the volume of the tank between the alarm switch for high levels of effluent and the bottom of the invert of the inlet pipe, must be of sufficient size to allow the owner of the system to respond to a high-level alarm before the level of effluent in the dosing tank reaches the invert of the inlet pipe.*

2. If an electric pump is used in a dosing tank:

(a) The size of the pump must be determined according to the performance curves provided by the manufacturer, the flow rate needed and the size of the pumping head as calculated by an

engineer. The engineer shall calculate the size of the pumping head by adding the difference in elevation between the highest elevation of the discharge pipe and the level for low effluent in the dosing chamber to the friction losses incurred in the discharge pipe. The engineer may make the calculations pursuant to this paragraph without considering velocity head.

(b) The control system for the dosing tank must include a switch to turn on the pump, a switch to turn off the pump and an alarm switch for high levels of effluent. The alarm switch must emit a visual and audible alarm and must be placed not less than 2 inches or more than 3 inches above the switch that turns off the pump to alert the owner that there is a high level of effluent or malfunction of the pump that will likely cause a high level of effluent. The alarm switch must be on a circuit that is separate from the circuit for the switches which turn the pump on and off. A switch used in a pumping chamber must be able to withstand the humid and corrosive atmosphere inside the tank. The owner shall include in the design plans an information sheet provided by the manufacturer for each pump, switch and alarm to be used in the dosing tank.

(c) All electrical contacts and relays must be mounted on the outside of the dosing tank to protect the contacts and relays from corrosion. The owner of the individual sewage disposal system shall take such actions as are necessary to prevent sewer gases from traveling through the electrical conduit into the control box.

3. The following is a diagram of a typical dosing tank with pump:

4. A siphon may be used in a dosing tank in lieu of an electric pump if the point of discharge is at a lower elevation than the elevation of the primary treatment unit. The size of the siphon must be determined by the average flow rate desired. The drawing depth, which is the distance from the bottom of the siphon bell to the high water level that is necessary to activate the siphon, must be determined by the manufacturer of the siphon. The volume of the dosing tank may be determined by adding the drawing depth to the length and width of the dosing tank. The following is a diagram of a typical dosing tank with a siphon:

5. A dosing tank must be vented. The vent must be located as far away from the electrical control box as practical, but in no case may the vent be closer than 3 feet from the electrical control box.

6. The frequency of dosing varies depending on the texture of the soil at the interface of the sand and native soil at the base of the mound as follows:

SOIL TEXTURE	*DOSING FREQUENCY*
Sand	*4 doses per day*
Sandy Loam	*1-2 doses per day*
Silty Clay Loam	*1 dose per day*

7. The dosing volume must be of sufficient capacity to distribute effluent evenly to all parts of the distribution system. The dosing volume must be approximately 10 times the volume of the distribution piping in a pressure distribution system and not less than 60 percent or more than 75 percent of the volume of the distribution piping for a system which does not use a pressure distribution system.

Sec. 67. *1. Except where a pressure distribution system is used, a distribution box must be used in an absorption system if more than one distribution line is used.*

2. A distribution box must be watertight and constructed of a durable material that is resistant to corrosion, including, without limitation, concrete, polyethylene, fiberglass, or any other material approved by the health authority. The distribution box must have a cover that is made of the same material as the distribution box.

3. Each distribution line must be separately connected to the distribution box. The inverts of the outlet lines must be set at the same level above the bottom of the box. The inverts of the inlet must be at least 1 inch higher than the inverts of the outlet. A distribution box must be designed to ensure equal flow and must be installed on:

(a) Aggregate;

(b) A level concrete slab which is at least 6 inches in depth and which extends 6 inches or more beyond the perimeter of the distribution box; or

(c) Undisturbed soil.

4. The number of outlets of a distribution box must be equal to or greater than the number of distribution lines to be used.

5. The following is a diagram of a distribution box:

Sec. 68. *1. The effluent from a septic tank or other primary treatment unit must be disposed of through a soil absorption trench or through an absorption system approved by the administrative authority.*

2. The size and type of the absorption area required for the disposal of the effluent must be determined according to the results of the percolation testing and the requirements for the sizing of the appropriate septic tank, except that if the percolation testing yields a percolation rate of less than 10 minutes per inch, the percolation rate shall be deemed to be 10 minutes per inch.

3. Soils to be used in a soil absorption trench must have a percolation rate that is 120 inches per minute or less without interference from ground water or impervious strata below the level of the absorption system. At least two test pits must be excavated to determine a profile of the soil. The profile of the soil must be recorded in a log for the profile of the soil to a minimum depth of 5 feet below the bottom of the proposed absorption area. Impervious barriers, bedrock, fractures, open solution channels, clay, caliche or other limiting factors which may affect the effluent disposal area must be indicated in the log.

4. A soil absorption system intended for use on soils with percolation rates of less than 60 minutes per inch, or intended for commercial use, must be designed by an engineer.

5. The depth to the seasonal high ground water, as observed as the surface of free water or as indicated by mottling or historical documentation, must be indicated in the log for the profile of the soil.

6. Unless otherwise approved by the administrative authority, the owner of the absorption system shall maintain at least 4 feet between the bottom of the disposal trench or absorption area and the level of seasonal high ground water, impervious barriers or other limiting soil characteristics.

7. If the absorption trench will be placed in any soil which has a percolation rate of less than 2 minutes per inch, the administrative authority may, depending on the characteristics of the soil and site, require that:

(a) The trench be specially designed by an engineer; and

(b) The required setbacks from any well or water courses be increased.

8. Effluent from a tank for the treatment of wastewater must be disposed of through a solid watertight pipe that is at least 5 feet in length and placed immediately before the absorption system.

9. The tank for the treatment of wastewater and the soil absorption system must be separated by at least 5 feet, and the solid watertight pipe that connects the tank and the absorption system must be placed on undisturbed soil.

10. Distribution lines must be of equivalent length unless otherwise authorized by the administrative authority.

11. The slowest percolation rate generated by the percolation tests must be used to determine the required size of an absorption system.

12. An individual sewage disposal system must be designed to include a reserve absorption area which is equal in size to at least 100 percent of the primary required absorption area. The reserve absorption area must not be paved and is subject to the setback requirements for the primary absorption area. No vehicles may travel on the reserve absorption area.

Sec. 69. *1. An individual sewage disposal system utilizing absorption trenches may be used wherever practical except if limiting conditions such as high ground water, sloping terrain, impervious soil or bedrock exist at the site where the individual sewage disposal system is to be located.*

2. The design for an individual sewage disposal system utilizing absorption trenches must comply with the design criteria set forth in this section and sections 70 and 71 of this regulation.

3. A homeowner or a licensed contractor may design a residential system that uses absorption trenches for the residence of the homeowner if the percolation rate of the soils in which the residential system will be placed is 60 minutes per inch or greater and the site is free of the limiting conditions described in subsection 1.

4. The following is an example of the calculations required to design an individual sewage disposal system utilizing absorption trenches:

A homeowner plans to build a 4-bedroom house. Percolation testing yields percolation rates of 15 minutes per inch in test hole number one and 23 minutes per inch in test hole number two. To determine the required capacity of the wastewater treatment tank, the required number of square feet of disposal area, and the required number of lineal feet of absorption trench:

Step 1 - Pursuant to the table in subsection 1 of section 55 of this regulation, a septic or wastewater treatment tank that has a capacity of 1,200 gallons is required for a 4-bedroom house.

Step 2 - The slowest percolation rate, which is 23 minutes per inch, must be used to determine the design application rate. Pursuant to the table in subsection 9 of section 70 of this regulation, the design application rate is 1.0 gallon per square foot.

Step 3 - The required absorption area is calculated by dividing the capacity of the septic or wastewater treatment tank by the design application rate as follows:

1,200 gallons ② 1.0 gallon/square foot = 1,200 square feet

Step 4 - The effective sidewall area must be calculated by multiplying the number of feet of aggregate beneath the distribution line by 2, to utilize the absorption area on each side of the trench. For the purposes of this example, assume that a maximum of 4 square feet of the area of the sidewall will be utilized on each trench wall per each lineal foot as follows:

2 x 4 square feet = 8 square feet per each lineal foot of trench

Step 5 - The required trench length is now determined by dividing the required absorption area by the effective sidewall area as follows:

1,200 square feet ÷ 8 square feet/lineal foot = 150 lineal feet

Since the maximum length of a distribution line may not exceed 110 feet, a minimum of two trenches of equivalent lengths are required. Therefore, the use of two distribution lines that are 75 feet long with 4 feet of aggregate beneath the distribution lines would be acceptable.

Sec. 70. *1. The bottom of an absorption trench that is used in an individual sewage disposal system must be level and not less than 1 foot or more than 3 feet in width.*

2. Excavations for absorption trenches must be spaced apart at a distance that is equal to or greater than 4 feet plus 2 feet for each foot of depth which the trench is below the bottom of the distribution piping, as measured from the centerline of the trenches.

3. An individual lateral may not be more than 110 feet long.

4. An absorption trench must not be excavated if the soil is extremely wet. Surfaces in an absorption trench which are smeared or compacted must be scarified to the depth to which the soils are smeared or compacted, and all loose material must be removed.

5. Distribution lines must be perforated drain pipe made of polyvinylchloride, unless otherwise approved by the administrative authority. The bottom of the distribution lines must be laid not less

than 12 inches or more than 48 inches below the ground surface in continuous straight or curved lines with a slope of not less than 2 inches or more than 4 inches per 100 feet of pipe. Distribution lines must be equipped with end caps or vented to the surface at the end of the lines.

6. At least 12 inches of clean, graded aggregate ranging in size from 3/4 to 2 1/2 inches must be placed in the trench below the distribution line and the aggregate must extend at least 2 inches over the top of the distribution line.

7. If an absorption trench is more than 6 feet in depth below the finished grade, the aggregate must extend to not less than 12 inches below the ground surface to avoid an anaerobic condition in the trench.

8. The aggregate in an absorption trench must be covered with untreated building paper, straw, geotextile fabric, or a similar covering approved by the administrative authority, and the top of the trench must be overfilled with not less than 4 inches or more than 6 inches of soil.

9. The percolation rate of the soil must be used to determine the design application rate in accordance with the following table:

Percolation Rate (minutes/inch)	*Design Application Rate (gallons/square foot)*
0-10	*1.6*
11-15	*1.3*
16-20	*1.1*
21-25	*1.0*
26-30	*0.9*
31-40	*0.8*
41-50	*0.7*
51-60	*0.6*

If the percolation rate of the soil is greater than 60 minutes per inch, the system must be designed by an engineer.

10. The required capacity of the septic tank must be divided by the design application rate to calculate the minimum absorption area required.

11. The area of the absorption trench must be determined by calculating the size of the effective area of the sidewall needed beneath the distribution line. Not more than 4 feet of aggregate below the distribution line may be used to calculate the effective area of the sidewall, except that aggregate which is in excess of 4 feet below the distribution line may be used to calculate the effective area of the sidewall with the approval of the administrative authority. The required length of distribution line must be determined as follows:

The minimum size required for the absorption area (in square feet) divided by [2 times the depth of the aggregate below the distribution line (in feet)] = required length of distribution line (in feet)

12. The following is a diagram of an absorption trench:

Sec. 71. *1. If a residential system that is designed by a homeowner includes absorption trenches:*

(a) The homeowner shall contact the administrative authority for an inspection before covering the system; and

(b) The administrative authority shall inspect the construction of the system,

before the covering is placed on the system to ensure that the system complies with the approved plans.

2. If an individual sewage disposal system that includes absorption trenches is designed by an engineer, the engineer shall, within 30 days after the date on which the construction of the system is completed, submit a letter to the administrative authority stating that the system was constructed in accordance with the approved plans.

