# LCB File No. R194-07

# PROPOSED REGULATION OF THE STATE ENVIRONMENTAL COMMISSION

## SEC File No. P2008-01

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

**AUTHORITY:** §1, NRS 445A.465

A REGULATION relating to on-site sewage disposal systems to included large septic tank and leach field applications at a flow of 3,000 gallons per day and above. This proposed regulation follows the transfer of the Safe Drinking Water Program to NDEP from the Health Division in 2005 by SB 395: http://www.leg.state.nv.us/73rd/reports/history.cfm?ID=2260

**NAC 445A.8335 "Septic system" defined. (**NRS 445A.425**)** "Septic system" means a well that is used to emplace sanitary waste below the surface and is typically composed of a septic tank and a subsurface fluid distribution system or disposal system. ***The term also includes an Onsite Sewage Disposal System as defined in NAC 445A.425***

**NAC 445A.849 Class V wells. (**NRS 445A.425**)** A Class V well is any injection well not included in Classes I, II, III and IV, including, without limitation:

1. Wells used to inject the water for heating or cooling by a heat pump;
2. Cesspools or other devices receiving wastes which have an open bottom and sometimes have perforated sides;
3. Wells used to inject water previously used for cooling;
4. Wells used to drain surface fluid, primarily the runoff from storms, into a subsurface formation;
5. Wells used for the injection of fluids accumulated from dewatering operations;
6. Drywells and wells used for the injection of nonhazardous wastes into a subsurface formation;
7. Wells used to replenish the water in an aquifer;
8. Wells used to inject water into an aquifer of fresh water to prevent the intrusion of water of a lower quality into the fresh water;
9. Wells used to inject a mixture of water and sand, mill tailings or other solids into subsurface mines;
10. **Wells used to inject** ~~[sanitary waste]~~ ***domestic sewage*** **for facilities other than single-family residences** ***and having a volume capacity of greater than 3,000 gallons per day;*** ~~[or facilities having a volume capacity of less than 5,000 gallons per day]~~
11. Wells used to inject fluids into a zone, other than an oil or gas producing zone, to reduce or eliminate subsidence associated with the overdraft of fresh water;
12. Wells used for the storage of hydrocarbons in a gaseous state at standard temperature and pressure;

13. Geothermal injection wells used in contact and noncontact heating and aquaculture, and in the production of energy;
14. Wells used for solution mining of ores or minerals in conventional mines, such as stopes leaching;
15. …….

***NAC 445A.84901 – Class V wells.***

1. ***Class V wells listed in NAC 445A.849.10 shall be permitted under the Onsite Sewage Disposal Systems General Permit***

**Section 1.** ***Definitions***

**Sec – 1.1** ***"Administrative Authority" defined. "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 Onsite Wastewater Disposal Systems.***

**Sec – 1.2** ***"Advanced Wastewater Treatment Unit" means alternative systems that treat the domestic sewage to discharge levels that exceed typical septic tank effluent. Such systems include, but are not limited to aerobic systems, denitrification systems, recirculating systems, etc.***

**Sec – 1.3** ***"Aerobic System" means an alternative system consisting of septic tank or other treatment facility with the additional presence of oxygen, and an absorption area, designed to provide a level of treatment before disposal.***

**Sec – 1.4** ***"Alternative System" means any Commission or Administrator approved Onsite Sewage Disposal System for use in lieu of a standard onsite system.***

**Sec – 1.5** ***"Capping Fill System" means an alternative system where the disposal pipe is at or near grade and the disposal trench effective sidewall is installed a minimum of twelve (12) inches into the natural soil below a soil cap of specified depth.***

**Sec – 1.6** ***"Certificate of Completion" means a certification issued in writing by the design engineer that certifies to the division the Onsite Sewage Disposal System was constructed in accordance with approved plans and specifications.***

**Sec – 1.7** ***"Cesspool" defined. "Cesspool" means a covered excavation in the ground which receives the discharge of domestic sewage or other organic wastes from a drainage system which is designed to retain the organic matter and solids while permitting the liquids to seep through the bottom and sides. Cesspools are prohibited.***

**Sec – 1.8** ***"Cluster System" means a group of residences or other occupied buildings that may discharge to either individual septic tanks on each property or a common septic tank. The tank(s) is/are then connected to a central disposal system. The distinguishing feature of a cluster system is the lack of an identifiable and responsible ownership with no enforcement authority amongst the users. The term does not include Mobile Home Parks as defined in NRS 118B.017.***

**Sec – 1.9** ***"Commercial Facility" means any structure or building(s), mobile home parks or any portion thereof, other than a residential single family dwelling.***

**Sec – 1.10** ***"Commission" means the State Environmental Commission as defined in NRS 445A. 075.***

**Sec – 1.11** ***"Conventional Sand Filter" means a filter with two (2) feet or more of sand filter media designed to chemically and biologically process septic tank or other treatment unit effluent from a pressure distribution system operated on an intermittent basis.***

**Sec – 1.12** ***"Division" means the Nevada Division of Environmental Protection, Department of Conservation and Natural Resources.***

**Sec – 1.13** ***"Domestic Sewage" defined. "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 an Onsite Sewage Disposal System. The term does not include industrial waste.***

**Sec – 1.14** ***"Drain Media" means clean washed gravel, clean crushed rock or other types of natural or synthetic aggregate (i.e. chipped tires) approved by the administrator, used in the distribution and treatment of effluent. Natural aggregate shall have a minimum size of three quarters (3/4) inches and a maximum size of two and one-half (2 ½) inches. The aggregate shall be durable and inert so that it will maintain its integrity and not collapse or disintegrate with time and shall not be detrimental to the performance of the system.***

**Sec – 1.15** ***"Emergency Repair" means repair of a failing system where immediate action is necessary to relieve a situation causing a potential human health threat via sewage backing up into a dwelling or building(s), repair of a broken pressure sewer pipe or ponding and/or surface flow of sewage. It does not include the construction of new or additional absorption facilities, but would allow use of the septic tank as a temporary holding tank until such time as new or additional absorption facilities could be constructed pursuant to an issued permit.***

**Sec – 1.16** ***"Engineer" defined. "Engineer" means a person who is licensed by the Nevada State Board of Professional Engineers and Land Surveyors to practice professional engineering.***

**Sec – 1.17** ***"Evapotranspiration-Absorption (ETA) System" means an alternative system consisting of a septic tank or other treatment facility, effluent sewer and disposal bed or disposal trenches. The ETA is designed to dispose of the effluent via evaporation, transpiration by plants and absorption into the underlying soil.***

**Sec – 1.18** ***"Failing System" means any system which discharges untreated or incompletely treated sewage or septic tank effluent directly or indirectly onto the ground surface or into waters of the state.***

**Sec – 1.19** ***"General Permit for an On-Site Sewage Disposal System" means a permit issued for an Onsite Sewage Disposal System that is:***

***a. less than or equal to 15,000 gallons per day in flow,***

***b. receives only domestic wastes, and***

***c. utilizes subsurface disposal.***

**Sec – 1.20** ***"Individual Permit for an On-Site Sewage Disposal System" means a permit issued for an Onsite Sewage Disposal System that meets any of the following:***

***a. larger than 15,000 gallons per day in flow,***

***b. receives flows other than domestic waste, regardless of size,***

***c. utilizes surface disposal.***

**Sec – 1.21** ***"Individual Sewage Disposal System" has the meaning ascribed in NAC 444.764 and does not include an On-Site Sewage Disposal System. Individual Sewage Disposal Systems are residential systems regulated by the Nevada Division of Health.***

**Sec – 1.22** ***"Industrial Waste" means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business, or from the development or recovery of any natural resources.***

**Sec – 1.23** ***"Nitrogen Removal Wastewater Treatment Unit" means a system that receives sewage and, through biological denitrification, chemical reduction or ion exchange, significantly reduces the total nitrogen level of the effluent.***

**Sec – 1.24** ***"Nitrogen Management Area" means an area that has been identified by the division with levels of nitrogen that are at or approaching 5 mg/l measured as total nitrogen in the groundwater or surface water. Standard septic tank and leach field applications are prohibited in these areas. Nitrogen Management area boundaries will be delineated after the division and local government have met and concurred on the boundary description. Nitrogen management areas are listed in NDEP guidance document WTS 23, found at: http://ndep.nv.gov/bwpc/wts-23.pdf***

**Sec – 1.25** ***"Onsite Sewage Disposal System" means any existing or proposed on-site sewage disposal system including, but not limited to a standard subsurface, alternative, experimental or other sewage disposal system. This does not include residential systems (Individual Sewage Disposal Systems), systems that are designed to treat and dispose of Industrial Wastes, or package treatment plants, as defined in NRS 445A.380.***

**Sec – 1.26** ***"Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the federal government and any agencies thereof.***

**Sec – 1.27** ***"Pressure Distribution System" means any system designed to uniformly distribute septic tank or other treatment unit effluent under pressure in an absorption facility or sand filter.***

**Sec – 1.28** ***"Projected Daily Sewage Flow" means the peak quantity of sewage a facility is forecast to produce on a daily basis upon which system sizing and design is based. It is also called design flow.***

**Sec – 1.29** ***"Sand Filter Media" means medium sand or other approved material used in a conventional sand filter. The media must be durable and inert so that it will maintain its***

*integrity, will not collapse or disintegrate with time, and will not be detrimental to the performance of the system. The particle size distribution of the media must be determined through a sieve analysis conducted in accordance with ASTM C-117 and ASTM C-136. The media must comply with Table 46-1 (Fill Material Specifications).*

**Sec – 1.30** *"Sand Filter System" means an alternative system that combines a septic tank or other treatment unit; a dosing system with effluent pump and controls or dosing siphon, piping and fittings; a select media filter; and an absorption facility to treat wastewater.*

**Sec – 1.31** *"Serial Distribution" means the distribution of effluent to a set of absorption trenches constructed at different elevations in which one trench at a time receives effluent in consecutive order beginning with the uppermost trench by means of a drop box, a serial overflow, or another approved distribution unit. The effluent in an individual trench must reach a level of 2 inches above the distribution pipe before effluent is distributed to the next lower trench.*

**Sec – 1.32** *"Site Evaluation Report" means a report on the evaluation of a site to determine its suitability for an onsite system prepared in accordance with Section 8 of the proposed regulations.*

**Sec – 1.33** *"Waters of the State" has the meaning ascribed to it in NRS 445A.415. ("Waters of the State" means all waters situated wholly or partly within or bordering upon this State, including but not limited to: 1. All streams, lakes, ponds, impounding reservoirs, marshes, watercourses, water ways, wells, springs, irrigation systems and drainage systems; and 2. All bodies or accumulations of water, surface and underground natural or artificial).*

**Sec – 1.34** *"Wellhead Protection Area" means the surface and subsurface area surrounding a well or well field that supplies a public water system, through which contaminants are likely to*

*move toward and reach the well or well field. For the purposes of this rule, wellhead protection area shall be that area bounded by a specific drinking water supply management area as regulated under NAC, Chapter 445A.*

**Section 2.** *Purpose, Disclaimer*

1. *The purpose of Section 1 to Section 56 inclusive is to prescribe the requirements for Onsite Sewage Disposal Systems (residential systems are not applicable) for the protection of public health and welfare of the people of the State of Nevada.*
2. *The regulations established by the division intend to address the following:*
   a. *Protect the public health.*
   b. *Prevent contamination of any drinking water supply, aquifer or other waters of the state.*
   c. *Prevent odors or vector attraction.*
   d. *Provide guidance to the design engineer.*
3. *The division, by review of plans and specifications, assumes no responsibility for the successful operation of the Onsite Sewage Disposal System. It is the primary responsibility of the professional engineer designing the system as well as the entity constructing and/or operating such system to ensure that it will operate satisfactorily.*

**Section 3.** *Jurisdiction*

*The division has been granted authority for the Underground Injection Control Program by the U.S. Environmental Protection Agency (EPA). The EPA has regulatory authority (40 CFR §144.81(9)) for the following applications that have been delegated to the state under the Class V injection well section:*

1. *An Onsite Sewage Disposal System, regardless of size, that receives any amount of industrial waste; or*
2. *An Onsite Sewage Disposal System that receives solely sanitary waste from multiple family residences or a non-residential establishment and has the capacity to serve 20 or more persons per day.*