Sec. 72. *1. If the use of an absorption trench is not practical, an absorption bed may be used as a viable alternative to the standard disposal trench. The bottom of the absorption bed, rather than the area of the sidewall, must serve as the primary absorptive medium.*

2. A homeowner may design a residential system that uses an absorption bed for use at his residence.

Sec. 73. *1. The absorptive area of an absorption bed must be at least 50 percent larger than the calculated size that would be required for a standard absorption trench.*

2. The percolation rate of the soils at the bottom of the absorption bed must not be less than 60 minutes per inch.

3. The effective perimeter of the area of the sidewall beneath the distribution lines, or the depth of the aggregate, must not be less than 12 inches or more than 36 inches. The area of the sidewall

may be added to the bottom of the bed when calculating the size of the total absorptive area of the individual sewage disposal system.

4. An absorption bed must not be placed on a slope if the grade of the slope is greater than 8 percent. The bottom of the absorption bed must be level.

5. The invert of the piping for the drain field must be not less than 12 inches or more than 48 inches below the finished grade. The top of the absorption bed must be at least 6 inches below the surface line of the natural soil, and a capping fill must be placed on top of the absorption bed. The capping fill must extend at least 10 feet beyond the perimeter of the leaching area of the absorption bed and must be placed at a minimum depth of 12 inches above the finished grade to allow for settling.

6. An absorption bed must have at least two distribution lines which are separated by not less than 4 feet or more than 6 feet. The distribution lines must be level and placed not less than 3 feet or more than 6 feet from the sidewall of the bed. If a gravity discharge system is used, the distribution line must not be less than 4 inches in diameter. If a pressurized distribution line is used, the line must meet the design guidelines for a pressure distribution system as set forth in sections 90 and 91 of this regulation.

7. A distribution line must not be longer than 110 feet and must be placed on at least 12 inches of clean, graded aggregate ranging in size from 3/4 to 2 1/2 inches. At least 2 inches of aggregate must cover the top of the distribution line. Untreated building paper, straw, geotextile fabric, or any similar covering approved by the administrative authority, must cover the aggregate, and a backfill of soil must be placed over the covering.

8. The owner of an individual sewage disposal system shall take such precautions as are necessary to avoid compacting the bottom of the absorption bed. Any loose or smeared soil must be

raked and removed. No vehicles may travel on the area of the absorption bed after excavation is completed.

9. Dosing is required if more than 500 linear feet of distribution lines is required.

10. The following is a diagram of an absorption bed:

Sec. 74. *1. The construction of an individual sewage disposal system that includes an absorption bed must be inspected and verified by an engineer or, if the system is designed by a homeowner as part of a residential system for his home, the homeowner. The inspections must be conducted as follows:*

(a) Following excavation, the bottom of the absorption bed must be examined to ensure that there is no loose soil and that no smearing conditions exist; and

(b) Upon completion of the installation of the distribution lines in the absorption bed, the individual sewage disposal system must be inspected to ensure that the system complies with the approved design plans.

2. If a residential system that includes an absorption bed is designed by a homeowner:

(a) The homeowner shall contact the administrative authority for an inspection; and

(b) The administrative authority shall inspect the construction,

before the covering is placed on the system, to ensure that the system complies with the approved plans.

3. If an individual sewage disposal system is designed by an engineer, the engineer shall, within 30 days after the date on which construction of the system is completed, submit a letter to the administrative authority stating that the system was constructed in accordance with the approved plans.

Sec. 75. *1. A chamber system may be used in lieu of a standard absorption trench if the installation of an absorption trench is not practical. The bottom area of the chamber system, rather than the area of the sidewall, serves as the primary absorption medium.*

2. The manufacturer of a chamber system must apply to the health authority for approval of the chamber system. A chamber system must not be used as a component of an individual sewage

disposal system unless the health authority has reviewed and approved the use of the chamber system.

3. A homeowner may design a residential system for use at his residence that includes a chamber system.

Sec. 76. *1. The health authority shall provide a sizing chart for each chamber system which it approves. The sizing chart must list the number of chamber units required for a specific size of septic tank and percolation rate.*

2. The percolation rate of the soil on which the chamber system is placed must not be less than 60 minutes per inch.

3. The invert of the drain piping entering the first chamber of the system must be not less than 12 inches or more than 48 inches below the finished grade. The top of the chamber system must be at least 6 inches below the natural soil surface, and a capping fill must be placed over the top of the chamber system to allow for settling.

4. The absorption trenches for a chamber system must not be longer than 110 feet.

5. Excavations for absorption trenches for a chamber system must be spaced so that there is at least 6 feet between the trenches, as measured from the centerline of the trenches.

6. The bottom of the excavation for an absorption trench to be used in a chamber system must be level. The owner must take such precautions as are necessary to avoid compacting the bottom of the trench. Loose or smeared soil must be raked and removed. No vehicles may travel on the area of an absorption trench after the excavation of the trench.

7. Dosing is required if more than 500 linear feet of absorption trench is required.

8. If a chamber system is used in a conjunction with an absorption bed rather than an absorption trench, the chamber system and the absorption bed must comply with the requirements

relating to the sizing for absorption beds set forth in sections 72 and 73 of this regulation. The sizing chart provided by the health authority pursuant to this section must not be used to size an absorption bed in which a chamber system will be placed.

Sec. 77. *1. The construction of an individual sewage disposal system that uses a chamber system must be inspected and verified by an engineer or, if the unit is designed by a homeowner as part of a residential system for his home, the homeowner. The inspections must be conducted as follows:*

(a) Following excavation, the bottom of each absorption trench or the bottom of the absorption bed, as appropriate, must be inspected to ensure that there is no loose soil and that no smearing conditions exist; and

(b) Upon completion of the installation of the chambers in the absorption trenches or absorption bed, the individual sewage disposal system must be inspected to ensure that the chamber system and the trenches or bed, as appropriate, have been constructed and installed in accordance with the design plans.

2. If a residential system that includes a chamber system is designed by a homeowner:

(a) The homeowner shall contact the administrative authority for an inspection; and

(b) The administrative authority shall inspect the construction of the residential system, before the covering is placed on the system, to ensure that the system complies with the approved plans.

3. If an individual sewage disposal system is designed by an engineer, the engineer shall, within 30 days after the date on which the construction of the individual sewage disposal system is completed, submit a letter to the administrative authority stating the system was constructed in accordance with the approved plans.

Sec. 78. *1. Graywater may be used for underground irrigation if approved by the administrative authority. A homeowner must obtain a permit to construct, alter or install a system that uses graywater for underground irrigation from the administrative authority before such a system may be constructed, altered or installed.*

2. A system that uses graywater for underground irrigation:

(a) May be used only for a single-family dwelling.

(b) Must not be used in soils which have a percolation rate that is greater than 120 minutes per inch.

(c) Must consist of a three-way diversion valve, a holding tank for the graywater and an irrigation system.

(d) May be equipped with a pump or siphon, or may rely on gravity to cause the water to flow to the irrigation system.

(e) Must not be connected to a system for potable water.

(f) Must not result in the surfacing of any graywater.

3. A system that uses graywater for underground irrigation, or any part thereof, must not be located on a lot other than the lot which is the site of the single-family dwelling that discharges the graywater to be used in the system.

Sec. 79. *1. An application to construct, alter or install a system that uses graywater for underground irrigation must include:*

(a) Detailed plans of the system to be constructed, altered or installed;

(b) Detailed plans of the existing and proposed sewage disposal system; and

(c) Data from percolation tests conducted in accordance with NAC 444.796 and sections 40 to 43, inclusive, of this regulation.

2. A holding tank for graywater must:

(a) Be watertight and constructed of solid, durable materials that are not subject to excessive corrosion or decay.

(b) Have a minimum capacity of 50 gallons.

(c) Have an overflow and an emergency drain. The overflow and emergency drain must not be equipped with a shutoff valve.

3. A three-way diversion valve, emergency drain and overflow must be permanently connected to the building drain or building sewer and must be located upstream from any septic tanks. The required size of an individual sewage disposal system must not be reduced solely because a system that uses graywater for underground irrigation is being used in conjunction with the individual sewage disposal system.

4. The piping for a system that uses graywater for underground irrigation which discharges into the holding tank or is directly connected to the building sewer must be downstream of any vented trap to protect the building from possible sewer gases.

5. The estimated discharge of a system that uses graywater for underground irrigation must calculated based on the number of bedrooms in the building, as follows:

(a) For the first bedroom, the estimated discharge of graywater is 80 gallons per day; and

(b) For each additional bedroom, the estimated discharge of graywater is 40 gallons per day.

6. The absorption area for an irrigation system that includes a system that uses graywater for underground irrigation must be calculated in accordance with the following table:

Percolation Rate (minutes per inch)	*Minimum Square Feet Per 100 Gallons Discharged Per Day*
0-20	*20*

21-40	*40*
41-60	*60*

7. The following is a diagram of a system that uses graywater for underground irrigation:

Sec. 80. *1. If an individual sewage disposal system that uses absorption trenches pursuant to sections 69, 70 and 71 of this regulation cannot be used because of limiting conditions, including, without limitation, the existence of high ground water, a highly permeable stratum, sloping terrain, bedrock, or a layer of semi-impervious soil with a percolation rate that is less than 60 minutes per inch, the health authority may approve the use of an alternative absorption system if the alternative absorption system is designed and inspected during construction by an engineer.*

2. Except as otherwise required by design modifications approved by the health authority, an alternative absorption system must comply with the regulations which pertain to a standard disposal trench.

3. A connecting fixture used in an alternative absorption system must be a low-flow fixture designed for an individual sewage disposal system that is used where the percolation rates are greater than 60 minutes per inch. Each such fixture must be specifically identified by the engineer on the design plans for the alternative absorption system.

4. An engineer who is designing an alternative absorption system must consult the Design Manual for Onsite Wastewater Treatment and Disposal Systems which is published by the Environmental Protection Agency (reference document number PB83-219907), and contact the health authority for design parameters for the alternative absorption system before the engineer submits the design plans to the health authority.

Sec. 81. *1. On sloping terrain where a conventional individual sewage disposal system cannot be installed or is impractical, a stepped network of trenches utilizing relief lines between the trenches may be used.*

2. A stepped network of trenches utilizing relief lines must:

(a) Be designed by an engineer; and

(b) Allow the effluent from a completely filled trench to overflow into a trench at a lower elevation, as shown in subsection 5 of section 82 of this regulation.

Sec. 82. *1. The size of the required absorption area for a stepped network of trenches utilizing relief lines must be calculated based on percolation testing and must conform to the requirements for the sizing of a standard trench. Percolation testing must be conducted at the location of each stepped trench and the size of the required absorption area must be calculated based on the slowest percolation rate.*

2. The invert of the overflow section must be located not less than 1 inch or more than 2 inches above the top of the disposal trench distribution line. The leaching aggregate must extend at least 4 inches above the disposal distribution line, as shown in subsection 5.

3. To minimize the possibility that the slope will fail or that effluent will surface down slope, the design of the disposal field must comply with the slope requirements set forth in NAC 444.792.

4. Trenches for a stepped network of trenches utilizing relief lines must be spaced at least 10 feet apart.

5. The following is a diagram of a stepped network of trenches utilizing relief lines:

Sec. 83. *1. An engineer shall:*

(a) Inspect each trench of a stepped network of trenches utilizing relief lines before the trench is covered; and

(b) Verify that the elevation of each disposal line and invert for overflow conforms with the approved plans.

2. The engineer shall, within 30 days after the date on which the construction of the system is completed, submit a letter to the health authority stating that the system was constructed in accordance with the approved plans.

Sec. 84. *1. A capping fill trench may be used where conditions relating to high ground water preclude the installation of a standard absorption trench.*

2. A capping fill trench must be designed by an engineer.

Sec. 85. *1. The soil surrounding and beneath the bottom of a capping fill trench must have a percolation rate that is greater than 2 minutes per inch, but less than or equal to 120 minutes per inch. The required area of the absorption trench must be determined by calculating the size of the effective sidewall pursuant to subsection 11 of section 70 of this regulation.*

2. A minimum depth of 4 feet must be maintained between the bottom of the capping fill trench and the level of the seasonal high ground water, any impermeable barrier or any other limiting features.

3. A capping fill trench must not be installed on a slope that is greater than 10 percent.

4. The invert of the disposal drain pipe must be placed not more than 12 inches below the existing grade of the native soil. At least 2 inches of aggregate must be placed above the disposal drain pipe. Untreated building paper, straw, geotextile fabric, or any other similar covering

approved by the health authority, must be placed above the aggregate before the placement of the capping fill.