*NRS 445A.450 allows the Director to cooperate with other agencies in furthering the purposed of NRS 445A.300 to 445A.730, inclusive. The department may enter into an agreement with the local health authorities or other local agencies with engineering capability (administrative authority) to permit Onsite Sewage Disposal Systems, including receiving and processing applications, issuing permits and performing required inspections for all Onsite Sewage Disposal Systems in their jurisdiction. The division must assume those responsibilities in non-agreement counties or jurisdictions.*

*Administrative authorities who assume responsibility for the Onsite Sewage Disposal System program and elect to enforce their own standards must develop regulations which are as stringent as the NAC. The administrative authority must also keep a database of approved Onsite Sewage Disposal System and provide the information to the division on an annual basis, every July 1st.*

**Section 4.** *General Standards, Prohibitions and Requirements*

a. *Protection of waters of the state from public health hazards. A permit shall not be issued for the installation or use of an Onsite Sewage Disposal System that is likely to pollute waters of the state or create a public health hazard (nitrogen management or nitrogen restricted areas, medical clinics that may dispose of pharmaceuticals through flushing, etc.). If, in the judgment of the division, the minimum standards in these regulations will*

***not adequately protect public waters or public health on a particular site, the division must require a system to meet requirements that are protective. This may include but is not limited to increasing setbacks, increasing drain field sizing, providing additional treatment or using an alternative system.***

***Further, the division shall deny the use of an Onsite Sewage Disposal System if it is determined the installation of the system will impact the waters of the state or is in an area where a moratorium has been established. The division must provide the applicant with a written statement of the specific reasons why more stringent requirements are necessary or why denial was given.***

***b. Land area required. The minimum land area required for an Onsite Sewage Disposal System must be 43.5 ft2 per gallon per day (1,000 gallons per acre per day). A back up area equal to the size of the original disposal area must be set aside for future use. The use of advanced wastewater treatment units may allow up to a 25% reduction in land area, if the engineer can demonstrate to the satisfaction of the division the unit will not adversely impact the local ground or surface water.***

***c. Flow. Systems with wastewater flow greater than 15,000 gallons per day, or receive flows other than domestic waste must obtain an individual permit. Flows greater than 5,000 gallons per day may require a groundwater mounding analysis be performed by the design engineer or other qualified professional as determined by the division.***

***d. Approved treatment and dispersal required, cesspools prohibited. All Onsite Sewage Disposal System wastewater must be treated and dispersed in a manner approved in accordance with these regulations. Cesspools are prohibited.***

*e. Prohibited discharges of wastewater. A person may not discharge untreated or partially treated wastewater or septic tank effluent directly or indirectly onto the ground surface, deep pit, mine shaft, abandoned wells or other waters of the state. Such discharge constitutes a public health hazard and is prohibited.*

*f. Prohibited discharges to systems, grease traps and interceptors. A person may not discharge into any Onsite Sewage Disposal System cooling water, air conditioning water, water softener brine, pool or hot tub (spa) water, groundwater, oil, hazardous materials, roof drainage, or other aqueous or non-aqueous substances that are detrimental to the performance of the system or to groundwater.*

*Commercial kitchens must provide a grease interceptor (approved by the health authority) prior to discharge to the septic tank or other treatment unit. Laundromats and car washes must also provide interceptors prior to discharge into a septic or treatment tank.*

*g. Increased flows prohibited. Except where specifically allowed by the division, a person may not connect a dwelling or commercial facility to an Onsite Sewage Disposal System if the total projected sewage flow would be greater than that allowed under the original system construction-installation permit.*

*h. System capacity. Each Onsite Sewage Disposal System must have adequate capacity to properly treat and disperse the maximum projected daily sewage flow. The projected quantity of sewage flow must be determined from Table 18.1 or other information the division determines to be valid.*

*i. Mounding. If required by the division, the engineer shall submit sufficient site-specific data to predict the height of the water table mound that will develop beneath the field (level*

*sites) and the rate of lateral and vertical flow away from the absorption area. The site shall be considered unsuitable if the data indicates the groundwater mound that will develop beneath the site cannot be maintained four feet or more below the bottom of the absorption area, or if it is determined that the effluent is likely to become exposed on the ground surface.*

*j. Plumbing fixtures connected. All plumbing fixtures in commercial facilities, and other structures from which sewage is or may be discharged must be connected to and discharge into an approved area-wide sewerage system or an approved Onsite Sewage Disposal System that is not failing.*

*k. Initial and replacement absorption area. Except as provided in regulation, the absorption area, including installed system and replacement area, must not be subject to activity that is likely, in the opinion of the division, to adversely affect the soil or the functioning of the system. This may include but is not limited to vehicular traffic, covering the area with asphalt or concrete, filling, cutting, or other soil modification.*

*l. Operation and maintenance. Owners of Onsite Sewage Disposal System must operate and maintain their systems in compliance with all permit conditions and applicable requirements set forth in these regulations and must not create a public health or safety hazard or pollute waters of the state. Operation and maintenance requirements for systems under the general permit are established by Section 52.*

*m. Coverage. Provisions not covered by Section 1 to Section 56 inclusive, must meet the most restrictive requirements found in the current publication of the Uniform Plumbing Code as well as the Bureau of Water Pollution Control's publication WTS 23, found at the following site: http://ndep.nv.gov/bwpc/wts-23.pdf*

**Section 5.** ***Adoption of Standards and Publications by Reference***

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

1. ***The Uniform Plumbing Code, 2006 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 $93.00.***
2. ***The Design Manual for Onsite Wastewater Treatment and Disposal Systems, which is published by the Environmental Protection Agency (reference document number PB83-219907), October 1980. 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 $97.50. Further, the document may be obtained free by visiting the U.S. EPA website at http://www.epa.gov/ordntrnt/ORD/NRMRL/pubs/625180012/625180012.htm***
3. ***The Onsite Wastewater Treatment Systems Manual, which is published by the Environmental Protection Agency (reference document number EPA/625/R-00/008), February 2002. This document is available free by on the web at: http://www.epa.gov/ordntrnt/ORD/NRMRL/pubs/625r00008/html/html/625R00008.htm***

**Section 6.** ***Exemptions***

***Except as otherwise provided in this section, the division may grant an exemption from any provision of Section 1 to Section 56 inclusive, to a permittee of an Onsite Sewage Disposal System if the exemption:***

1. ***Is justified and stamped by an engineer licensed in Nevada;***

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

3. *Provides for a similar level of protection to the environment.*

**Section 7.** *Nitrogen Restricted Areas*

1. *Whenever the division finds that construction of subsurface, non-water-carried, or alternative onsite systems should be limited or prohibited in an area, it must issue an order limiting or prohibiting such construction. Reasons for an order include areas of high groundwater, shallow bedrock, extreme slope, where it has been demonstrated that total nitrogen in the groundwater is approaching or above 10 mg/l or the division's septic density policy has been exceeded and further development will impact the aquifer. In addition, if the area wide 208 management plan prohibits the use of Onsite Sewage Disposal Systems in the proposed area, none shall be allowed.*

2. *The order may be issued only after public hearing for which 30 days notice is given to interested persons in the affected areas. Nitrogen restricted areas are listed in WTS 23 at http://ndep.nv.gov/bwpc/wts-23.pdf*

3. *The division will not approve subdivisions, as defined in NRS 278.320, in a nitrogen restricted area if the proposed method of sewage disposal is individual sewage disposal systems, or other sewage disposal methods that will increase nitrogen loading to the groundwater in excess of 10 mg/l.*

**Section 8.** *Engineering Reports/Application for Construction*

1. *An engineering report shall be considered an application for construction and a request to be covered under the general permit. Construction of the Onsite Sewage Disposal System*

***shall not commence until the plans and specifications have been given approval in writing by the division.***

2. ***Coverage under the general permit shall not commence until the engineer's submittal of the Certificate of Completion is received by the division and a permit is issued.***
3. ***All submittals for new, expanded or modified Onsite Sewage Disposal Systems must be designed, wet stamped and signed by a qualified professional engineer licensed in Nevada. The design shall include a report that outlines the scope of the proposed construction and include an analysis of the disposal area's capability to adequately treat and dispose of the proposed sewage and septage quantities from the project.***
4. ***The engineering report provides the basis which will be utilized in developing the final plans and specifications. The engineering report must include, but not be limited to the following:***
    a. ***A soils analysis performed by a qualified person approved by the division (engineer, soils scientist, geologist, etc.).***
    b. ***Pits must be dug to develop soil logs at the disposal site. Soil logs should be developed for each pit describing the soils in accordance with the United States Department of Agriculture, Natural Resources Conservation Service nomenclature, or terminology and procedures noted in Sections 28 thru Section 30, Figure 29-1, Table 29-1 and Appendix A, of Design Manual: On-site Wastewater Treatment and Disposal Systems, U.S. EPA .***
    c. ***The facility design will be in accordance with NAC Chapter 445A and WTS 23, as well as other criteria the design engineer may justify.***

*d. Hydraulic loading rate. The loading rate is dependent upon the most restrictive percolation rate along with soil texture noted within 4' below the proposed bottom of the trench or bed. Section 32, Table 32-1 notes the maximum loading rates (or Long Term Acceptance Rates) in gallons per day per square foot that must be used for sizing the disposal area.*

*5. The loading rates referenced in Section 32, table 32-1 are suitable for raw wastewater (domestic sewage entering the septic/treatment tank) with BOD5 of 250 mg/liter or less, Suspended Solids ratio of 150 mg/l or less and Total Oil and Grease (G&O) of < 20 mg/liter. If the facility has BOD5, TSS or O&G of greater strength effluent than domestic sewage, then the effluent shall be:*

*a. pre-treated to reduce the BOD5 , TSS, Total Oil and Grease below the above levels; or*

*b. the loading rate may be reduced so that the BOD5 loading per unit area per unit time remains constant. This option is only available to BOD5 of < 500 mg/l and on a case by case basis by the review agency.*

*A minimum of one down gradient monitoring well may be required. Additional wells may be required depending on the topography and size of the proposed system. The wells must extend to sufficient depths to sample seasonal fluctuations of the unconfined water table. The wells shall conform to division guidance document WTS 4 found at http://ndep.nv.gov/bwpc/fact01.htm#wts.*

*6. The division may require the design engineer to include a nitrogen balance to demonstrate that the effluent will not cause the waters of the state to exceed the maximum contaminant level (MCL) for nitrate. Background groundwater samples from the installed monitoring wells must be obtained prior to initiation of operation.*

*Note: The general permit requires that the groundwater leaving the system boundaries must not exceed the state and federal MCL for nitrate in drinking water. If those levels are exceeded, enforcement actions may result. The general permit specifies the parameters to be tested.*

**Section 9.** *Permits: Information Required*

1. *Approval must be obtained from the administrative authority to construct, alter or expand an Onsite Sewage Disposal System.*
2. *The request for approval must include:*
   a. *The name, address and current phone number of the applicant.*
   b. *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. *A plot plan.*
3. *The plot plan must include:*
   a. *The title and date of the plan and the stamp and signature of the design engineer.*
   b. *A map of the area in which the Onsite Sewage Disposal System will be located that shows the location of the roads and streets.*
   c. *The location and distance to well and sewage systems on surrounding lots. If the lots are vacant, the plot plan must so indicate.*
   d. *The direction of north clearly indicated.*
   e. *The distance within 500 feet to any watercourse indicated, including, without limitation, any pond, lagoon or stream. If there are no watercourses, the plot plan must so indicate.*

*f. The location of each percolation test hole, excavated pit or boring test hole.*

*g. The location and depth of each proposed or actual well, including the depth of casing and surface grout seal. Submission of logs for existing wells is required.*

*h. Each component of the Onsite Sewage Disposal System, which must be properly marked and located at specified distances, in feet.*

*i. The distance to public and private sewers. If there are none, the plot plan must so indicate.*

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

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

*l. The calculations used by the engineer to determine the minimum capacity of the commercial system.*

*m. The capacity of the septic tank or treatment device.*

*n. The maximum slope across the absorption system area.*

*o. The dimensions of the lot.*

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

*q. The location of the water supply lines, building sewer lines and other underground utilities.*

*r. The location of the structures, paved areas, driveways, trees and patios.*

*s. The location of the source of water to be used by permittee, 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, percolation test results and design specifications must accompany the plot plan.*

**Section 10.** *Permits: Prohibited Acts; Failure of System*

1. *The owner/operator of the permitted facility shall not:*
   a. *Cause or contribute to a violation of a water quality standard,*
   b. *Expand the system to accommodate increased flows, without division approval,*
   c. *Treat flows that are not typical sewage (i.e. pool and spa discharges, water softener backwash, etc.),*
   d. *Treat flows from commercial operations using hazardous substances or creating hazardous wastes, as defined in section 1, or*
   e. *Create any public health, safety or environmental nuisance condition.*
2. *Coverage under a general permit pursuant to Section 1 to Section 56 inclusive, is deemed to be a temporary permit to operate an Onsite Sewage Disposal System. The operating permit is valid until:*
   a. *The Onsite Sewage Disposal System fails; or*
   b. *A community sewerage system is installed to service the area.*
3. *For the purposes of this section, an Onsite Sewage Disposal System shall be deemed to have failed if:*
   a. *A condition or malfunction occurs in the Onsite 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 surface;*

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

3. *Sewage leaking from a septic or other treatment 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 general permit to operate the system.*

**Section 11.** *Denials, Procedures for Review of Actions Taken by Division; Appeals*

1. *Except as otherwise provided in this subsection, an application for a permit for an Onsite sewage disposal system submitted to the division must be denied in writing and the reasons specified if:*

a. *The administrative authority determines that the proposed installation will not comply with Section 1 to Section 56 inclusive;*

b. *Public or community sewerage systems are available, as determined by the wastewater treatment facility having jurisdiction, and is available at a property line of the lot.*

c. *The proposed Onsite Sewage Disposal System is within the service area of a sewer company which provides sewage services 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 division if the local governmental entity approves in writing the construction of the Onsite Sewage Disposal System within its service area or jurisdiction.*

d. *The area wide 208 plan prohibits the use of Onsite Sewage Disposal Systems in the area.*

*e. An Onsite Sewage Disposal System moratorium has been issued in the area.*

2. *A person who has reason to believe that an action taken by the administrative authority pursuant to Section 1 thru 56, inclusive, is incorrect 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 division for a formal conference. The formal conference must be scheduled for a date, place and time mutually agreed upon by the aggrieved person and the division, except that the formal conference must be held no later than 60 days after the date on which the division received the written request. The Administrator or his appointee shall preside over the formal conference.*
4. *The determination of the division resulting from the formal conference may be appealed to the Director in writing, within 10 business days after receipt of the determination. The director shall review information provided in formal hearing and issue a determination no later than 60 days after the date on which the department received the written request.*

**Section 12.** *Alteration of Existing Onsite Sewage Disposal Systems; Permit Extensions*

1. *A person shall not alter or increase the design capacity of an existing Onsite Sewage Disposal System without first obtaining a permit in accordance with Section 9. Increase in the design capacity or alteration of the Onsite Sewage Disposal System will be assessed the fee associated with a new system in Section 54 (based on new gallons per day flow).*
2. *A permit is void 12 months after the date of issuance if the proposed construction, alteration or extension of the Onsite Sewage Disposal System is not completed within 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 Section 1 to Section 56 inclusive.*

**Section 13.** *Inspections, Certification*

1. *Inspections are required by the design engineer during all phases of construction of the system. The engineer must issue a Certificate of Completion for a system installation if the engineer determines the system complies with applicable requirements in Section 1 to 56 inclusive, and the proposed conditions of the permit.*
2. *The permit will not be issued until the Certificate of Completion, wet stamped, signed and dated is received by the division.*
3. *The division may request photo documentation depicting the phases of construction be submitted with the Certificate of Completion.*

**Section 14.** *Annual Reports*

1. *A permittee must submit all reports as specified in the permit. At a minimum, the permittee must submit written certification prepared by a maintenance provider that:*
   a. *The system has been maintained in accordance with the requirements of the regulations during the reporting year and is operating in accordance with the engineer-approved design specifications and Operations and Maintenance Manual, and*
   b. *Required samples, if any, are taken, analyzed and forwarded to the division.*

**Section 15.** *Approval of New or Innovative Technologies, Materials, or Designs for Onsite Systems*

*The design engineer shall provide information to the division that demonstrates the new or innovative technologies, materials or designs for the Onsite Sewage Disposal System achieves equal or better performance compared with the general permit requirements, or addresses site or system conditions more satisfactorily than the requirements of Section 1 to Section 56, inclusive. The division reserves the right to require independent verification of new technologies, materials or designs for onsite systems.*

*The division may approve new or innovative technologies, materials, or designs for onsite systems if it determines they will protect public health, safety, and waters of the state as effectively as systems authorized in these regulations.*

*The division shall deny the request for the change if the Onsite Sewage Disposal System:*

a. *Fails to achieve equal or better performance compared to the general permit requirement,*
b. *Fails to address site or system conditions more satisfactorily than the general permit requirement,*
c. *Is insufficiently justified based on the information provided in the submittal,*
d. *Requires excessive review time, research, or specialized expertise by the division to act on the request, or*
e. *For any other justifiable cause.*

**Section 16.** *Setbacks*

*1. The minimum horizontal separations that must be maintained between the perimeter of the components of an Onsite Sewage Disposal System and the following features are:*

| *Minimum horizontal distance, in clear, required from:* | *Building sewer drain* | *Septic or other treatment tank* | *Disposal field* |
|---|---|---|---|
| *Building or structure* | *—* | *10□* | *10□* |
| *Property lines* | *10□* | *10□* | *10□* |
| *Water supply wells - domestic (sealed to 50 feet)* | *50□* | *100□* | *100□* |
| *Water supply wells (not sealed to 50 feet)* | *50□* | *100□* | *150□ ** |
| *Public water supply wells* | *50□* | *150□* | *150□ ** |
| *Streams or watercourses* | *50□* | *100□* | *100□* |
| *Drainage channel or irrigation ditch(s)* | *25□* | *25□* | *25□* |
| *Trees that may impact disposal area (roots, shade, etc.)* | *—* | *10□* | *10□* |
| *Disposal fields* | *—* | *5□* | *—* |
| *Community water main line* | *10□* | *25□* | *25□* |
| *Individual water service line* | *10□* | *25□* | *25□* |
| *Dry wells* | *—* | *10□* | *25□* |

**** The required distance between a well and the components of an Onsite Sewage Disposal System may be increased by the administrative authority depending on the depth to the water table, soil profile and site characteristics. The minimum distance may also be increased if groundwater mounding analysis indicates the need, the area is in a nitrogen management area or the Source Water Protection program staff indicates the need for more separation.***

**Section 17.** ***Approved Cleanout; Building Sewer***

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 practical 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 between the structure(s) and the septic tank or other treatment systems must be approved pipe made of ABS, polyvinylchloride or other materials with watertight joints.***
3. ***Except as otherwise provided in this section, the run of the building sewer, when practical, must be at a uniform slope to provide a scour velocity of at least 2 ft/sec.***
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.***

**Section 18.** ***Capacity of Septic Tank***

1. ***The minimum capacity of a septic tank or other treatment tank that is used to serve an Onsite Sewage Disposal System must be calculated based on the estimated flow of sewage from the non-residential (commercial) facility, in accordance with Table 18-1 and items 4 & 5,below.***
2. ***To determine the estimated flow of sewage from the commercial facility, examine the following table and determine the occupancy or occupancies that most closely correlate to the intended occupancy of the commercial structure.***
3. ***Septic tank construction information may be found in WTS 23, at: http://ndep.nv.gov/bwpc/wts-23.pdf***

*Table 18-1*

| *TYPE OF OCCUPANCY* | *ESTIMATED FLOW OF SEWAGE (GALLONS PER DAY)* |
|---|---|
| *Airports* | *15 per employee and 5 per customer* |
| *Automobile washes (sand/oil interceptor required)* | *5 per passenger vehicle* |
| *Bowling alleys* | *150 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 (lint trap required)* | *500 per machine* |
| *Commercial* | *Per manufacturer's specifications* |

| *TYPE OF OCCUPANCY* | *ESTIMATED FLOW OF SEWAGE (GALLONS PER DAY)* |
|---|---|
| *Mobile home parks* | *300 per space* |
| *Offices* | *20 per employee* |
| *Picnic parks (with toilets only)* | *20 per parking space* |
| *Recreational Vehicle Parks* [a.] | |
| *With water hookups* | *100 per space* |
| *Without water hookups* | *75 per space* |
| *Motels with bath, toilet and kitchen wastes* | *100 per room* |
| *Motels without kitchens* | *80 per room* |
| *Restaurants and cafeterias* [b.] *(Grease trap/interceptor required)* | *20 per employee* |
| *With toilets* | *Add 7 per customer* |
| *With cocktail lounge* | *Add 2 per meal served* |
| *With garbage disposal (not recommended)* | *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* [b.] | |
| *With toilets* | *1,000 for first bay* |
| *Each additional bay* | *Add 500* |
| *Stores/shopping centers* [b.] | |
| *Staff* | *20 per employee* |
| *With public restroom* | *1 per 10 square feet of floor space* |

| *TYPE OF OCCUPANCY* | *ESTIMATED FLOW OF SEWAGE (GALLONS PER DAY)* |
|---|---|
| *Swimming pools (public)* | *10 per person* |
| *Theaters and auditoriums:* | |
| *Indoor* | *5 per seat* |
| *Drive-in* | *10 per space* |

*4. If the estimated flow of sewage for the intended occupancy is 3,000 gallons or less per day, the minimum required capacity of the septic tank is equal to the estimated flow times 1.5.*

*5. If the estimated flow of sewage for the intended occupancy is more than 3,000 gallons per day, the minimum required capacity of the septic tank is equal to the estimated flow plus a sludge storage volume of 1,500 gallons.*

*[1.] Recreational vehicle waste is high strength and is generally discharged with a sanitary solution that inhibits microbial activity. Therefore, in sizing the system, a factor of safety of 2.0 times the volume determined from Table 18-1 shall be used. Increased pumping frequency must also be provided.*

*[2.] Systems serving high volume establishments such as restaurants, convenience stores and service stations located near interstate type highways and similar high-traffic areas, require special sizing considerations due to expected above average sewage volume. Minimum estimated flows for these facilities shall be 3.0 times the volume determined from Table 18-1.*

**Section 19.** *Septic/Treatment Tank Construction*

*1. GENERAL REQUIREMENTS*

*a. Septic tanks shall be constructed of durable materials designed to withstand expected physical loads and corrosive forces.*

*b. Septic tanks shall be verified watertight by a water-tightness test during installation.*

*c. Septic tanks shall be installed at level and;*

*d. Septic tanks shall be designed to provide settling of solids, accumulation of sludge and scum, and access for cleaning,*

*e. Meet the specified requirements set forth in the Uniform Plumbing Code, /ASTM or other recognized construction code or design manual, referenced by the design engineer, for the construction of septic tanks as well as conform to guidelines in WTS 23, found at: http://ndep.nv.gov/bwpc/wts-23.pdf*

*2. TANK DIMENSIONS*

*a. Liquid depth of tanks shall be at least 36 inches. A liquid depth greater than 6 feet shall not be considered in determining tank capacity.*

*b. 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.*

*3. TANKS IN SERIES*

*a. Septic tanks may be installed in series, up to a maximum of 2, provided each tank is a single compartment tank and the volume of the first tank must not be less than 2/3 of the total capacity of both tanks.*

*4. Scum storage volume shall be at least 12.5% of the tank with a minimum 9 inch airspace.*

*5. VENTING*

*a. Inlets and outlets shall allow free venting of tank gases back through the drainage system.*

*b. The top of the tee or baffle for both the vented inlet and the vented outlet must extend at least 4 inches above the level of the liquid. The bottom of the tee or baffle for both the vented inlet and vented outlet must extend at least 12 inches below the level of the*

*liquid. The invert of the inlet pipe must be at least 2 inches above the invert of the outlet pipe.*

6. *Each compartment must have at least one manhole to provide access into the compartment.*
   a. *Access 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. There shall also be an access manhole for each 10 feet of length for tanks over 30 feet.*
   b. *The top of the tank shall be at least 6 inches below finished grade.*
   c. *If the top of the tank is located more than 18 inches below finished grade, all access openings required by sub-section (1) above, shall be extended to within 18 inches of the finished grade.*
   d. *Manholes must be designed to minimize objectionable odors and, where necessary, prevent unauthorized entry.*

**Section 20.** *Aerobic Wastewater Treatment Unit: General Requirements*

1. *If the division 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 division may require that the Onsite Sewage Disposal System include an aerobic wastewater treatment unit.*
2. *The owner of an Onsite Sewage Disposal System that will include an aerobic wastewater treatment unit must include in the design plans submitted to the division a maintenance agreement with a service provider that covers the anticipated life span of the Onsite Sewage Disposal System.*