5. The absorption trenches must be constructed before the capping fill is constructed.

6. The capping fill must extend at least 10 feet beyond the sidewall of the absorption trench. The vegetative mat in the fill area must be disrupted by scarification or plowing. The owner of the system shall take such precautions as are necessary to prevent compaction of the scarified area. No vehicles may travel on the capping fill.

7. The native soil and the applied fill must be mixed at their point of interface. The soil to be used as fill must be of a texture similar to the native topsoil. The fill must be placed over the aggregate to a depth of not less than 12 inches or more than 18 inches.

8. The fill must be evenly graded to provide positive drainage away from the absorption trenches and toward the perimeter of the capping fill. The fill material must be placed in such a manner so as to prevent the compaction of the scarified soil at the interface of the native soil and fill. Plant vegetation must be established on the top of the fill to reduce the potential for the erosion of the capping fill.

9. A capping fill trench must not be used if the soil in which the capping fill is to be placed exhibits saturated conditions.

10. The following is a diagram of a capping fill trench:

Sec. 86. *1. An engineer shall inspect the construction of a capping fill:*

(a) Upon the completion of the installation of the distribution lines in the absorption trenches.

(b) When the fill area has been scarified. The engineer shall inspect the fill and native soils to ensure that they are not excessively moist and are of similar texture.

(c) When the capping fill has been placed:

(1) To ensure that there is an adequate interface of the fill and soils at the surface; and

(2) To verify the dimensions of the capping fill.

2. The engineer shall, within 30 days after the date on which the construction of the system is completed, submit a letter to the health authority stating the system was constructed in accordance with the approved plans.

Sec. 87. *1. An elevated mound system consists of:*

(a) A suitable fill material;

(b) An absorption area and distribution network; and

(c) A soil cap.

2. With an elevated mound system:

(a) The effluent must be gravity fed, pumped or siphoned into the absorption area and through a distribution network located in the upper part of the absorption bed made of coarse aggregate;

(b) The effluent must pass through the aggregate and infiltrate the fill material; and

(c) Treatment of the wastewater must occur as it passes through the fill material and the unsaturated zone of the natural soil.

3. An individual sewage disposal system that uses an elevated mound system must be designed by an engineer.

Sec. 88. *1. An elevated mound system must not be constructed on a slope that is:*

(a) Greater than 6 percent, if the soils comprising the slope have percolation rates that are less than or equal to 60 minutes per inch; or

(b) Greater than 12 percent, if the soils comprising the slope have percolation rates that are greater than 60 minutes per inch.

2. At least 4 feet of unsaturated soil or fill material, or any combination thereof, must be maintained between the top of the seasonal high ground water table or any impervious barrier such as bedrock. On sloping sites, the depth of unsaturated soil and fill material must be increased to maintain a level bed.

3. Percolation tests must be conducted at the depth anticipated by the engineer as being the point of interface of the native soil and sand fill, and at a depth of 20 inches below the surface of the native soil. The size of the required basal area of the elevated mound system must be based on the slowest percolation rate.

4. The fill material for the elevated mound system must meet the following criteria:

Sieve Size	*Percent by Weight Passing Sieve*
3/8 inch	*100*
No. 4	*95-100*
No. 8	*80-100*
No. 16	*45-85*
No. 30	*15-60*
No. 50	*3-15*
No. 100	*0-4*

5. Whenever practical, the bed for an elevated mound system must be a rectangular bed with a long axis that is parallel to the contour of the slope to minimize the possibility of seepage from the base of the elevated mound. If the natural soil has a percolation rate that is less than 60 minutes per inch, the bed must be made narrow and extend along the contour of the slope for as far as practical. The bed must be filled with at least 9 inches of clean, graded aggregate that ranges in size from 3/4 to 2 1/2 inches.

6. The basal area of an elevated mound system must be sufficiently large enough to absorb the wastewater before it reaches the perimeter of the elevated mound to avoid the surfacing of the effluent. The infiltration rates for determining the size of the basal area of an elevated mound system are as follows:

Percolation Rate (Minutes per	*Infiltration Rate (Gallons per*

Inch)	*day per Square Foot)*
0-30	*1.2*
31-45	*.75*
46-60	*.50*
61-120	*.25*

7. If the site on which an elevated mound system will be located is:

(a) Flat, the entire basal area, calculated as length multiplied by width, must be used to determine the area needed for the elevated mound system.

(b) Sloping, only the area below and down slope from the absorption bed, calculated as W x (A + I), must be used to determine the area needed for the elevated mound system, where:

(1) "W" equals the width of the absorption bed;

(2) "A" equals the length of the absorption bed; and

(3) "I" equals the required side slope of the elevated mound system as measured from the edge of the absorption bed to the perimeter of the mound in accordance with subsection 8.

8. The side slopes of the elevated mound system must extend in a horizontal to vertical ratio that is at least 3 to 1. The entire absorption bed must be covered with at least 1 foot of topsoil. The topsoil cap, which must be placed at the center of the mound, must maintain a minimum slope of 2 percent away from the crown. Untreated building paper, straw, geotextile fabric, or any similar covering approved by the health authority, must be placed over the aggregate in the absorption bed before the topsoil is placed.

9. At least one observation standpipe which extends down to the fill sand must be installed in the absorption bed.

10. The following is a diagram of an elevated mound:

Sec. 89. *1. The construction of an elevated mound system must be inspected and verified by an engineer when:*

(a) The basal area of the elevated mound has been scarified;

(b) The distribution lines have been placed in the aggregate absorption bed;

(c) The topsoil cap has been placed; and

(d) If a dosing system is used, when all the pumps, switches and alarms associated with the dosing system have been installed. The engineer shall verify that the operational liquid levels in the dosing tank are set as specified by the design plans.

2. The engineer must develop a manual for the operation and maintenance for the elevated mound system and submit the manual to the health authority for review before a permit or other type of approval authorizing occupancy may be issued.

3. The engineer shall, within 30 days after the date on which the project is completed, submit a letter to the health authority stating that the system was constructed in accordance with the approved plans.

Sec. 90. *1. A pressure distribution system may be used in conjunction with an elevated mound, absorption bed or absorption trench system.*

2. An individual sewage disposal system that uses a pressure distribution system must be designed by an engineer.

Sec. 91. *1. A pump must be used to pressurize a pressure distribution system. A siphon may be used in lieu of a pump if adequate elevation head is available. The active dosing volume must be approximately 10 times the total volume of the distribution pipe.*

2. A solid delivery pipe which goes from the dosing tank to the perforated distribution piping must be placed below the frost line. The delivery pipe must maintain a downward slope

from the distribution lines to the dosing tank to ensure that the line will drain between discharges. Check valves and other devices that prevent backflow through the pump must not be used, so that effluent may, when necessary, drain back to the dosing tank to protect the pipe from freezing.

3. To reduce the potential for plugging and clogging the distribution lines, the diameter of the discharge hole must be 3/8 inch or more. The rate of discharge for various sized holes at various pressures are set forth in the following table:

DISCHARGE RATES AT VARIOUS PRESSURES (gallons per minute)				
Pressure		*Hole Diameter*		
Per Foot of Water	*Per Square Inch*	*3/8 Inch*	*7/16 Inch*	*1/2 Inch*
1	*0.43*	*1.66*	*2.26*	*2.95*
2	*0.87*	*2.34*	*3.19*	*4.17*
3	*1.30*	*2.87*	*3.91*	*5.10*
4	*1.73*	*3.31*	*4.51*	*5.89*
5	*2.17*	*3.71*	*5.04*	*6.59*

4. Friction losses in schedule 40 plastic pipe are listed in the following table:

FRICTION LOSS IN SCHEDULE 40 PLASTIC PIPE; C = 150 (ft/100 ft)									
Flow in gallons per minute	*Pipe Diameter (inches)*								
	1	*1 1/4*	*1 1/2*	*2*	*3*	*4*	*6*	*8*	*10*
1	*0.07*								
2	*0.28*	*0.07*							
3	*0.60*	*0.16*	*0.07*						
4	*1.01*	*0.25*	*0.12*						
5	*1.52*	*0.39*	*0.18*						
6	*2.14*	*0.55*	*0.25*	*0.07*					
7	*2.89*	*0.76*	*0.36*	*0.10*					
8	*3.63*	*0.97*	*0.46*	*0.14*					
9	*4.57*	*1.21*	*0.58*	*0.17*					
10	*5.50*	*1.46*	*0.70*	*0.21*					
11		*1.77*	*0.84*	*0.25*					
12		*2.09*	*1.01*	*0.30*					
13		*2.42*	*1.17*	*0.35*					
14		*2.74*	*1.33*	*0.39*					
15		*3.06*	*1.45*	*0.44*	*0.07*				
16		*3.49*	*1.65*	*0.50*	*0.08*				

17		*3.93*	*1.86*	*0.56*	*0.09*				
18		*4.37*	*2.07*	*0.62*	*0.10*				
19		*4.81*	*2.28*	*0.68*	*0.11*				
20-24		*5.23*	*2.46*	*0.74*	*0.12*				
25-29			*3.75*	*1.10*	*0.16*				
30-34			*5.22*	*1.54*	*0.23*				
35-39				*2.05*	*0.30*	*0.07*			
40-44				*2.62*	*0.39*	*0.09*			
45-49				*3.27*	*0.48*	*0.12*			
50-59				*3.98*	*0.58*	*0.16*			
60-69					*0.81*	*0.21*			
70-79					*1.08*	*0.28*			
80-89					*1.38*	*0.37*			
90-99					*1.73*	*0.46*			
100-149					*2.09*	*0.55*	*0.07*		
150-199						*1.17*	*0.16*		
200-249							*0.28*	*0.07*	
250-299							*0.41*	*0.11*	
300-349							*0.58*	*0.16*	
350-399							*0.78*	*0.20*	*0.07*
400-449							*0.99*	*0.26*	*0.09*
450-499							*1.22*	*0.32*	*0.11*

500-599								*0.38*	*0.14*
600-699								*0.54*	*0.18*
700-799								*0.72*	*0.24*
800-899									*0.32*
900-999									*0.38*
1000 or more									*0.46*

5. Laterals must be spaced so that they are not less than 4 feet or more than 6 feet apart. The outside laterals must be placed at a distance from the perimeter of the bed that is equal to 1/2 of the distance between the laterals.

6. Distribution lines in the pressure distribution system must be looped.

7. The required lateral pipe diameters for various hole diameters, hole spacing, and lateral lengths for plastic pipe are shown in the following diagram:

8. Manifold diameters for various manifold lengths, number of laterals, and lateral discharge rates for plastic pipe are shown in the following diagram:

Sec. 92. NAC 444.750 is hereby amended to read as follows:

444.750 As used in NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* unless the context otherwise requires, the words and terms defined in NAC 444.754 to 444.776, inclusive, *and sections 2 to 37, inclusive, of this regulation,* have the meanings ascribed to them in those sections.

Sec. 93. NAC 444.754 is hereby amended to read as follows:

444.754 "Cesspool" means a **[**lined and**]** covered excavation in the ground which receives the discharge of domestic sewage or other organic wastes from a drainage system **[**so designed as**]** *which is designed* to retain the organic matter and solids **[**but**]** *while* permitting the liquids to seep through the bottom and sides.

Sec. 94. NAC 444.764 is hereby amended to read as follows:

444.764 Individual sewage disposal system" means a single system of sewage treatment tanks and effluent disposal facilities serving **[**only a single dwelling or other building.**]** *:*

1. A single-family dwelling; or

2. In the case of a commercial system, one or more buildings that are not used as single-family dwellings.

Sec. 95. NAC 444.770 is hereby amended to read as follows:

444.770 "Septic tank pumping contractor" means any person engaged in the operation of removing and disposing of the solid and liquid contents of septic tanks, holding tanks *, grease traps, grease interceptors, nonsewered toilets,* or other sewage treatment or disposal facilities.

Sec. 96. NAC 444.772 is hereby amended to read as follows:

444.772 Sewage" means a combination of the liquid or water-carried wastes *carried by pipes* from **[**residences, business buildings, institutions and industrial establishments, together with such ground water, surface water and storm water as may be present. Residential wastes include**]** *:*

1. Residences, including human excreta and liquid waste from kitchens **[**,**]** *and* water closets **[**, lavatories and laundries.**]** *;*

2. Business buildings;

3. Institutions; and

4. Industrial establishments.

Sec. 97. NAC 444.778 is hereby amended to read as follows:

444.778 1. The purpose of NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* is to protect the health of the individual family and the community and to prevent the occurrence of nuisances by safely disposing of all human and domestic wastes.

2. To accomplish satisfactory results, these wastes must be disposed of so that they will not:

(a) Contaminate any drinking water supply.

(b) **[**Give rise to**]** *Create* a public health hazard by being accessible to insects, rodents or other possible carriers which may come in contact with food or drinking water.

(c) **[**Give rise to**]** *Create* a nuisance due to odor or unsightly appearance.

(d) Contaminate any body of water.

(e) Violate laws or regulations governing sewage disposal.

Sec. 98. NAC 444.780 is hereby amended to read as follows:

444.780 If more than one interpretation exists for a provision of NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* the more restrictive interpretation must be followed.

Sec. 99. NAC 444.782 is hereby amended to read as follows:

444.782 If any of the provisions of NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* or any application thereof to any person, thing or circumstance is held invalid, it is intended that such invalidity not affect the remaining provisions, or their application, that can be given effect without the invalid provision or application.

Sec. 100. NAC 444.784 is hereby amended to read as follows:

444.784 1. Approval must be obtained from the **[**health**]** *administrative* authority to construct, alter or extend an individual sewage disposal system. This approval for new construction is required before any building permit **[**can**]** *may* be issued for any structure which requires an individual sewage disposal system.

2. The request for approval must include:

(a) **[**Name,**]** *The name,* address and current phone number of the applicant.

(b) **[**Lot and block number**]** *The legal description* of *the* property *, including the lot and block number, township, range, section and assessor's parcel number,* on which construction, alteration or extension is proposed.

(c) **[**The following items shall be shown on the plot plan (a sample plot plan is given in subsection 4):

(1) Plan's] *A plot plan.*

3. The plot plan must include:

(a) The title and date *of the plan* and [owner's signature.

(2) Location as to] *the signature of the owner or his representative.*

(b) A map of the area in which the individual sewage disposal system will be located that shows the location of the roads and streets.

[(3) Location]

(c) The location and distance to well and sewage systems on surrounding lots . [(if] *If the lots are* vacant, *the plot plan must* so indicate . [).

(4) Direction]

(d) The direction of north clearly indicated.

[(5)] *(e)* The distance within 500 feet to any watercourse [(] *indicated, including, without limitation, any* pond, lagoon or stream . [) indicated. If none,] *If there are no watercourses, the plot plan must* so indicate.

[(6)] *(f)* The location of [the] *each* percolation test hole and boring test hole . [must be shown on the plan.

(7) The well]

(g) The location and depth [,] *of each* proposed or actual [. Indicate] *well, including* the depth of casing or surface grout seal.

[(8) All septic tank components]

(h) Each component of the individual sewage disposal system, which must be properly marked and located at specified distances.

[(9)**]** *(i)* The distance to city sewers. If *there are* none, *the plot plan must* so indicate.

[(10) Distances**]**

(j) The distance of *each* well and soil absorption system to the property line.

[(11) Plans must be drawn to scale (1**]**

(k) The scale to which the plan is drawn, such as 1 inch = 30 feet, 40 feet, 50 feet, 60 feet, etc.**[**).

(12)**]** *(l)* The number of bedrooms in the **[**trailer or house.

(13)**]** *single-family dwelling or, if the request for approval is for a commercial system, the calculations used by the engineer to determine the minimum capacity of the commercial system.*

(m) The capacity of the septic tank.

[(14)**]** *(n)* The maximum slope across the absorption system area.

[(15) Lot dimensions.

(16) Depth and length of tile trenches and**]**

(o) The dimensions of the lot.

(p) The depth, length, width and spacing of *any absorption* trenches.

[(17) Water**]**

(q) The location of the water supply lines **[**and**]** *, building* sewer lines **[**indicated.

(18) Locate structures and**]** *and other underground utilities.*

(r) The location of the structures, paved areas **[**on plot plan.

(d)**]** *, driveways, trees and patios.*

(s) The location of the source of water to be used by the individual sewage disposal system, including, without limitation, a well or other source approved by the administrative authority.

(t) The location of the reserve absorption area, which must be of a size not less than the size of the primary absorption area.

4. Soil characteristics, depth to water table and bedrock, **[**and**]** percolation test results *and design specifications* must accompany the plot plan. **[**Sample percolation test results are given in subsection 5.

(e) Design specifications must accompany the plot plan. Sample calculations are given in subsection 6.

3. Permits**]**

5. A permit issued under NAC 444.750 to 444.828, inclusive, **[**must be considered as**]** *and sections 2 to 91, inclusive, of this regulation, is deemed to be* a temporary permit to operate an individual sewage disposal system. The operating permit is valid until:

(a) The *individual sewage* disposal system fails; or

(b) A community sewerage system is installed to service the area.

[4. Sample Plot.

5. Sample percolation test results.

Soil Composition

1 1/2″ Top soil

8″ Clay

2′ Gravelly clay

3′ Sandy loam

1 1/2′ Sand

Water below 7′

Test hole saturated - overnight

Depth of test hole - 42″

Test hole filled to - 34″ every 30-minute interval

Time	Interval	Depth to water	Inches drop
11:00	34.0		
11:30	30	39.3	5.3
11:30		34.0	
12:00	30	39.2	5.2
12:00		34.0	
12:30	30	39.2	5.2

Rate of fall

5.2 in. ÷ 30 min. = 1 in./5.8 min.

5.8 minutes per inch

6. Calculations.

Given: 3 Bedrooms

1,000 gallon septic tank

5.8 minutes per inch percolation rate

Using the equation from 14.2

$Q = 5 \div \sqrt{t}$ $\quad$ Q = Rate of sewage application

$= 5 \div \sqrt{5.8}$ $\quad$ t = Percolation rate

$= 2.08$ gallons/sq. ft./day

Septic tank capacity = 1,000 gallons

1,000 ÷ 2.08 = 480 sq. ft. of absorption area required

OR

Using the graph in subsection 4 of NAC 444.816 with a percolation rate of 5.8 minutes per inch, read to the curve for a 1,000 gallon septic tank which projects to give the required absorption area of 480 sq. ft.

Therefore, using a shallow trench 2 feet deep with 1 foot of trench side wall below the distribution pipe on each side of the trench,

480 sq. ft. - 2 ft. = 240 linear feet required

Proposed: 3 trenches 80 feet long = 240 feet**]**

6. For the purposes of this section, an individual sewage disposal system shall be deemed to have failed if:

(a) A condition or malfunction occurs in the individual sewage disposal system, or in the operation of the system, that threatens the public health by inadequately treating sewage or by

creating a potential for direct or indirect contact between sewage and the public, including, without limitation:

(1) Sewage on the ground;

(2) A backup of sewage into a structure that is caused by the slow soil absorption of effluent;

(3) Sewage leaking from a septic tank, dosing tank, holding tank or collection system; and

(4) Effluent contaminating the ground water or surface water; or

(b) The operator of the system fails to comply with the requirements of the permit issued to operate the system.

Sec. 101. NAC 444.786 is hereby amended to read as follows:

444.786 1. **[**The**]** *Except as otherwise provided in this subsection, an application for a* permit *for an individual sewage disposal system submitted to the health authority* must be denied in writing and the reasons specified therefor if:

(a) The health authority determines that the proposed installation will not comply with NAC 444.750 to 444.828, inclusive **[**; or**]** *, and sections 2 to 91, inclusive, of this regulation;*

(b) Public or community sewerage systems are available within 400 feet of the nearest property line **[**.

2. Any**]** *; or*

(c) The proposed individual sewage disposal system is within the service area of a sewer company which provides sewage services that are subject to the jurisdiction of the public utility commission of Nevada or any local governmental entity, including, without limitation, a general improvement district, that has jurisdiction over the sewer services in that geographical area. A permit may be granted by the health authority if the public utility commission of

Nevada or local governmental entity approves in writing the construction of the individual sewage disposal system within its service area or jurisdiction.

2. *A* person who has reason to believe that an action taken by the health **[**division**]** *authority* pursuant to NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* is incorrect or based on inadequate knowledge may, within 10 business days after receiving notice of the action, request an informal discussion with the employee responsible for the action and the immediate supervisor of the employee.

3. If the informal discussion does not resolve the problem, the aggrieved person may, within 10 business days after the date scheduled for the informal discussion, submit a written request to the bureau for an informal conference. The informal conference must be scheduled for a date, place and time mutually agreed upon by the aggrieved person and the bureau, except that the informal conference must be held no later than 60 days after the date on which the bureau received the written request.

4. Except as otherwise provided in subsection 5, the determination of the bureau resulting from the informal conference cannot be appealed and is the final remedy available to the aggrieved person.

5. An applicant for or holder of a permit issued pursuant to NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* who is aggrieved by an action of the health **[**division**]** *authority* relating to the denial of an application for *,* or the suspension or revocation of *,* such a permit may appeal that action in accordance with NAC 439.300 to 439.395, inclusive, after exhausting the informal procedures set forth in this section, except

that the bureau may waive the informal procedures, or any portion thereof, by giving written notice to the aggrieved person.

6. **[**Permits are null and void after**]** *A permit is void* 12 months **[**from**]** *after* the date of issuance if the proposed construction, alteration or extension of the *individual* sewage disposal system is not completed within **[**this time**]** *that* period. *Upon the request of the holder of the permit, an extension of the permit may be granted in increments of 1 year if the appropriate fees are paid and the proposed plans meet the requirements of NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation.*

7. As used in this section, "bureau" means the bureau of health protection services of the health division of the department of human resources or its successor.

Sec. 102. NAC 444.788 is hereby amended to read as follows:

444.788 1. Inspections may be required of the system materials and the trench **[**prior to filling**]** *before the trench is filled* with aggregate or rock. Inspections by the **[**health authority are required prior to covering of**]** *administrative authority may be required before* the sewer line, septic tank and soil absorption system **[**.**]** *may be covered. Inspections of alternative systems are required at intervals specified in NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation. If an engineer verifies that an individual sewage disposal system was constructed according to the plans approved by the administrative authority, the administrative authority may waive its inspection of the system.*

2. Until the *individual* sewage disposal system has passed inspection by the **[**health authority,**]** *administrative authority and a permit or other type of approval authorizing*

occupancy of the building has been issued, there must be no occupancy of the building and no permanent electrical power connection to the property.

3. **[**Inspections may**]** *In an area in which there is a local administrative authority, review of designs and inspections must* be performed by city, district or county building inspectors . **[**provided these inspectors have been certified by the health division. Building inspectors are not certified in those areas served by a local health department.**]**

Sec. 103. NAC 444.790 is hereby amended to read as follows:

444.790 1. A minimum area of 1 acre (43,560 square feet), including public streets and alleys or other public rights of way, lands or any portion thereof abutting on, running through or within a building site, is required for the installation of an individual sewage disposal system on a lot served by a well . **[**, except as provided by NAC 444.794.

2. A**]**

2. For a lot that is a part of a tentative map that is approved before January 1, 2000, a minimum area of 1/4 acre (10,890 square feet), including public streets or alleys or other public rights of way, lands or any portions thereof abutting on, running through or within a building site, is required *for the installation of an individual sewage disposal system* on a lot served by a community water supply . **[**, except as provided by NAC 444.794.**]**

3. *For a lot that is part of a tentative map that is approved on or after January 1, 2000, a minimum area of 1/2 acre (21,780 square feet), including public streets or alleys or other public rights of way, lands or any portions thereof abutting on, running through or within a building site, is required for the installation of an individual sewage disposal system on a lot served by a community water supply.*

4. Available pertinent land for construction of *a building or structure,* other than *a* single-family **[**dwellings**]** *dwelling,* must have a minimum net available area in the amount of 22 square feet per gallon of estimated *daily* sewage *capacity* as computed **[**from the fixture unit values established by the current issue of the Uniform Plumbing Code and each fixture unit must be rated at not less than 25 gallons per day.**]** *pursuant to sections 56, 57 and 58 of this regulation.* One-half of this pertinent land area must be available for sewage disposal.