3. *The maintenance agreement for the Onsite 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 biochemical oxygen demand that are each 30 milligrams or less per liter (average daily maximum).*
4. *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 before the unit may be used.*

**Section 21.** *Aerobic Wastewater Treatment Unit: Design Criteria*

1. *The division may authorize a reduction in the size of the absorption area if an aerobic wastewater treatment unit is utilized and hydraulic conditions (i.e. mounding) are not exceeded. Any reduction in the size of the absorption area must be justified by the design engineer based on the conditions of the soil and constraints of the site.*
2. *Except in those cases where an aerobic wastewater treatment unit is required, 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 Onsite Sewage Disposal System.*
3. *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.*
4. *A manual for the operation and maintenance of an aerobic wastewater treatment unit must be submitted to the division with the design plans. Aerobic wastewater treatment units*

***will not be approved by the division if an operation and maintenance manual has not been submitted with the design plans and approved by the division.***

**Section 22.** ***Nitrogen Removal Wastewater Treatment Unit: General Requirements***

1. ***If the division determines that the degradation of ground water or the constraints of the site (i.e. nitrogen management area) 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 Onsite Sewage Disposal System include a nitrogen removal wastewater treatment unit.***
2. ***The owner of an Onsite Sewage Disposal System that will include a nitrogen removal wastewater treatment unit shall include in the design plans submitted to the division a maintenance agreement with a service provider that covers the anticipated life span of the Onsite Sewage Disposal System.***
3. ***The maintenance agreement for the Onsite Sewage Disposal System must include, without limitation, a yearly inspection and wastewater quality testing of the system, and the components thereof, which verifies that the system is:***
   a. ***Functioning correctly; and***
   b. ***Producing effluent which has total nitrogen concentrations at 20 milligrams per liter, or less, consistent with the manufacturer's performance specifications.***
4. ***Nitrogen removal wastewater treatment unit that produces effluent with a concentration of nitrate that is more than 20 milligrams per liter, measured as total nitrogen, may not be considered for use in areas where it has been documented that total nitrogen concentration is in excess of 10 mg/l or is increasing in the groundwater (i.e. nitrogen management area), or to satisfy septic tank density policies and procedures established by the division.***

5. *A detailed hydrogeological study shall be submitted by the design engineer that demonstrates that a nitrogen removal wastewater treatment unit will not increase the nitrate-nitrogen concentration in the groundwater beneath the site or at any down gradient location to above 5 mg/L measured as total nitrogen.*

**Section 23.** *Nitrogen Removal Wastewater Treatment Unit: Design Criteria*

1. *The division may authorize a reduction in the size of the absorption area if a nitrogen removal wastewater treatment unit is utilized pursuant to section 22, provided hydraulic conditions are not exceeded. 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.*
2. *A nitrogen removal wastewater treatment unit must not be used where electrical service is unreliable, dependable maintenance is not available, or intermittent use of the nitrogen removal wastewater treatment unit will adversely effect the functioning of the Onsite Sewage Disposal System.*
3. *The design plans for a nitrogen removal wastewater treatment unit must include a schematic detailing a 24-hour operating alarm system for the nitrogen removal wastewater treatment unit.*
4. *A manual for the operation and maintenance of a nitrogen removal wastewater treatment unit must be submitted to the division with the design plans. A nitrogen removal wastewater treatment unit will not be approved by the division if an operation and maintenance manual has not been submitted with the design plans and approved by the division.*

**Section 24.** *Dosing/Pump Tank: General Requirements*

1. *Dosing tanks are required where:*

*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;*

*d. More than 500 lineal feet of absorption trench are required for the Onsite Sewage Disposal System. Alternate dosing is required for systems with over 1,000 ft. of disposal pipe.*

*e. Soil conditions exist that warrant dosing.*

**Section 25.** *Dosing Tank: Design Criteria*

*1. Dosing tanks and wastewater distribution components. An applicant shall:*

*a. Design dosing tanks to withstand anticipated internal and external loads under full and empty conditions.*

*b. Design the dosing tank to 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 Permittee or his operator to respond to a high-level alarm before the level of effluent in the dosing tank reaches the invert of the inlet pipe. The reserve volume should allow at least two hours time for the operator to respond. If the Onsite Sewage Disposal System is located in a remote area, the reserve volume must be increased by the design engineer.*

*c. Design dosing tanks to be easily accessible and have secured covers;*

*d. Ensure that dosing tanks are watertight and anti-buoyant, and*

*e. Install risers to provide access to the inlet and outlet of the tank and to service internal components.*

*2. If dosing will be performed by an electric pump:*

*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.*

*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 alert the permittee/operator that there is a high level of effluent or malfunction of the pump that will likely cause a high level of effluent. The alarm float shall be located at a level to provide the required emergency storage volume. The alarm switch must be on a circuit that is separate from the circuit for the switches that control the pump. A switch used in a pumping chamber must be able to withstand the humid and corrosive atmosphere inside the tank. The engineer 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. In lieu of floats, a dosing timer is also acceptable, provided the design engineer justifies its use.*

*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 design engineer of the Onsite Sewage Disposal System shall take such actions as are necessary to prevent sewer gases from traveling through the electrical conduit into the control box.*

*d. A source of back up power must be available.*

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

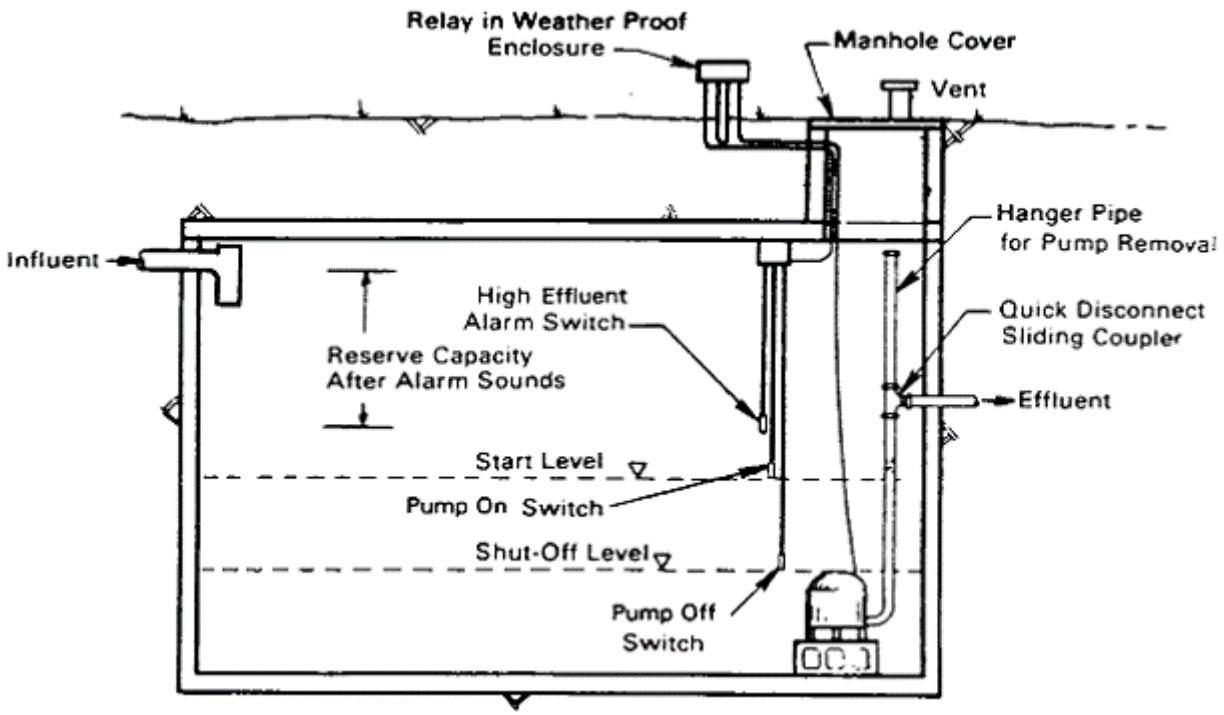



**Figure 25-1**

4. *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.*

5. *If dosing tanks are screened, a reduction in the disposal field pipe orifice opening may be allowed.*

6. *The frequency of dosing shall be at least 4 and no more than 8 times per day.*

7. *The dosing volume must be of sufficient capacity to distribute effluent evenly to all parts of the distribution system. The active dosing volume must be between 5 to 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.*

**Section 26.** ***Distribution Box: General Requirement; Design Criteria***

1. ***Except where a pressure distribution system is used, a distribution box or boxes 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 division. The distribution box must have a cover that is made of the same material as the distribution box. It is critical that the distribution box be placed level and maintained in that manner.***
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 invert of the inlet must be at least 1 inch higher than the invert 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.***

**Section 27.** ***Monitoring Ports***

1. ***When required, monitoring ports shall be a minimum of four inches (4") in diameter and be located at representative points in the absorption area. The intent of monitoring ports is to measure any anticipated liquid at critical depths within the bed or trench. A sufficient number of ports must be located in disposal fields to adequately assess operating***

*conditions. At a minimum, monitoring ports shall be located at the center and ends of absorption beds and at the corners of absorption trenches.*

**Section 28.** *Soil Absorption System: Percolation Tests, General Requirements*

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 division.*
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 (unless methodology described in section 29.6 is used) and the requirements for the sizing of the appropriate septic tank as determined in section 18, except that if the percolation testing yields a percolation rate of less than 5 minutes per inch, special design shall be incorporated (i.e. sand lined trench) to slow the effluent for proper treatment as outlined in Section 28.7.*
3. *Soils to be used in a soil absorption trench must have a percolation rate that is 120 minutes per inch or less without interference from ground water or impervious strata below the level of the absorption system. A test pit must be excavated and the profile of the soil to a minimum depth of 5 feet below the bottom of the proposed absorption system must be recorded in a log for the soil profile. Impervious barriers, bedrock, fractures, areas of open solution, 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 greater than 60 minutes per inch may require special design.*
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 division, 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 5 minutes per inch, the division 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 watercourses be increased.*

8. *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.*

9. *Distribution lines must be of equivalent length unless otherwise authorized by the division.*

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

11. *An Onsite 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 and no permanent structures may be placed over the area.*

**Section 29.** *Performance of Percolation Test*

1. *Data from percolation tests from a minimum of two test holes in the area of the proposed soil absorption system is required, unless the methodology described in subsection 6 is*

*utilized. The engineer, soil scientist, geologist or other persons suitable to the division shall perform a percolation test in accordance with this section.*

2. *The hole must be dug or bored to the proposed depth of the absorption trench. The hole must have vertical sides and have a horizontal dimension of 4 to 12 inches. 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. Any soil which has sloughed into the hole before or during the percolation test must be removed.*
3. *The design engineer, or other suitable person, must verify 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. Verification of maximum high ground water includes, without limitation, a morphological study of soil conditions with particular reference to soil color and sequence of horizons.*
4. *If the natural soil condition has been altered by filling or other attempts to improve wet areas, the division 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 division may require the verification by the engineer to include a determination of whether the fill material is suitable for an Onsite Sewage Disposal System.*

*6. In lieu of performing a percolation test, the design engineer, in performing a site Investigation may include the determination of soil characteristics using one or more of the following methods:*

*a. "Standard Practice for Surface Site Characterization for On-site Septic Systems" published by the American Society for Testing and Materials, (D 5879-95E1), approved December 10, 1995;*

*b. "Standard Practice for Subsurface Site Characterization of Test Pits for On-Site Septic Systems," published by the American Society for Testing and Materials, (D 5921-96E1), approved February 10, 1996;*

*c. "Standard Practice for Soil Investigation and Sampling by Auger Borings," published by the American Society for Testing and Materials, (D 1452-80), re-approved 1995, if the depth to groundwater may be within the required minimum vertical separation from the bottom of the disposal field.*

*1. The information listed in subsections a, b and c is incorporated by reference and does not include any later amendments or editions of the incorporated matter.*