Sec. 104. NAC 444.792 is hereby amended to read as follows:

444.792 1. **[**The septic tank must not be located within 8 feet of any building or structure.

2. The soil absorption system must not be located:

(a) Within 10 feet of any property line;

(b) Within 8 feet from a building or structure;

(c) Within 100 feet from any well or other source of water supply, stream or watercourse, or 150 feet of any spring or well not sealed the first 50 feet;

(d) Within 150 feet from any well or other sources of water supply if it is a deep system.

3. Location of individual sewage disposal systems:**]** *Except as otherwise provided in this section, an individual sewage disposal system must be located on the same lot as the building or structure that the system serves. The administrative authority may approve the use of a part of an abutting lot to provide additional space for an individual sewage disposal system or any part thereof, if the owner of the individual sewage disposal system can show:*

(a) Proper cause, including, without limitation, a legal right of the owner to use the abutting land as a result of a transfer of ownership of the abutting lot or an easement to use the abutting lot; and

(b) Use of the abutting lot for the individual sewage disposal system does not violate any other requirement of NAC 444.750 to 444.828, inclusive, and sections 2 to 91, inclusive, of this regulation.

2. The minimum horizontal separations that must be maintained between the perimeter of the components of an individual sewage disposal system and the following features are:

Minimum horizontal distance, in clear, required from	Building sewer drain	Septic tank	Disposal field (shallow)	[Disposal field (deep)]
Building or structure	[100′ (max.)] —	8′	8′	[20′]
Property lines	10′	10′	10′	[10′]
Water supply wells *(sealed to 50 feet)*	50′	100′	100′	[150′]
Water supply wells (not sealed to 50 feet)	*50'*	*100'*	*150' **	
Public water supply wells	*50'*	*150'*	*150' **	
Streams or watercourses	50′	100′	100′	[150′]
Drainage channels	*25'*	*25'*	*25'*	
Large trees or shrubs	—	10′	10′	[10′]
Disposal fields	—	5′	—	[—]
Community water main line	10′	10′	25′	[25′]

Individual water service line	**[**6′**]** *10'*	10′	25′	**[**25′**]**
Dry wells	—	6′	20′	**[**20′**]**

** The required distance between a well and the components of an individual sewage disposal system may be increased by the administrative authority depending on the depth to the water table, soil profile and site characteristics.*

[4. Lot plan:

]

Sec. 105. NAC 444.794 is hereby amended to read as follows:

444.794 1. [To take precautions to prevent slides or downhill surfacing of effluent, the minimum lot size must be increased in proportion to the slope of the lot.

2. Based upon the slope of the absorption system area, the following factors must be applied to increase the minimum required lot sizes:

Drainfield Area Slope Percent	Minimum Net Lot Size Factor for
Less than 5	1.0
5 to 10	1.25
10 to 20	1.5
Over 20	2.0

3.] For lots with slopes in excess of 20 percent , soil absorption trenches must , *at the level of the distribution pipe,* be a minimum of 20 feet horizontally from the face of the slope **[**,**]** or ground surface as *shown* in subsection **[**5.

4.**]** *4.*

2. Additional restrictions **[**must**]** *may* be imposed where conditions relating to percolation and slope so indicate.

[5.**]** *3. A stepped network of trenches utilizing relief lines which follows the contours of the slope may be used upon the approval of the health authority.*

4. Diagram of *a* slope:

Sec. 106. NAC 444.796 is hereby amended to read as follows:

444.796 1. **[**Percolation test data**]** *Data from percolation tests* from a minimum of two test holes in the area of the proposed soil absorption system is required. **[**Performance of these tests is the responsibility of the property owner:

(a)**]** *The property owner shall perform a percolation test in accordance with this section and sections 40 to 43, inclusive, of this regulation.*

2. The hole must be dug or bored to the proposed depth of the absorption trench. **[**It**]** *The hole* must have vertical sides and have a horizontal dimension of 4 to 12 inches.

[(b)**]** The bottom and sides of the hole must be carefully scratched with a sharp pointed instrument to expose the natural soil interface. All loose material must be removed from the bottom of the hole which must then be covered with 2 inches of coarse sand or gravel when necessary to prevent scouring.

[(c) For tests in sandy soils containing little or no clay, the hole must be carefully filled with clear water to a minimum depth of 12 inches over the gravel and the time for this amount of water to seep away must be determined. The procedure must be repeated and if the water from the second filling of the hole at least 12 inches above the gravel seeps away in 10 minutes or less, the test may proceed immediately as follows:

(1) Water must be added at a point not more than 6 inches above the gravel.

(2) Thereupon, from a fixed reference point, water levels must be measured at 10-minute intervals for a period of 1 hour.

(3) If 6 inches of water seeps away in less than 10 minutes a shorter interval between measurements must be used, but in no case may the water depth exceed 6 inches.

(4) The final water level drop must be used to calculate the percolation rate.

(5) Soils not meeting the above requirements must be tested as in subsection 2.

2. For other soils, the hole must be carefully filled with clear water and a minimum depth of 12 inches must be maintained above the gravel for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours must not be removed. The soil must be allowed to swell not less than 16 hours or more than 30 hours. Immediately following the soil swelling period, the percolation rate measurements must be made as follows:

(a) **]** Any soil which has sloughed into the hole *before or during the percolation test* must be removed .

[and water must be adjusted to 6 inches over the gravel.

(b) Thereupon, from a fixed reference point, the water level must be measured at 30-minute intervals for a period of 4 hours unless two successive water level drops do not vary more than 1/16 of an inch.

(c) The hole must be filled with clear water to a point not more than 6 inches above the gravel whenever it becomes nearly empty.

(d) Adjustments of the water level must not be made during the last three measurement periods except to the limits of the last measured water level drop.

(e) When the first 6 inches of water seeps away in less than 30 minutes, the time interval between measurements must be 10 minutes and the test run for 1 hour.

(f) The water depth must not exceed 6 inches at any time during the measurement period.

(g) The drop that occurs during the final measurement period must be used in calculating the percolation rate.

3. Depth to**]**

3. The health authority may require an engineer to verify data relating to the depth of the high ground water and bedrock, *or areas subject or susceptible to flooding, the* ground slope , and *the results of* percolation tests . **[**results are subject to an engineer's verification as required by the health authority.**]** Verification of maximum high ground water **[**must include, but is not limited to,**]** *includes, without limitation,* a morphological study of soil conditions with particular reference to soil color and sequence of horizons.

4. **[**Where**]** *If* the natural soil condition has been altered by filling or other attempts to improve wet areas, **[**verification**]** *the health authority* may require *the verification by the engineer to include* observation of high ground water levels under saturated soil conditions.

5. If the natural soil condition has been altered by filling or other attempts to improve the percolation rate of the soil, the health authority may require the verification by the engineer to include a determination of whether the fill material is suitable for an individual sewage disposal system.

Sec. 107. NAC 444.798 is hereby amended to read as follows:

444.798 1. An approved cleanout must be installed between the building drain and the building sewer line. *The cleanout must be located within 3 feet of the structure or, if the cleanout cannot be placed within 3 feet of the structure, as close as practicable to the structure. At least one additional cleanout must be placed for each 100-foot increment of sewer line and for each aggregate change in the direction of the sewer line in excess of 90 degrees.*

2. The *building* sewer **[**line**]** between the house and the septic tank must be approved pipe *made* of cast-iron, **[**vitrified-clay,**]** concrete, cement-asbestos or **[**plastic,**]** *polyvinylchloride* with watertight joints . **[**and on a slope of not less than 1/8 inch per foot for the 8 feet of line immediately preceding the septic tank and laid on undisturbed earth or well-compacted material.

2.

]

3. Except as otherwise provided in this section, the run of the building sewer, when practical, must be at a uniform slope of not less than 1/4 inch per foot from the building toward the point of disposal. If approved by the administrative authority, a building sewer which is:

(a) Not less than 4 inches or more than 6 inches in diameter may have a slope of not less than 1/8 inch per foot.

(b) Eight inches or more in diameter may have a slope of not less than 1/16 inch per foot.

4. A building sewer must be laid on undisturbed earth or well-compacted material. The top of the building sewer must be 12 inches or more below the final grade.

5. The following is a diagram of an individual sewage disposal system:

Sec. 108. NAC 444.804 is hereby amended to read as follows:

444.804 1. Plans for **[**all septic tanks**]** *a septic tank which have not been previously approved by the health authority* must be submitted to the health authority for approval. The plans must show all dimensions, reinforcing, structural calculations and *such* other pertinent data as may be required **[**. Independent laboratory tests and calibrations may be required on prefabricated septic tanks.

2. Septic tanks must be constructed of sound durable materials, not subject to excessive corrosion or decay and be watertight. Each tank must be structurally designed to withstand all anticipated earth or other loads and be installed level and on a solid bed.

3. Watertight materials must be used. Acceptable materials which are not subject to excessive corrosion are concrete, coated metal, vitrified clay, heavy weight concrete blocks or hard burned bricks. Other construction materials may be approved.

4. All septic tanks must conform to the design on the drawings and all buildings must be done under strict controlled supervision by the manufacturer. Any changes in design must be submitted to the health authority for approval.

5. Any**]** *pursuant to NAC 444.804 to 444.810, inclusive. A septic tank must be constructed of solid durable materials, and must not be subject to excessive corrosion or decay. Acceptable materials include concrete, coated steel, polyethelene and fiberglass and any other material approved by the health authority.*

2. A septic tank must have two compartments. The capacity of the inlet compartment must be not less than 2/3 of the total capacity of the tank. The inlet compartment must be at least 3 feet in width and 5 feet in length. The depth of the liquid in the inlet compartment must be not

less than 30 inches or more than 72 inches. The secondary compartment must have a minimum capacity of 300 gallons and a maximum capacity which is equal to 300 gallons or 1/3 of the total capacity of the septic tank, whichever is greater. If the septic tank has a total capacity of more than 1,500 gallons, the secondary compartment must be 5 feet or more in length.

3. Adequate access must be provided into each compartment to facilitate inspection and cleaning of the tank. Each compartment must have at least one manhole to provide access into the compartment. A manhole must have a minimum diameter of 20 inches. If the inlet compartment is longer than 12 feet, an additional manhole must be provided over the baffle or partition wall.

4. An inlet or outlet pipe must be at least 4 inches in diameter. The top of the tee or baffle for the vented inlet or the vented outlet must extend at least 4 inches above the water line. The bottom of the tee or baffle for the vented inlet or vented outlet must extend at least 12 inches below the water line. The invert of the inlet pipe must be at least 2 inches about the invert of the outlet pipe.

5. A manufactured septic tank **[**manufactured anywhere but in its permanent location,**]** must be permanently and legibly marked as to *the* manufacturer, total tank capacity, liquid capacity and general location of *the* manufacturing firm.

6. **[**Tanks must be so designed as to support an earth load of not less than 300 pounds per square foot or 4 feet of earth cover plus 200 pounds per square foot surcharge plus any other anticipated loads.

7. All concrete septic tanks must be protected from corrosion by coating the inside with an approved bituminous coating or by other acceptable means. The coating must extend to at least

4 inches below the water line and cover all of the internal area above that point.] *A partition or baffle between compartments must be made of solid, durable material, must extend at least 4 inches about the liquid level, and must be vented to allow for the free passage of gas between the compartments. A down-turned 90-degree inverted fitting, which is at least 4 inches in diameter, must be installed on the side of the baffle or partition for the inlet compartment. The inverted fitting must be set so that the bottom of the fitting is placed at a level that is equal to not less than 50 percent or more than 75 percent of the height of the liquid level in the tank. A baffle or partition may not be made of wood.*

7. A septic tank must be structurally designed to withstand all anticipated loads of dirt or other substances, must be installed so that the tank is level and must be installed on a solid bed. The cover of a septic tank must be capable of supporting a load of dirt of not less than 300 pounds per square foot.