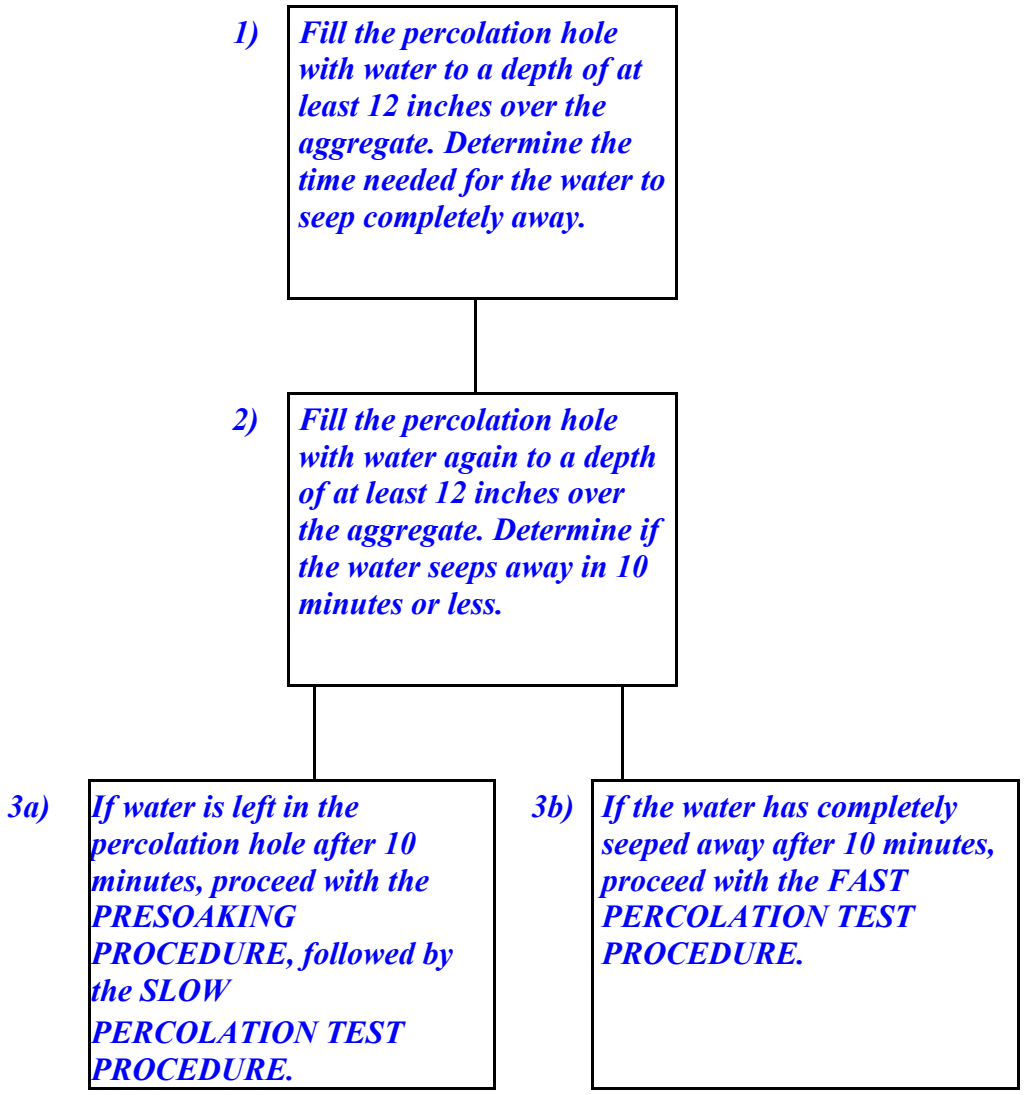
*2. Copies of the incorporated material are available for inspection at the Division of Environmental Protection and the Office of the Secretary of State, or may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959.*

*d. Other methods of soil evaluation, as approved by the division that ensure compliance with the Nevada Water Pollution Control Law.*

*8. Soil characterization (soil texture) and Percolation test results must be applied to Table 32-1 to determine the design application rate*

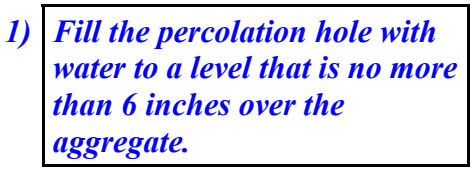
**Section 30.** ***Determination of Appropriate Percolation Test Procedure***

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




***Fast Percolation Test Procedure***

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



2) *From a fixed reference point, determine, at 10-minute intervals, how much the water drops over the next 60 minutes. If 6 inches of water seeps away in less than 10 minutes, a shorter interval between measurements must be used.*

3) *Refill the hole as necessary to prevent all water from seeping away. The level of the water must never exceed 6 inches in depth over the aggregate.*

4) *The amount of the drop in the level of the water recorded for the final 10-minute period must be used to determine the percolation rate.*

***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.***

***Presoaking Procedure for Slow Percolation Test***

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

1) *Fill the percolation hole with clear water to a minimum depth of 12 inches over the aggregate.*

2) *Maintain at least 12 inches of water over the aggregate in the hole for 4 hours.*

3) *Any water remaining in the hole at the end of the 4-hour period must be allowed to seep away. Do not remove the water.*

4) *Let the hole sit for not less than 16 hours or more than 30 hours. Swelling of the soil will occur during this period. The SLOW PERCOLATION TEST PROCEDURE must begin no sooner than 16 hours and no later than 30 hours after the end of the 4-hour soaking period.*

### *Slow Percolation Test Procedure*

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

1) *Fill the percolation hole with water to a maximum depth of 6 inches over the aggregate.*

2) *From a fixed reference point, measure the drop in the level of the water at 30-minute intervals, for a total of 4 hours. If the first 6 inches of water seeps away in less than 30 minutes, the interval between measurements must be reduced to 10 minutes and the length of the test must be reduced to 1 hour.*

3) *Fill the hole to a maximum depth of 6 inches over the aggregate as often as necessary to prevent the hole from becoming empty.*

*4)* ***The amount of the drop in the level of the water during the last interval must be used to determine the percolation rate, except that if two successive measurements do not vary more than 1/16 inch, the test may be stopped and the percolation rate may be determined. In any case, the minimum time in which a slow percolation test may be completed is 1 hour.***

### *Sample form 29-1 for Percolation Test*

***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.***

## *Sample Log 29-2 for Profile of Soil.*

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

| | |
|---|---|
| ***PROJECT*** | |
| ***TEST SPECIFICATIONS*** | |
| ***ENGINEER/TECHNICIAN*** | ***DATE*** |

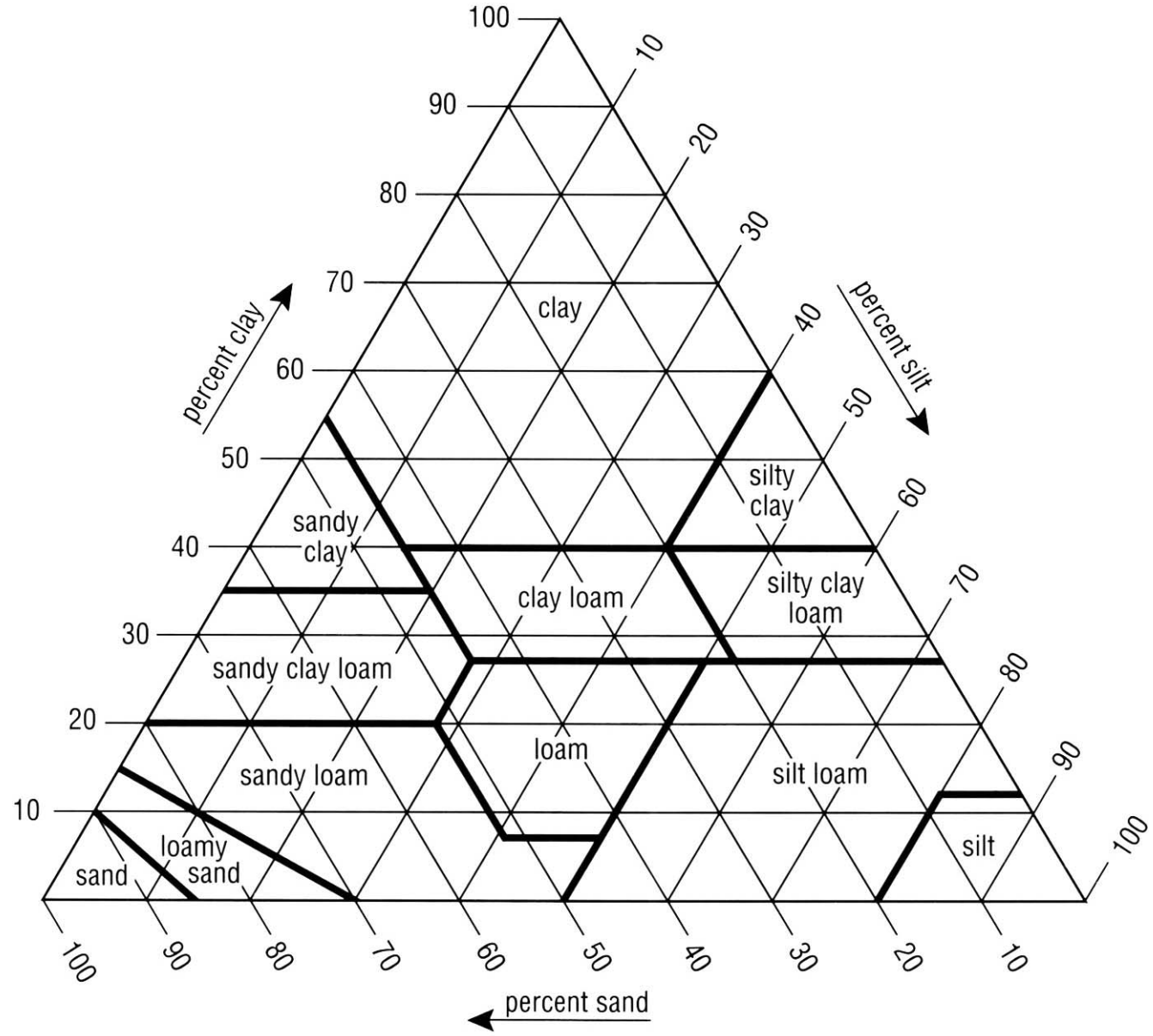
| ***DEPTH IN FEET*** | ***DESCRIPTION OF SOIL*** |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

***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. LOCATIONS OF THE TEST PITS SHALL BE INDICATED ON THE PLANS.***




***General soil classification used by the U.S. Department of Agriculture***

***Fig. 29-1***

*Table 29-1*

*Types of Soils*

| | |
|---|---|
| *Sands:* | *Soil is 85% or more sand and the percentage of silt plus 1.5 times the percentage of clay is 15 or less.* |
| *Loamy Sands:* | *At the upper limit soil is 85 to 90% sand and the percentage of silt plus 1.5 times the percentage of clay is 15 or less; at the lower limit, soil is 70 to 85% sand and the percentage of silt plus twice the percentage of clay is 30 or less.* |
| *Sandy Loams:* | *Soil is 20% or less clay and 52% or more sand and the percentage of silt plus twice the percentage of clay exceeds 30; or soil is less than 7% clay, less than 50% silt, and between 43 and 52% sand.* |
| *Loam:* | *Soil is 7 to 27% clay, 28 to 50% silt, and less than 52% sand.* |
| *Silt Loam:* | *Soil is 50% or more silt and 12 to 27% clay, or 50 to 80% silt and less than 12% clay.* |
| *Silty Clay Loam:* | *Soil is 27 to 40% clay and less than 20% sand.* |
| *Clay:* | *40% or more clay, less than 45% sand, and less than 40% silt.* |
| *Silt:* | *80% or more silt and less than 12% clay.* |
| *Sandy Clay Loam:* | *20 to 35% clay, less than 28% silt, and more than 45% sand.* |
| *Clay Loam:* | *27 to 40% clay and 20 to 46% sand.* |
| *Sandy Clay:* | *35% or more clay and 45% or more sand.* |

**Section 31.** *Absorption Trench System: General Requirements*

*1. An Onsite 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 Onsite Sewage Disposal System is to be located.*

2. *The design for an Onsite Sewage Disposal System utilizing absorption trenches must comply with the design criteria set forth in sections 1 through 56.*

**Section 32.** *Absorption Trench System: Design Criteria*

1. *The bottom of an absorption trench that is used in an Onsite 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, unless a longer length is justified by the design engineer and approved by the administrative authority.*
4. *An absorption trench must not be excavated if the soil is extremely wet (critical in soils with clay). 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 allowed in regulation or approved by the division. 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. Perforations shall be facing down. 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 anaerobic conditions in the trench.*
8. *The aggregate in an absorption trench must be covered with untreated building paper; straw (1 in. min. thickness), geotextile fabric, or a similar covering approved by the division, and the top of the trench must be overfilled with not less than 4 inches or more than 6 inches of soil.*

   *Note: It is extremely important to keep fines from entering the trench from poorly cleaned gravel or soil cover. It is estimated that over 60% of the trench absorption capacity could be impaired with aggregate that is composed of 4% fines.*

9. *The Long Term Acceptance Rate (LTAR), as determined by the percolation rate of the soil, or soil texture must be used to determine the design application rate in accordance with the following table:*

*Table 32-1*

*Long Term Acceptance Rates (LTAR) for Wastewater Application to Soil Absorption Systems*

| *Percolation Rate (minutes/inch)* | *Typical soil Textures* | *Maximum Loading Rate/LTAR (gallons/square foot/day)* |
|---|---|---|
| *≤ 5* | *Gravel to Course to Medium Sand* | *See Section 28 (7).* |
| *6-10* | *Fine Sand to Loamy Sand* | *0.9 1.1* |
| *11-20* | *Sandy Loam to Loam* | *0.7 1.0* |
| *21-30* | *Loam* | *0.5 0.7* |
| *31-40* | *Loam to Silty Loam* | *0.4 0.5* |
| *41-60* | *Clay Loam to Clay* | *0.3 0.4* |
| *Over 60* | *Silty Clay Loam/Silty Clay* | *0.2* |

*The absorption area required for the On-site Sewage Disposal System will be determined by the following formula:*

*A is the absorption area in gallons per day per ft2.*

*Q is the flow (septic tank size)*

*LTAR is the Long Term Acceptance Rate found in table 31-1.*

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

*Example 32-1: A 3,000 gallon septic tank is proposed and the long term rate (from Table 32-1) for sandy loam is 1.0 gal/ft2/day.*

*3,000 gal/d ÷ 1.0 gal/ft2/day = 3,000 ft2 absorption area required.*

*10. Soils with a percolation rate slower than of 120 min/in are not suitable for an Onsite Sewage Disposal System that uses a soil absorption system for effluent disposal.*

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

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

*Example 32-2: 3,000 ft2 of absorption area required in example 32-1, and a 4 foot trench will be utilized for the soil absorption area. Since there are two sidewalls per trench, multiply the depth by 2.*

*3,000 ft2 ÷ (2 x 4 ft.) = 375 lineal ft. of disposal line required.*

*13. The following is a diagram of an absorption trench:*

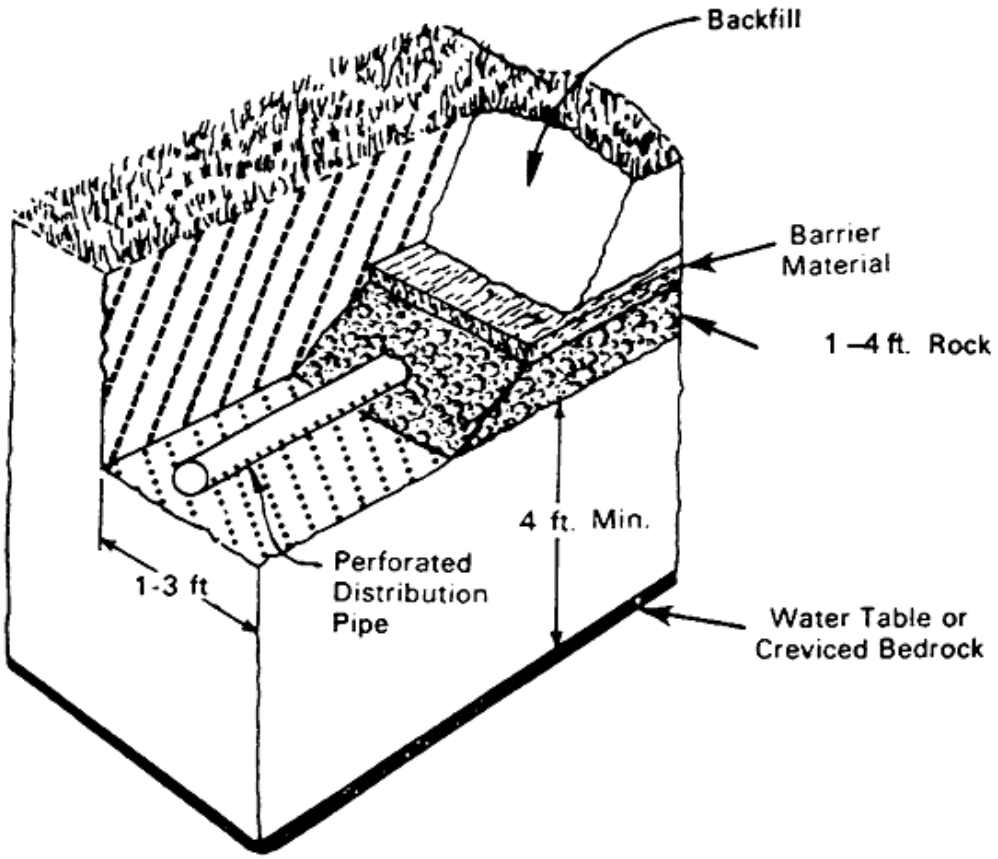



*Figure 32-1*

**Section 33.** ***Absorption Bed: General Requirements***

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, if justified by the engineer. The bottom of the absorption bed, rather than the area of the sidewall, must serve as the primary absorptive medium.***
2. ***An absorption bed must not be placed on a slope if the grade of the slope is greater than 5 percent. The bottom of the absorption bed must be level.***
3. ***Absorption beds are not as effective as absorption trenches due to the absorption bed having less sidewall, as well as a loss of aerobic qualities. Therefore, they must be sized larger by a factor of 1.75.***

**Section 34.** ***Absorption Bed: Design Criteria***

1. ***The absorptive area of an absorption bed must be at least 75 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 greater 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.***
4. ***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.***
5. ***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 NAC 444.8394 and 444.8396.***
6. ***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, geotextile fabric, straw (1 in. min thickness) or any similar covering approved by the***

*administrative authority, must cover the aggregate, and a backfill of soil must be placed over the covering.*

7. *The owner of an Onsite 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 during or after excavation is completed.*
8. *Dosing is required if more than 500 linear feet of distribution lines are required.*
9. *The following is a diagram of an absorption bed:*

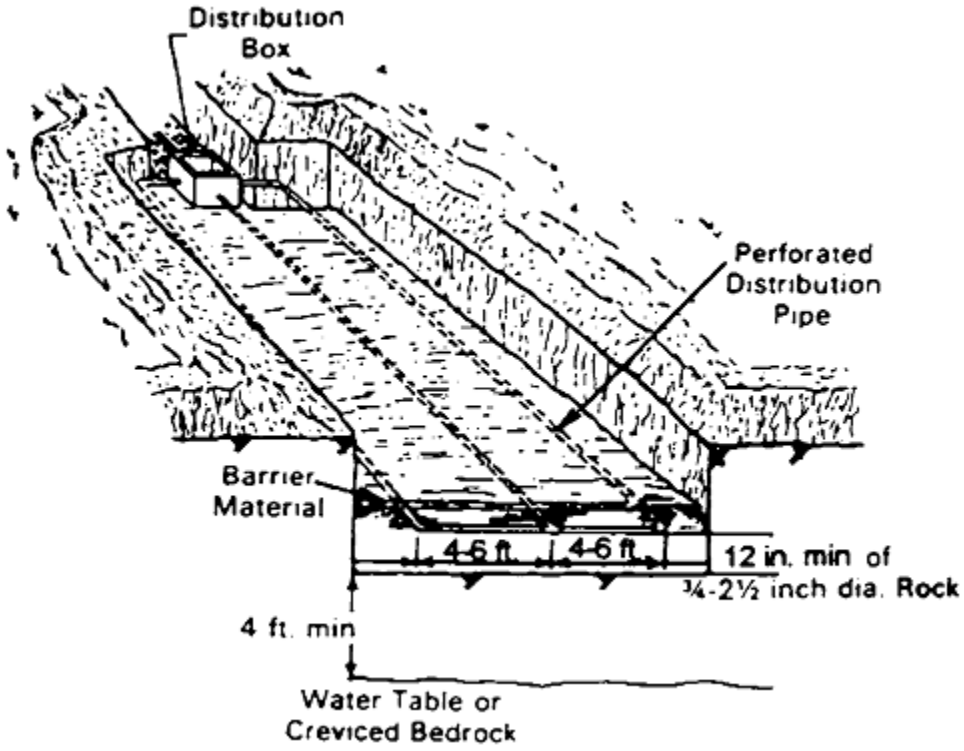



*Figure 34-1*

**Section 35.** *Chamber System: General Requirements*

1. *A chamber system (Gravel-less absorption 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.*

**Section 36.** *Chamber System: Design Criteria*

1. *The division will not consider a reduction in size for utilizing a chamber system with a septic tank.*
2. *The percolation rate of the soil on which a chamber system is placed must not be slower 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 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 and no more than five feet deep.*
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 engineer 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 conjunction with an absorption bed rather than an absorption trench, the chamber system and the absorption bed must comply with the*

*manufacturer's recommendations and WTS 23 found at http://ndep.nv.gov/bwpc/wts-23.pdf*

**Section 37.** *Alternative Absorption System: General Requirements*

1. *If an Onsite Sewage Disposal System that uses absorption trenches pursuant to Sections 31 and 32 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 slower than 60 minutes per inch, the division may approve the use of an alternative absorption system (i.e. sand filter, mound).*
2. *A plumbing fixture served by an alternative absorption system must be a low-flow fixture designed for an Onsite Sewage Disposal System that is used where the percolation rates are slower than 60 minutes per inch. Each such fixture must be specifically identified by the engineer on the design plans for the alternative absorption system.*
3. *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 U.S. Environmental Protection Agency (reference document number PB83-219907), the Onsite Wastewater Treatment Systems Manual which is published by the Environmental Protection Agency (reference document number EPA/625/R-00/008, and contact the division for design parameters for the alternative absorption system before the engineer submits the design plans to the division.*
4. *An engineer who is designing an alternative absorption systems must also consult the division's WTS 23 design policy located at http://ndep.nv.gov/bwpc/wts-23.pdf*

**Section 38.** ***Stepped Network of Trenches Utilizing Relief Lines: General Requirements***

1. ***On sloping terrain where a conventional Onsite 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 allow the effluent from a completely filled trench to overflow into a trench at a lower elevation, as shown in figures 39-1 and 39-2.***

***Note: because continuous ponding of the infiltration surfaces is necessary for the system to function, the trenches experience hydraulic failure more rapidly and progressively because the infiltration surfaces cannot regenerate their infiltrative capacity.***

**Section 39.** ***Stepped network of trenches utilizing relief lines: Design criteria.***

1. ***The size of the required absorption area for a stepped network of trenches utilizing relief lines must be calculated based on the Long Term Acceptance Rate in table 32-1 and must conform to the requirements for the sizing of a standard trench. Percolation testing or soil texture analysis 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 or most restrictive soil.***
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.***
3. ***Trenches for a stepped network of trenches utilizing relief lines must be spaced at least 10 feet apart.***
4. ***The following is a diagram of a stepped network of trenches utilizing relief lines:***