8. All aggregates fine and coarse, other than lightweight aggregate, must conform to specifications outlined by [ASTM C-33. Lightweight aggregates, fine and coarse, must conform to the specifications outlined by ASTM C-330.] *the Standard Specifications for Public Works Construction adopted by reference pursuant to section 38 of this regulation.*

9. Aggregates must be free of deleterious substances [causing reactivity] *which may react* with oxidized hydrogen sulfide. [Both types of aggregate] *Aggregates* must be graded in *such* a manner *as* to produce a homogeneous concrete mix. All materials [are to] *must* be accurately weighed at a central batching facility for mixing.

10. All cement must be Portland cement conforming to [ASTM C-150 Type II.] *the Standard Specifications for Public Works Construction adopted by reference pursuant to*

section 38 of this regulation. Cement content must be sufficient to produce a minimum strength of 3,000 PSI, or other design strengths required.

11. All concrete must be handled from the mixer or transport vehicle to the place of final deposit in a continuous manner, as rapidly as practicable, and without segregation or loss of ingredients, until the approved **[**unit operation**]** *construction* is completed. Each pour must be compacted by mechanical internal or external-vibrating equipment. Duration of the vibration cycle must be limited to the time necessary to produce satisfactory consolidation without causing objectionable segregation.

12. All reinforcing steel, including welded wire mesh, must be of the size and in the location as shown on the plans. **[**All**]** *The* reinforcing *steel* must be sufficiently tied to withstand any displacement during the pouring operation. All bars must be *made of* intermediate or hard graded billet steel . **[**conforming to ASTM-315-grade 40. Bars must be deformed in accordance with ASTM A-305.

13. Inspection by the**]**

13. The health authority may **[**be required of**]** *inspect* the tank reinforcing steel before any concrete is poured.

14. **[**Back-filling, particularly around steel tanks, must be carefully done to prevent damage to the tank. Before back-filling, each septic tank must be adequately supported and may be required to be filled with water to determine that it is watertight. The tank must be level after setting.**]** *A septic tank must be watertight. A manufacturer of a septic tank shall test the tank for watertightness by one of the following methods:*

(a) Water testing by sealing the outlets, filling the septic tank to its operational level and allowing the tank to stand not less than 8 hours or more than 10 hours. If, after this period, there is a measurable loss of water, the tank must be refilled and allowed to stand for an additional 8 to 10 hours. If, after the second period, there is a measurable loss, the tank must be rejected. A septic tank may not be rejected solely because of the appearance of damp spots on the exterior of the tank. A tank that has been rejected must be repaired and tested before it may be used in an individual sewage disposal system.

(b) Vacuum testing by sealing all of the inlets, outlets and accesses and introducing a vacuum of 4 inches of mercury. If the vacuum drops during the first 5 minutes, the vacuum must be brought back up to 4 inches of mercury. If the septic tank fails to hold the vacuum at 4 inches of mercury during the second 5-minute period, the tank must be rejected. A tank that has been rejected must be repaired and tested before it may be used in an individual sewage disposal system.

(c) An alternative testing procedure approved by the health authority.

15. The health authority may require a manufacturer of a septic tank to demonstrate the watertight integrity of the septic tank.

16. A septic tank must meet the requirements set forth in the Uniform Plumbing Code for the construction of septic tanks.

17. The following is a diagram of a typical two-compartment septic tank:

Sec. 109. NAC 444.806 is hereby amended to read as follows:

444.806 For precast septic tanks:

1. All forms used in placing concrete must be smooth, *and* sufficiently designed and braced to maintain their alignment under *the* pressure of the concrete during placing.

2. Precast sections must be set evenly in a full bed of sealant. Excessively mortared joints must be trimmed flush. Sealants used between the joints are at the manufacturer's discretion, unless otherwise specified **[**.**]** *by the health authority*. If grout is used, it must consist of two parts **[**plaster**]** sand to one part cement with sufficient water added to make the grout flow under its own weight. The grout must be poured into a water-soaked groove, and filled to the top of the groove in the previously set section. If mastic joint compound is used, it must be placed along the walls of the groove unless a double amount *of mastic joint compound* is to be used as a further precaution against leakage. **[**In this case,**]** *If a double amount of mastic joint compound is used,* the mastic sealant must be placed on the two shoulders of the groove. If polyurethane **[**or approved equal**]** is used, it must be mixed as directed **[**on the label**]** *by the manufacturer of the polyurethane* and placed in the groove. The next section must be placed while the foaming reaction *for the previous section* is still in process.

3. For the purpose of early reuse of forms, the concrete may be steam cured. Other curing by means of water spraying or a membrane curing compound may be used . **[**and must comply to best acceptable method outlined by the American Concrete Institute.**]**

Sec. 110. NAC 444.808 is hereby amended to read as follows:

444.808 **[**For built-in-place septic tanks:

1. The walls and floor of each poured-in-place, concrete septic tank must be of monolithic or keyed construction; the maximum length of any section of unreinforced concrete septic tank wall must be 6 feet, and no cross section of any such unreinforced concrete wall or floor may be less than 5 inches in thickness. The minimum compressive strength of any concrete septic tank wall, top and covers, or floor must be 3,000 pounds per square inch.

2. When blocks or bricks are used, they must be cemented to a concrete base. Joints and cells must be well filled and the interior of the tank surfaced with two 1/4-inch coats of Portland cement-sand plaster.

3. Minimum reinforcement must consist of number 3 bars on 24-inch centers vertically and number 9 wire (minimum) K mesh at 16-inch center horizontally.

4. Concrete septic tank covers must be reinforced and have a minimum compressive strength of 3,000 pounds per square inch.**]** *A built-in-place septic tank must be designed by an engineer and constructed in accordance with NAC 444.804 to 444.810, inclusive. The design plans for a built-in-place septic tank must be submitted to the health authority for review and approval before construction on the tank may begin. Upon completion of the construction of the built-in-place septic tank, the engineer who designed the tank shall submit written verification to the health authority that the septic tank was constructed according to the approved plans.*

Sec. 111. NAC 444.810 is hereby amended to read as follows:

444.810 1. Coated **[**metal**]** *steel* septic tanks must be made of commercial grade sheet steel of good welding quality and *must* have a bituminous coating **[**as required below.**]** *applied in accordance with subsection 2.* Only new materials may be used and the thickness of the

sheet must be Number 12 manufacturer's standard gage (.109 inches) or heavier. The tanks must be so constructed as to withstand all anticipated earth or other loads.

2. The coating must be composed of bituminous-base materials that are impervious to water and resistant to sulfuric and sulfurous acids of concentrations encountered in the normal operation of septic tanks. **[**Two**]** *The* coating systems *which* are acceptable **[**. The hot-dipped**]** *must be applied as follows:*

(a) A hot-dipped asphalt coating **[**must**]** *may* be applied to the bare metal or over an asphalt primer, followed by a coal-tar-base emulsion coating applied to **[**the critical area. The critical area is**]** all interior surfaces of the tank above a level at least 8 inches below the **[**overflow level. The cold-application**]** *invert of the outlet pipe.*

(b) A cold-application, coal-tar-base coating **[**must**]** *may* be applied to the bare metal or over a coal-tar-primer, followed by a second application of *the* coating to **[**the critical area. The coating materials and procedures must meet the requirements of Underwriter's Laboratories and Commercial Standards 177-62 of the United States Department of Commerce. Each steel tank must be provided with a pint of touchup material.

3. The requirements of Underwriter's Laboratories described in subsection 2 are: "Requirements for Bituminous Coatings for Metal Septic Tanks, Subject 70," by Underwriter's Laboratories, Inc., 207 East Ohio Street, Chicago, Illinois.**]** *all interior surfaces of the tank above a level at least 8 inches below the invert of the outlet pipe.*

Sec. 112. NAC 444.818 is hereby amended to read as follows:

444.818 1. Cesspools are prohibited.

2. The discharge of surface, rain and other clear water into an individual sewage disposal system is prohibited.

3. **[**A soil absorption system must not be installed in a noncompacted filled area without specific approval of the health authority.

4. There must be at least 4 feet of soil between the bottom of the soil absorption system and the maximum seasonal elevation of the ground-water table, rock formations or other impervious strata on any lot or parcel with a net area less than 5 acres, or at least 2 feet of soil between the bottom of the soil absorption system and the maximum seasonal elevation of the ground-water table, rock formations or other impervious strata on any lot or parcel with a net area greater than 5 acres.

5.**]** *An absorption system that must be specially designed because of the limiting characteristics of the site must be designed by an engineer in accordance with the design criteria:*

(a) That are set forth in sections 80 to 91, inclusive, of this regulation, if the absorption system is an alternative absorption system; or

(b) That have been approved by the health authority.

4. An individual sewage disposal system is prohibited in any area subject to vehicular traffic or any area to be paved.

[6.**]** *5.* Sewage or any waste must not be discharged into any well, deep pit or mine shaft **[**.

7.**]** *, or onto the ground surface.*

6. Approved plans and specifications must not be revised except with written approval of the **[**health authority.

8. Where rapid percolation rates are encountered in sand, gravel or fractured stone, the required distance from any water supply or watercourse may be increased, requiring special design of the absorption system.

9. Only one single-family dwelling is permitted per individual sewage disposal system.

10. Abandoned septic tanks must be filled with earth or sand after being pumped.

11. Soils with a percolation rate over 60 minutes per inch must not be used for an absorption system.

12.**]** *administrative authority.*

7. If the soil has a fast percolation rate, the administrative authority may, depending on the characteristics of the soil and site, require:

(a) The plans for the system be designed especially for the site; and

(b) The setbacks from wells or watercourses, or both, be increased.

8. An individual sewage disposal system must be operated and maintained so as not to create a public hazard or nuisance, or cause water pollution.

9. With the approval of the administrative authority, an abandoned septic tank may be pumped, removed and disposed of. An abandoned septic tank must be filled with dirt or sand after being pumped. An excavation site created by the removal of a septic tank must be backfilled with suitable material that is compatible to the intended future use of the site.

10. To facilitate cleaning and maintenance operations, the **[**contractor must**]** *installer of an individual sewage disposal system shall* provide the owner with a diagram of the **[**septic tank

system. It**]** *system. The diagram* must include the location of the house, the septic tank, the **[**access holes and the drainage**]** *cleanouts and the absorption* system. This information must be kept **[**always**]** on the premises regardless of changes in occupancy.

[13.**]** *11.* Any necessary bends in the *individual* sewage disposal system *before the system enters the septic tank* must be accomplished by the use of **[**45 degree or less**]** pipe fittings **[**.

14.**]** *that are 45 degrees or less.*

12. Every dwelling or habitation, including occupied trailers, must have an approved method of sewage disposal.

[15.**]** *The health authority may issue a permit for the temporary use of a holding tank at locations, including labor camps for construction or drilling projects, where an approved method of sewage disposal is not available. An application for a permit for the temporary use of a holding tank must include a copy of:*

(a) A contract between the applicant and a licensed septic tank pumping contractor that provides for the removal and disposal of wastes from the temporary tank; and

(b) A letter from an approved sewage disposal treatment facility stating that the facility agrees to accept the wastes from the holding tank collected by the septic tank pumping contractor.

A permit for the temporary use of a holding tank issued pursuant to this subsection is valid for 30 days and may be renewed as necessary.

13. The disposal of sewage must be through an approved *individual* sewage disposal system.

[16.**]** *14.* Provisions not covered by NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* must meet the most restrictive requirements found in the current publication of the Uniform Plumbing Code . **[**or the United States Public Health Service Manual of Septic Tank Practice.

17. Absorption area for standard trenches is figured as trench bottom area.

18. Absorption area for seepage pits is figured as effective side-wall area beneath the inlet.

19.**]** *15.* Disposal fields must be located in unshaded, unobstructed areas.