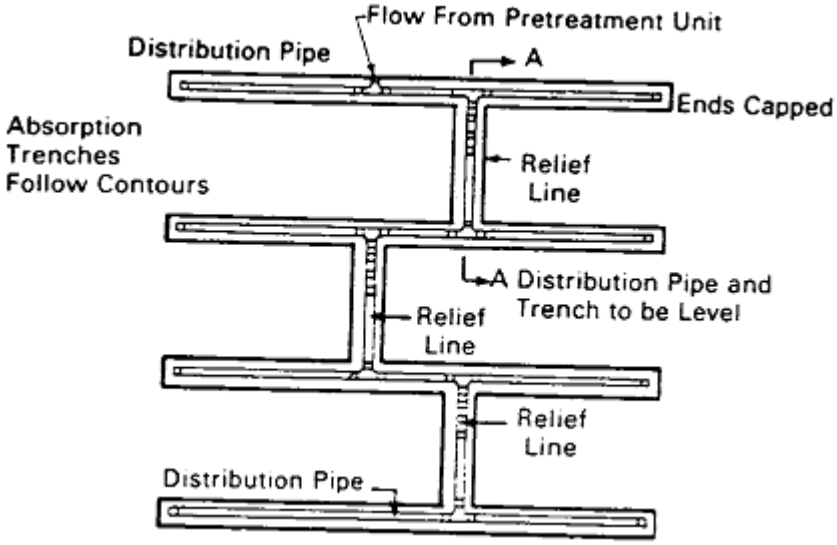



*Figure 39-1*

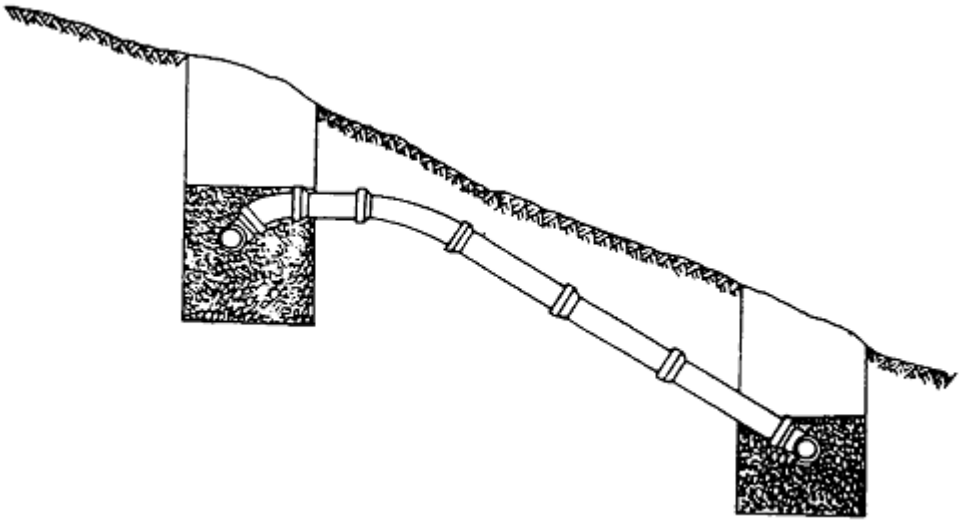


*Figure 39-2*

**Section 40.** *Capping Fill Trench: General Requirements*

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

**Section 41.** *Capping Fill Trench: Design Criteria*

1. *The soil surrounding and beneath the bottom of a capping fill trench must have a percolation rate that is greater than 10 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 Section 32 (12).*
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 5 percent with percolation rates of 60 minutes per inch or less. Percolation rates of greater than 60 minutes per inch may be placed on slopes of up to 10%.*
4. *The invert of the disposal drain pipe must be placed less 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, geotextile fabric, straw (1 in. min thickness) or any other similar covering approved by the administrative 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:*

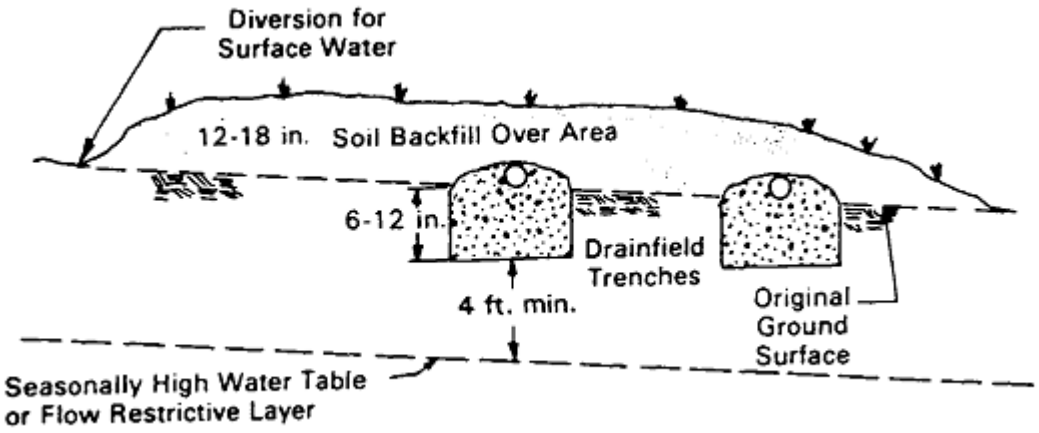



*Figure 41-1*

**Section 42.** *Elevated Mound System: General Requirements*

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. When preparing the site, leave in place tree stumps and other herbaceous material excessively alters the soil structure if removed after mowing and cutting;*

*4. Begin mound construction immediately after scarification.*

*5. Place each layer of the bed system to prevent differential settling and promote uniform density.*

**Section 43.** *Elevated Mound System: Design Criteria*

*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 slower than 60 minutes per inch; or*

*b. Greater than 12 percent, if the soils comprising the slope have percolation rates that are equal to or faster 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. *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 slower than 60 minutes per inch, the bed must be made narrow and extend along the contour of the slope 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.*
5. *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:*

*Table 43-2*

| *Percolation Rate (minutes per inch)* | *Infiltration Rate (gallons per day per square foot)* |
|---|---|
| *0-30* | *1.0* |
| *31-45* | *0.5* |
| *46-60* | *0.3* |
| *61-120* | *0.2* |

6. *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;*

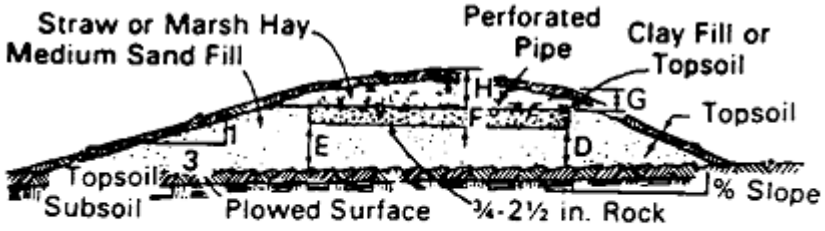
*2. "A" equals the length of the absorption bed; and*

*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.*

*7. 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.*

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

*9. The following is a diagram of an elevated mound:*




(A) Cross Section

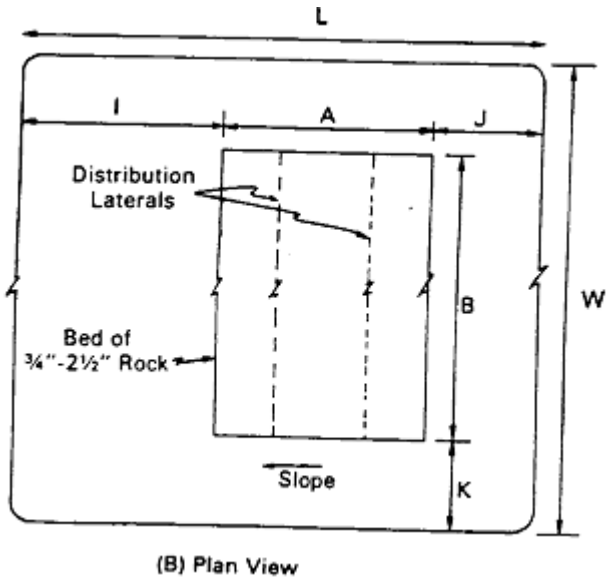



*Figure 43-1*

**Section 44.** *Elevated Mound System: Inspections*

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, 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 division for review before a permit or other type of approval authorizing occupancy may be issued.*

**Section 45.** ***Intermittent Sand Filter: General Requirements***

1. ***The effluent shall be 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.***
2. ***The effluent shall pass through the aggregate and infiltrate the select fill material.***
3. ***Treatment of the wastewater shall occur as it passes through the fill material and the unsaturated zone of the natural soil.***

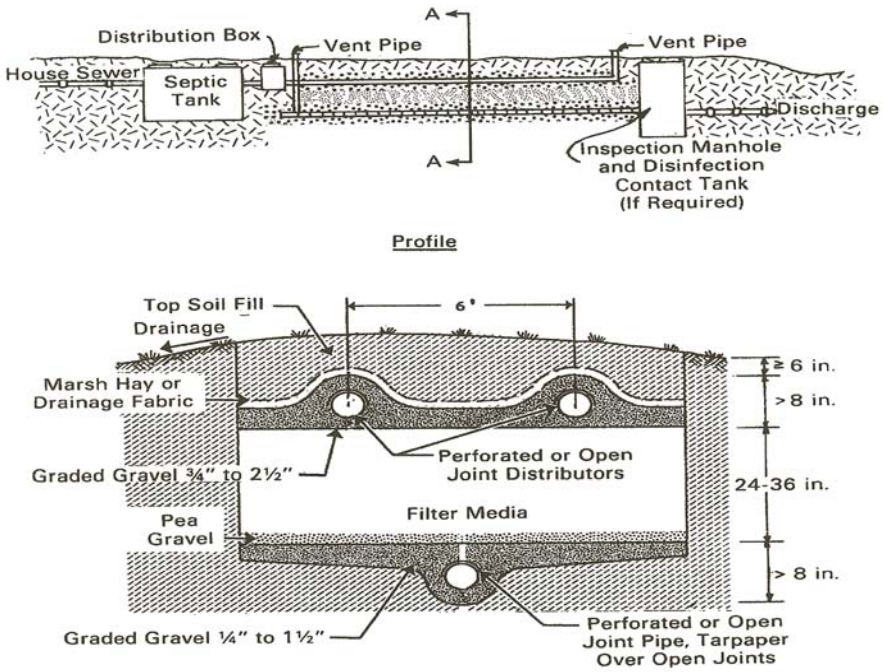
**Section 46.** ***Intermittent Sand Filter: Design Criteria***

1. ***Pressurized wastewater delivery must be applied from the septic tank or separate watertight chamber with a pump or siphon sized and controlled to deliver the pretreated wastewater to the top of the intermittent sand filter.***
2. ***The dosing rate shall be at least four (4) doses per day and not more than twenty four (24) doses per day;***
3. ***The pressurized wastewater delivery system shall provide even distribution in the sand filter through good engineering practice. The engineer shall:***
    a. ***Specify all necessary controls, pipe, valves, orifices, filter cover materials, gravel, or other distribution media, and monitoring and servicing components in the design documents; and***
    b. ***Ensure that the topsoil cover is six to 12 inches in depth and graded to drain.***
4. ***The sand filter containment vessel shall be watertight, structurally sound, durable, and capable of withstanding stress from installation and operational service. Intermittent sand filter placement may be above grade, partially buried, or fully buried depending on site and service circumstances.***

5. ***Media used in the intermittent sand filter must be washed durable granular material with less than 1% organic matter by weight. The effective size of the sand must be between 0.25-1.00 millimeters (optimal effective size is between 0.3 – 0.7 millimeters). The uniformity coefficient must be less than 4 (optimally 3.5 or less).***
6. ***The sand media depth shall be a minimum of 24 inches with the top and bottom surfaces level.***
7. ***The maximum wastewater loading rate shall be 1.0 gallons per day per square foot of inlet surface at the rated daily design flow; includes necessary monitoring, inspection, and servicing features;***
8. ***Inspection ports shall be installed in the distribution media and, in the under drain, if utilized;***
9. ***The native soil absorption system shall be designed to ensure that the linear loading rate does not exceed site disposal capability;***
10. ***The fill material for a sand filter system must meet the criteria found in table 46-1:***

FIGURE 6-5

TYPICAL BURIED INTERMITTENT FILTER INSTALLATION

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## *Fill Material Specifications*

***a.***

| *Sieve Size/#* | *Effective Particle Size* | *% Passing* |
|---|---|---|
| *3/8"* | *9.50 mm* | *100* |
| *4* | *4.75 mm* | *95-100* |
| *8* | *2.36 mm* | *80-100* |
| *16* | *1.18 mm* | *50-85* |
| *30* | *0.60 mm* | *25-60* |
| *50* | *0.30 mm* | *10-30* |
| *100* | *0.15 mm* | *2-10* |
| *200* | *0.075 mm* | *≤3%* |

*Source: ASTM C-33, Specifications for Fine Aggregate*

*b. The sand shall have not more than 45% passing any one sieve and retained on next consecutive sieve of those shown above.*

*c. The fineness modules shall not be less than 2.3 nor more than 3.1. The Fineness Modules is defined as the sum of the cumulative percentages retained in the sieve analysis, divided by 100, for the sieve sizes shown above (except for #200 sieve).*

**Section 47.** *Intermittent Sand Filter: Inspections*

*1. The construction of an intermittent sand filter system must be inspected and verified by an engineer when:*

*a. The basal area of the filter has been scarified;*

*b. The distribution lines have been placed on the sand media and covered by the aggregate;*

*c. The topsoil cap has been placed; and*

*d. After 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 shall develop a manual for the operation and maintenance for the sand filter system and submit the manual to the division for review before a permit or other type of approval authorizing occupancy may be issued.*

**Section 48.** *Pressure Distribution System: General Requirements*

*1. A pressure distribution system may be used in conjunction with an elevated mound, sand filter, absorption bed or absorption trench system (including chamber systems, etc.) Monitoring ports are required.*