16. Where a public water supply is unavailable, an individual sewage disposal system which includes a well may serve only one single-family dwelling per acre. For the purposes of this subsection, obtaining the approval of the division of water resources of the state department of conservation and natural resources to use the individual sewage disposal system and well as a municipal or quasi-municipal water use does not constitute "public water supply." The administrative authority shall not allow any additional individual sewage disposal system to be installed on the lot. A commercial system on a single lot may be authorized to serve two or more structures upon approval by the health authority if the structures and commercial system are owned by the same person.

17. The person to whom the ownership in commercial property served by an individual sewage disposal system is sold or transferred shall have a new design plan created to determine the suitability of the proposed new business with the existing individual sewage disposal system if:

(a) The proposed use of the buildings or structures is different from the current use; or

(b) The system has been dormant in excess of 1 year, regardless of the proposed use of the buildings or structures.

If the proposed use of the buildings or structures and the existing disposal system are incompatible, the health authority shall deny approval of the system until the system is modified so that the system and the proposed use of the buildings or structures are compatible.

18. An unattached structure that is separate from a single-family dwelling served by an approved individual sewage disposal system may be allowed to plumb into the individual sewage disposal system if:

(a) The unattached structure is or will be used in conjunction with the single-family dwelling; and

(b) The septic tank has sufficient capacity to accommodate the total number of fixtures in the single-family dwelling and the unattached structure as determined pursuant to subsection 3 of section 58 of this regulation. For the purposes of this paragraph, each fixture must be rated at 25 gallons.

Sec. 113. NAC 444.820 is hereby amended to read as follows:

444.820 1. **[**Persons engaged**]** *A person shall not engage* in the operation of removing and disposing of the solid and liquid contents of septic tanks, holding tanks *grease traps, grease interceptors, portable toilets* or other sewage treatment or disposal facilities **[**must obtain**]** *unless he has obtained* an annual permit from the health authority. *To obtain a permit pursuant to this section, NAC 444.828 and sections 47 and 48 of this regulation, the applicant must file with the health authority an application on a form prescribed, prepared and furnished by the health authority. A written application must be filed annually and as necessary to amend*

the permit. A permit must be amended before using a vehicle which is not listed on the application and before changing a point of discharge.

2. The application for this permit **[**should**]** *must* contain the following information:

(a) **[**Area**]** *The area* to be served.

(b) **[**Type**]** *The type* of waste to be hauled.

(c) **[**Location**]** *The exact location* of all discharge **[**points**]** *sites* and type of waste *to be* discharged at each location. *The application must include a letter from the operating authority of each such discharge site that states that the operating authority will accept the waste to be removed and disposed of by the applicant at the discharge site.*

(d) **[**License number and state of registration of each truck.

(e) Capacity of each truck.

(f)**]** *The license number, vehicle identification number, make, model, year and color of each vehicle which the holder of a permit intends to use to remove or dispose of solid and liquid contents of septic tanks, holding tanks, grease traps, grease interceptors, portable toilets or other sewage treatment or disposal facilities. If the color of the vehicle is changed, the applicant or the holder of the permit, as appropriate, shall forthwith notify the health authority in writing of the change.*

(e) The capacity of each vehicle to be listed on the permit.

(f) The location where each vehicle will be stored.

(g) The names and addresses of the employees of the applicant who will be removing or disposing of solid and liquid contents of septic tanks, holding tanks, grease traps, grease interceptors, portable toilets or other sewage treatment or disposal facilities. Not later than 2

weeks after the date on which any change in personnel is made, the applicant or holder of a permit, as appropriate, shall submit written notification of the change to the health authority.

(h) A description of each tank which is not physically affixed to a vehicle and which will be used to remove, dispose of or store solid and liquid contents of septic tanks, holding tanks, grease traps, grease interceptors, portable toilets or other sewage treatment or disposal facilities. The description must include the dimensions, size, capacity and color of each tank.

(i) A statement signed by the applicant that all waste material collected will be disposed of in accordance with the provisions of NAC 444.750 to 444.828, inclusive, *and sections 2 to 91, inclusive, of this regulation,* and that such waste will not be discharged to any waterway or sewer nor deposited on any land *, including privately owned land,* without *the* prior approval of the health authority **[**.**]** *or the division of environmental protection of the state department of conservation and natural resources, as appropriate.*

(j) Evidence satisfactory to the health authority that the applicant is of reputable and responsible character. If the applicant is a firm, association, organization, partnership, business trust, corporation or company, similar evidence must be submitted as to the members thereof, and the person in charge of the business for which the application is made.

(k) A copy of the vehicle registration issued by the department of motor vehicles and public safety for each vehicle to be used by the septic tank pumping contractor to remove and dispose of the solid and liquid contents of septic tanks, holding tanks, grease traps, grease interceptors, portable toilets or other sewage treatment or disposal facilities. Upon the request of the health authority, an applicant shall include in an application the original or a certified copy of the state registration or bill of sale, or both, for each vehicle listed on the application. If, while an

application is pending, the ownership of a vehicle listed on the application changes, the applicant shall forthwith provide the health authority with documentation of the change. If a change in the ownership of the vehicle changes after a permit has been issued, the holder of the permit shall, not later than 2 weeks after the date on which the change occurred, provide to the health authority documentation of the change. If the applicant is not the registered owner of a vehicle, the applicant shall submit documentation of his authority to use the vehicle.

(l) Such other information as may be required by the health authority.

3. The name, address and phone number of the septic tank pumping contractor **[**or**]** *and* his permit number **[**or both**]** must be legibly *and permanently* lettered *on each tank which is not physically attached to a vehicle, and* on both sides *and the rear* of each vehicle used for septic tank pumping purposes. *The lettering must be at least 4 inches in height and of a color that contrasts with the color of the tank or vehicle, as appropriate.*

4. *Each tank and portable receptacle that is used to transport liquid or solid waste must have the words "SEWAGE SLUDGE" or "RAW SEWAGE" permanently and legibly labeled on both sides and the rear of the tank or portable receptacle. The lettering must be at least 4 inches in height and of a color that contrasts with the color of the tank or portable receptacle, as appropriate.*

5. Every vehicle used for septic tank pumping purposes must be equipped with a watertight tank . **[**or body and**]** *A tank and portable receptacle that is used to transport liquid or solid waste must* be maintained in a clean and sanitary condition. *Water that is used to clean a portable receptacle must be disposed of in an approved individual sewage disposal system or sewage treatment facility.* Liquid **[**wastes**]** *or solid waste* must not be transported in *a vehicle*

with an open body **[**vehicle**]** unless *the waste is* contained within suitable portable receptacles. All pumps and hose lines must be maintained so as to prevent leakage.

[5. All portable receptacles used for transporting liquid or solid wastes must be watertight, equipped with tight-fitting lids, and must be cleaned daily.**]**

6. Prior approval in writing must be obtained from the health authority *and the operating authority of the discharge site* for every **[**site**]** *location* at which a septic tank pumping contractor plans to discharge a specific volume of waste material collected . **[**and no**]** *No* waste material may be discharged on **[**a**]** *any* site without prior approval. Waste material collected by the septic tank pumping contractor must not be discharged into ditches, watercourses, lakes, ponds or any point where it can pollute any watercourse, water supply source or bathing area. **[**It**]** *Waste material* must not be deposited within 600 feet of any highway **[**.

7. All septic tank pumping contractor truck pumping and discharge hoses must be fitted with automatic shutoff valves.**]** *or residence.*

7. A vehicle or portable receptacle that is used to remove or dispose of solid or liquid wastes must not be used for any other purpose.

8. The health authority may deny an application for a permit if the applicant:

(a) Engaged in the operation of removing and disposing of solid and liquid contents of septic tanks, holding tanks *, grease traps, grease interceptors* or other sewage treatment or disposal facilities before obtaining a permit from the health authority.

(b) Failed to comply with the provisions of this section **[**.**]** *, NAC 444.828 and sections 47 and 48 of this regulation.*

9. The health authority may refuse to renew a permit or *may* suspend or revoke a permit **[**for any violation of this section or for violating the terms of the permit.**]** *if the holder of a permit:*

(a) Violates any provision of this chapter or chapter 444 of NRS;

(b) Violates any of the terms of the permit; or

(c) Uses a vehicle or tank which is not listed in the permit.

Sec. 114. NAC 444.828 is hereby amended to read as follows:

444.828 The health division shall charge and collect fees for its services in accordance with the following schedule, except in areas where the laws and regulations governing individual sewage disposal systems *and septic tank pumping contractors* are administered by **[**local health authorities:**]** *another administrative authority:*

1. For a permit to construct an individual sewage disposal system for a single-family dwelling, including a review of the plan for the system **[**, and for the**]** *and an* initial inspection of the system $100

2. For a permit to construct a residential system that utilizes an alternative treatment or disposal system design, including a review of the plan for the system and an initial inspection of the system 200

3. For a permit to construct an individual sewage disposal system for a commercial building, including a review of the plan for the system and an initial inspection of the system 200

4. For the resubmission of a plan described in subsection 1, 2 or 3..... 50

5. For a reinspection of an individual sewage disposal system 50

6. For a review of an application to obtain a loan for property **[**on which an individual sewage disposal system has been constructed**]** *which contains a system described in subsection 1, 2 or 3* 50

7. For **[**a license**]** *an annual permit* for a septic tank **[**pumping company**]** *pumping contractor* 50

Plus $50 **[**per pumping unit**]** per year **[**.**]** *for each pumping unit to be authorized for use pursuant to the permit.*

8. To extend a permit to construct an individual sewage disposal system for a 1-year period after the expiration date of the permit 50

9. For an annual permit to operate a nitrate removal wastewater treatment unit 50

10. For an annual permit to operate an aerobic wastewater treatment unit 50

Sec. 115. NAC 461A.590 is hereby amended to read as follows:

461A.590 1. All liquid wastes from service buildings and camping vehicles, including sink wastes, must be discharged into a public sewer or private sewage disposal system approved by the health authority. These wastes must be disposed of in accordance with NAC 444.750 to **[**444.840, inclusive.**]** *444.828, inclusive, and sections 2 to 91, inclusive, of this regulation.*

2. All plumbing must comply with principles stated in the Uniform Plumbing Code.

3. Sewer riser pipe, if provided for camping vehicles having toilet facilities, must be at least 4 inches in diameter and must be provided with a standard threaded fitting to assure a watertight connection. Each connection must be closed when not linked to a camping vehicle.

4. An approved sanitary station, according to subsection 5, must be provided and toilet wastes from retention tanks of camping vehicles must be discharged through the sanitary station.

5. Sanitary stations:

Sec. 116. The amendatory provisions of section 60 of this regulation apply only to aerobic wastewater treatment units that are constructed or repaired on or after the effective date of this regulation.

Sec. 117. The amendatory provisions of section 63 of this regulation apply only to nitrate removal wastewater treatment units that are constructed or repaired on or after the effective date of this regulation.

Sec. 118. The amendatory provisions of section 107 of this regulation apply only to building sewer lines that are constructed or repaired on or after the effective date of this regulation.

Sec. 119. NAC 444.756, 444.774, 444.800, 444.802, 444.812, 444.814, 444.816, 444.830, 444.832, 444.834, 444.836, 444.838 and 444.840 are hereby repealed.

TEXT OF REPEALED SECTIONS

444.756 "Deep system" defined. "Deep system" means an absorption trench developed to a depth of more than 36 inches below the final grade.

444.774 "Shallow system" defined. "Shallow system" means an absorption trench having a depth of 36 inches or less below final grade.

444.800 Septic tanks: General specifications.

1. Minimum capacity and recommended sizes are listed in subsection 4. An additional volume capacity equal to about 20 percent of the liquid volume must be provided in the tank above the liquid surface to provide storage space for the scum.

2. The smallest plan dimensions must be 2 feet. Liquid depth may range between 30 and 60 inches.

3.

4. Recommended Inside Dimensions:

Number of Bedrooms	Liquid Capacity of Tanks (Gallons)	Width W	Length L	Liquid Depth	Total Depth
4 or less	1,000	4′ 0″	7′ 6″	4′ 6″	5′ 6″
5	1,250	4′ 3″	8′ 9″	4′ 6″	5′ 6″
6	1,500	4′ 6″	10′ 0″	4′ 6″	5′ 6″

5. If a two-compartment tank is used the first compartment must equal one-half to two-thirds of the total volume, and the outlet of each compartment must comply with the tank outlet requirements.

6. Adequate access to the tank must be provided to facilitate inspection and cleaning (subsection 3). Both inlet and outlet of the tank must be accessible. On tanks close to the ground surface, a removable cover or manhole must be used. On tanks over 18 inches below the ground surface, manholes at least 24 inches in diameter that extend to about 18 inches below the ground surface must be used.

7. (a) The inlet invert must enter the septic tank at least 3 inches above the liquid level. A vented inlet tee or baffle must penetrate at least 6 inches below the liquid level, but not greater than that allowed for the outlet device.

(b) The vented outlet tee or baffle must extend a distance below the liquid level equal to 40 percent of the liquid depth.

(c) The vented inlet and outlet device must extend above the liquid line to approximately 2 inches from the top of the septic tank, or provide a vent opening of 12 square inches.

(d) The inlet and outlet pipes where they pass through the septic tank walls must be sealed.

8. Back-filling, particularly around steel tanks, must be carefully done to prevent damage to the tank. Before backfilling, each septic tank must be adequately supported and may be required to be filled with water to determine that it is watertight. The tank must be level after setting.

9. The requirements of NAC 444.800 to 444.812, inclusive, do not preclude the use of treatment devices other than septic tanks as may be approved by the health authority. The treatment devices must bear the approval of the National Sanitation Foundation.

444.802 Diagrams of septic tank and seepage pit.

1.

2.

NOTE:

Effective area of a seepage pit is the vertical wall area of the pervious strata below the inlet. No allowance is to be made for impervious strata or bottom area.

Whatever material is used to construct the pit lining, the walls below the inlet level should be laid close with no conscious attempt to provide openings between the units.

Portion of pit lining above the inlet level should be watertight and a water-proof membrane should be placed on the gravel backfill at the sides of the pit.

444.812 Homeowner constructed septic tank. For homeowner constructed septic tanks:

1. Tank bottoms must be 4 inches thick with 3/8-inch steel rods on 18-inch centers both ways or plain poured concrete 6 inches thick.

2. Concrete tank walls must be a minimum of 3 inches thick and reinforced with 3/8-inch steel rods on 18-inch centers both ways. Walls without reinforcing must be 5 inches thick. Welded wire mesh may be used in the walls and bottom. The welded wire mesh required is 6 inches x 6 inches / .1 x .1 and supported horizontally by 3/8-inch steel rods on 20-inch centers.

3. All concrete tank tops must be a minimum of 3 inches thick and reinforced with 3/8-inch steel rods on 6-inch centers on the short span and 18-inch centers on the long span.

4. Inspections by the health authority may be required of the tank reinforcing steel before any concrete is poured.

5. Precast sections must be set evenly in a full bed of sealing mortar or equivalent. Excessively mortared joints must be trimmed flush. The inside and outside of each mortar joint must be sealed with a bituminous sealing compound. For greater resistance to corrosion, an

air-entrained concrete should be used. Six sacks of cement per cubic yard of concrete and 5 1/2 gallons of water per sack are recommended.

6. Other types of septic tanks must be constructed to conform to the provisions of NAC 444.800 to 444.812, inclusive.

444.814 Dosing tanks.

1. Dosing tanks must be provided where there are over 500 lineal feet of distribution lines in the absorption system.

2. Dosing tanks must have sufficient capacity to distribute sewage equally to all parts of the absorption system at 3- to 4-hour intervals. Sufficient capacity is equivalent to 60 to 75 percent of the interior volume of the tile in the system.

3. Siphons must be automatic and must be of an alternating type when the length of the distribution lines is over 1,000 feet. Alternating siphons must discharge to separate disposal areas.

4. Construction and materials must conform to the provisions of NAC 444.800 to 444.812, inclusive.

5. Dosing tanks must be constructed in a manner that will permit venting the absorption system.

6. Each dosing tank or compartment must be provided with an access opening located so as to facilitate repair or adjustment of the siphon. The openings must be over the siphon or siphons and conform to the provisions of subsection 6 of NAC 444.800.

7. Dosing tank:

444.816 Soil absorption system.

1. The effluent from septic tanks must be disposed of by soil absorption systems, or by such other manner as may be approved, through a minimum 5-foot section of approved solid watertight pipe.

2. The area required for a soil absorption system serving a single-family residence must be determined from subsection 3 or 4. The absorption trench area must be determined by the effective side wall area (both sides of the trench) beneath the distribution pipe.

3. Table:

Number of Bedrooms	Minimum Liquid Capacity of Tank in Gallons	Required Absorption Area of Trench Side Walls in Square Feet				
		Sand & Gravel	Fine Sand	Sandy Loam	Clayey Sand	Sandy Clay
4 or less	1,000	200	350	630	1000	1340
5	1,250	250	430	780	1250	1610
6	1,500	300	520	940	1500	2000
Percolation Rate (Time in minutes required for water to fall 1 inch) 1 or less		3	10	25	45	

4. Graph:

5. For larger systems determine the rate of sewage application by the equation:

$$Q = \frac{5}{\sqrt{t}}$$

Q = Rate of sewage application, gallons per square foot per day.

t = Percolation rate in minutes per inch.

6. The septic tank and soil absorption system must be separated by a dike of undisturbed soil at least 2 feet thick. See subsection 2 of NAC 444.798.

7. A distribution box may be used when more than one distribution line is used in an absorption system.

(a)

(b) The box is to be constructed of sound, durable material (concrete, coated metal, concrete blocks, hard-burned bricks, etc.) to assure its being watertight.

(c) Each distribution line must be connected separately to the distribution box. The outlet lines must be set at the same level and 4 to 6 inches above the bottom of the box. The inlet must be at least 1 inch above the outlets.

(d) The size of the distribution box must be sufficient to accommodate the required number of distribution lines. The box must be of watertight construction. A masonry baffle at least 6 inches high and 12 inches long must be placed traversely to the distribution box inlet and 6 inches in front of it. The box must be provided with a satisfactory masonry or steel cover.

8. Shallow system:

(a) The bottom of the trench must be level and 1 to 2 feet in width. Trench excavations must be spaced at least 6 feet centerline to centerline apart. The individual laterals must not be over 100 feet long.

(b) Trenches must not be excavated when the soil is extremely wet.

(c) All smeared or compacted surfaces in the absorption trench must be scarified to the depth of the compaction and the loose material must be removed.

(d) Distribution piping must be perforated clay tile, plastic, bituminous fiber, cement asbestos or short lengths of clay or concrete drain pipe. The bottom of the distribution piping must be laid 12 to 24 inches below the ground surface in continuous straight or curved lines. A slope of 2 to 4 inches per 100 feet must be maintained. Drain pipe must be spaced approximately 1/4 inch apart and blinded at the top with tar paper.

(e) A minimum of 12 inches of clean, graded rock or similar aggregate ranging in size from 3/4 to 1 1/2 inches must be laid into the trench below the distribution pipe and such aggregate must extend at least 2 inches over the top of the distribution pipe. The aggregate must be covered with untreated building paper or equal, and the top of the trench must be overfilled with 4 to 6 inches of earth.

9. Deep system:

(a) The bottom of the distribution line must be laid 12 to 48 inches below the ground surface in continuous straight or curved lines.

(b) The bottom of the absorption trench must be level and 1 or 2 feet in width. Trenches must be spaced a distance equal to twice the trench depth. The length of each trench must not exceed 100 feet.

(c) Clean, graded rock or similar aggregate ranging in size from 1 to 2 1/2 inches must be laid into the trench below the distribution pipe and such aggregate must extend at least 2 inches over the top of the distribution pipe. The aggregate must be covered with untreated building paper or equal. The first 4 to 6 inches of soil backfill must be hand tamped, and the top of the trench must be overfilled with 4 to 6 inches of earth.

(d) Paragraphs (b) to (d), inclusive, of subsection 8 apply to deep absorption systems.

10. Other types of absorption systems may be used only upon written approval of the health authority.

11. Disposal trench:

444.830 Filing of request for variance. Any person requesting a variance under NAC 444.830 to 444.840, inclusive, for the purpose of installing an individual sewage disposal system on land situated in either Clark County or Washoe County must file the request with the district board of health of the respective county in which the land is located.

444.832 Public hearing by district board. The district board of health or its designated hearing board shall, within 60 days of receipt of a request for a variance, hold a public hearing pursuant to chapter 233B of NRS after giving at least 30 days' prior public notice of the date, place and subject of the hearing in a newspaper of general circulation in the county.

444.834 Decision by district board. (NRS 439.200, 444.650)

1. The district board of health or its designated hearing board shall, after receiving evidence from all interested persons at the hearing on the request for a variance, make written findings of fact based on the evidence as to whether or not the variance, if granted, would cause human and domestic waste to be disposed of in a manner:

(a) That would cause any drinking water supply to be contaminated;

(b) That would give rise to a public health hazard by being accessible to insects, rodents or other possible carriers which may come in contact with food or drinking water;

(c) That would give rise to a nuisance due to odors or unsightly appearance;

(d) That would contaminate any body of water; and

(e) That would violate any other laws or regulations governing sewage disposal.

2. Based on its findings of fact, the district board of health or its designated hearing board shall make a written recommendation of denial or approval of the variance to the board.

3. The record of the hearing by the district board of health or its designated hearing board must include:

(a) Written findings of fact;

(b) Written recommendation;

(c) Verbatim evidence received or considered by the district board of health or its designated hearing board; and

(d) The application for the variance.

4. The district board of health shall submit the record of the variance request hearing to the bureau of health protection services of the health division of the department of human resources or its successor within 14 days of such hearing and simultaneously forward a copy of the findings of fact and recommendation to the applicant for a variance.

444.836 Review by bureau of health protection services. (NRS 439.200, 444.650)

1. The bureau of health protection services of the health division of the department of human resources or its successor shall, within 14 days of receipt of the district board of health's record of the hearing on the request for a variance, review the record, enter a written recommendation either to deny or grant the requested variance and forward the written recommendation accompanied with the district board of health's variance request hearing record to the secretary of the board. The bureau shall send a copy of its written recommendation to the applicant for a variance simultaneously with sending it to the secretary of the board.

2. The basis for the written recommendation of the bureau pursuant to subsection 1 is not limited to the record of the district board of health's variance hearing, but may include

engineering and sanitation studies conducted by the bureau with regard to the criteria established in subsection 1 of NAC 444.834 as a basis for the district board of health's findings of fact and recommendation.

3. The bureau shall include in its recommendation under subsection 1 any findings of fact in addition to those of the district board of health and the source of the information relied on to arrive at such additional findings of fact.

444.838 Hearings by state board. (NRS 439.200, 444.650)

1. If the recommendations of the district board of health and the bureau of health protection services of the health division of the department of human resources or its successor are in conflict or a recommended denial of a variance is concurred in by both the district and the bureau, a hearing on the request for the variance will be held by the state board of health, if requested by the applicant.

2. If the recommendation of the bureau is entered at least 30 days before the next regularly scheduled meeting of the state board of health, the hearing referred to in subsection 1 will be held at the meeting, otherwise it will be scheduled for the following regularly scheduled meeting.

3. Evidence presented at the hearing of the state board of health referred to in subsection 1 will be limited to that evidence concerning those issues not raised at the district board of health's hearing, newly discovered evidence, additional material evidence concerning issues presented at the hearing of the district board of health or evidence in support of or in rebuttal to the findings of fact of the bureau as a result of its own engineering and sanitation studies.

4. At the conclusion of the evidence referred to in subsection 3, the request for a variance stands submitted and the state board of health will enter a written decision, including findings of fact, within 2 weeks of the hearing date.

444.840 Grant of variance. (NRS 439.200, 444.650) If the district board of health and the bureau of health protection services of the health division of the department of human resources or its successor concur in their recommendations that a variance should be granted, the state board of health will grant the variance at its next regularly scheduled meeting, upon review and approval.