**Section 49.** ***Pressure Distribution System: Design Criteria***

1. ***A pump shall be used to pressurize a pressure distribution system. The active dosing volume must be approximately 10 times the total volume of the distribution pipe.***
2. ***A solid delivery pipe from the dosing tank to the perforated distribution piping shall be placed below the frost line. The delivery pipe shall 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 shall 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 larger. If an effluent pump screen is utilized, the diameter of the discharge hole may be reduced accordingly. The rate of discharge for various-sized holes at various pressures are set forth in the following table:***

***Table 49-1***
***Source: US EPA***

| ***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:*

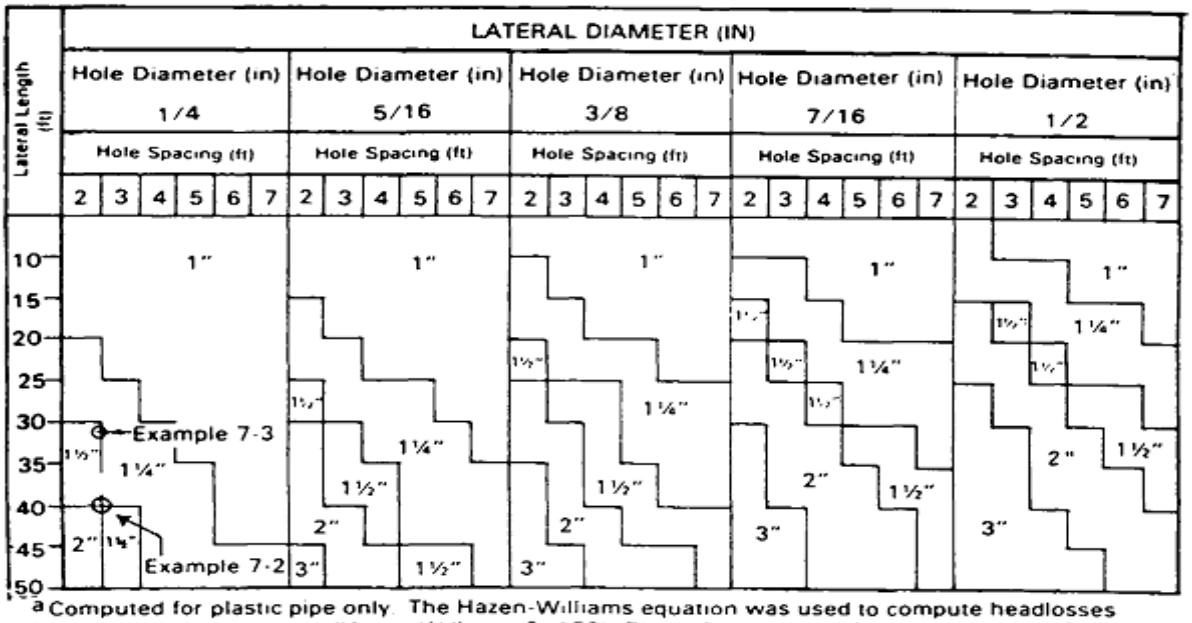
| *FRICTION LOSS IN SCHEDULE 40 PLASTIC PIPE; C = 150 (ft/100 ft)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Flow in gallons per minute* | *Pipe Diameter (inches)* | | | | | | | | |
| | *1* | *1 1/4* | *1 1/2* | *2* | *3* | *4* | *6* | *8* | *10* |
| *1* | *0.07* | | | | | | | | |
| *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* | | | | |

| *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* |
| *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* | |

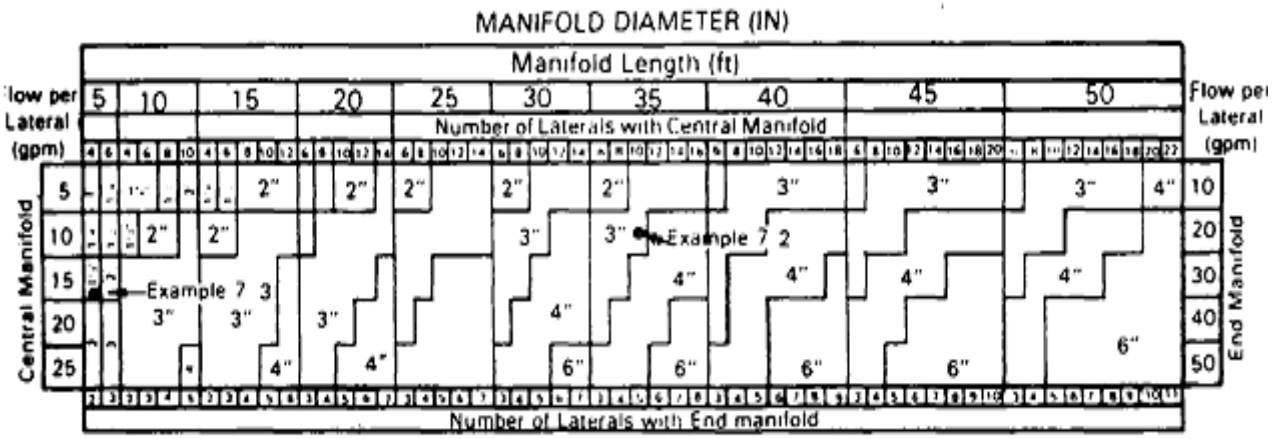
| *FRICTION LOSS IN SCHEDULE 40 PLASTIC PIPE; C = 150 (ft/100 ft)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Flow in gallons per minute* | *Pipe Diameter (inches)* | | | | | | | | |
| | *1* | *1 1/4* | *1 1/2* | *2* | *3* | *4* | *6* | *8* | *10* |
| *300-349* | | | | | | | *0.58* | *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 spacings, 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:*

REQUIRED LATERAL PIPE DIAMETERS FOR VARIOUS HOLE DIAMETERS, HOLE SPACINGS, AND LATERAL LENGTHS[a] (FOR PLASTIC PIPE ONLY)




[a] Computed for plastic pipe only. The Hazen-Williams equation was used to compute headlosses through each pipe segment (Hazen-Williams C= 150). The orifice equation for sharp-edged orifices (discharge coefficient = 0.6) was used to compute the discharge rates through each orifice. The maximum lateral length for a given hole and spacing was defined as that length at which the difference between the rates of discharge from the distal end and the supply end orifice reached 10 percent of the distal end orifice discharge rate.




[a] Computed for plastic pipe only. The Hazen-Williams equation was used to compute headlosses through each segment (Hazen-Williams C = 150). The maximum manifold length for a given lateral discharge rate and spacing was defined as that length at which the difference between the heads at the distal and supply ends of the manifold exceeded 10 percent of the head at the distal end.

***Source: U.S. EPA***

**Section 50.** ***Holding Tanks (non-industrial)***

1. ***Criteria for approval. Installation of a holding tank system requires a permit. A permit may be issued for sites that meet all the following conditions:***
    a. ***The site cannot be approved for installation of a standard subsurface disposal system.***
    b. ***No community or area wide sewerage system is available or expected to be available within five years.***
    c. ***The holding tank is intended to serve a county, state or national park or an occasional use facility such as a county fair or a rodeo, or if the holding tank is under the control of a city or other legal entity authorized to construct, operate, and maintain a community or area-wide sewerage system.***
    d. ***Unless otherwise allowed by the division, the projected daily sewage flow is not more than 500 gallons.***
    e. ***Setbacks required for septic tanks can be met.***
    f. ***Only domestic sewage may be discharged into the tank.***
2. ***Operations and maintenance. At all times the holding tank is being used, the permittee must maintain a service contract with a sewage disposal service licensed under NAC 444 to provide for regular inspection and pumping of the holding tank.***
3. ***Design and construction requirements. Except as provided in section (5) of this rule, holding tanks must comply with the following requirements:***
    a. ***Plans and specifications for each holding tank proposed to be installed must be submitted to the division for review and approval.***
    b. ***Each tank shall:***
    c. ***Have a minimum liquid capacity of 2,000 gallons;***

*d. Comply with tank standards in WTS 23;*

*e. Be located and designed to facilitate removal of contents by pumping;*

*f. Be equipped with both an audible and a visual alarm placed in locations acceptable to the agent to indicate when the tank is 75 percent full;*

*g. Have no overflow vent at an elevation lower than the overflow level of the lowest fixture served; and*

*h. Be designed for anti-buoyancy if test hole examination or other observations indicate seasonally high groundwater may float the tank when empty.*

*4. Special requirements. The application for a holding tank permit must include:*

*a. A copy of a contract with a licensed sewage disposal service that requires the tank to be pumped periodically at regular intervals or as needed and the contents treated in a manner and at an approved facility; and*

*b. Evidence that the owner or operator of the proposed treatment facility will accept the pumpings for treatment.*

*5. Temporary use of holding tanks: Portable holding tanks may be temporarily placed at sites of limited duration events including, but not limited to, county fairs or construction projects (restaurants are regulated by the health authority) if the following requirements are met:*

*a. The tanks must be owned and serviced by a licensed sewage disposal service with sewage pumping equipment.*

*b. Tank placement and use must comply with all local planning, building, and health requirements.*

*c. Only domestic sewage may be discharged into the tank.*

*d. The tank must be maintained in a sanitary manner to prevent a health hazard or nuisance.*

*e. Unless approved by the division, the tank must not be buried.*

*f. A person may not use the tank to serve a dwelling, recreation vehicle, or any other structure having sleeping accommodations, except that a portable holding tank may be used temporarily to serve a contractor's job shack or night watchman's trailer.*

*6. The temporary tank must meet the following standards:*

*a. The tank must be watertight with no overflow vent lower than the overflow level of the lowest fixture served.*

*b. Tank capacity may not exceed 1,000 gallons unless otherwise authorized by the agent.*

*c. The tank must be structurally sound and made of durable, noncorrosive materials.*

*d. The tank must be designed and constructed to provide a secure, watertight connection of the building sewer pipe.*

*e. The tank must be marked with the name and phone number of the licensed sewage disposal service responsible for maintaining the tank.*

**Section 51.** *Cluster Systems*

*1. Use of a cluster system may be considered when lot sizes, location or site conditions make conventional disposal unacceptable and a local governing agency or its recognized entity assumes jurisdiction for permitting, operation and maintenance. The individual permit must be issued to a local governing body or its recognized entity as listed in NAC 445A.231.*

2. *Cluster systems shall be designed and constructed in accordance with the requirements of this regulation. In addition, cluster systems shall be maintained in accordance with the individual permit.*
3. *The combined area of the lots served by the cluster system plus the area of the parcel where the system is located, if separated from the lots served, shall be used to determine the allowable lot size. In no case shall the amount of sewage disposed at the site be more than listed in Section 4, subsection b.*
4. *Tank size/flow shall not exceed 25,000 gallons per day.*

**Section 52.** *Operation and Maintenance Manuals*

1. *The type and size of an Onsite Sewage Disposal System dictates what operations and maintenance (O&M) activities are necessary. A draft manual may be submitted along with the plans and specifications. The final O & M manual shall be stamped, signed and dated by the engineer and shall be submitted with the Certificate of Completion.*
2. *The manual should include, but not be limited to, schedules and/or procedures for the following:*
    a. *Response to emergencies. Notification of users, the division, and if necessary, the local health authority;*
    b. *Reporting the cause of any failure or malfunction. The information must be submitted in written form to the division.*
    c. *Making repairs, replacements or modifications of design as required to restore the system to proper function.*
    d. *Inspection of facilities to ascertain efficiency of operation and general condition of equipment (with checklist).*

*e. Pumping of septic tanks, pump or siphon chambers or other storage tanks by a licensed septic tank pumper and periodic pumping/maintenance of other pretreatment mechanisms by qualified personnel.*

*f. Maintenance of pumps, motors and switches.*

*g. Replacement of worn or damaged equipment.*

*h. Monitoring of water usage/wastewater generation.*

*i. Dosing/resting cycles for the drain field.*

*j. Determining water levels in trenches/drain field.*

*k. Monitoring of groundwater or adjacent surface water quality, if necessary.*

*l. Other activities as determined by the design engineer.*

*m. Sample forms for all O & M activities.*

*3. Records must be kept of all inspections, monitoring, work performed, conditions found, etc. The records must be available for inspection by the division at all times. Annual summary reports of system maintenance and operation must be submitted to the division per the permit requirements.*

*4. If O & M is performed by a municipality or other public entity operating many systems, a general manual with specific requirements for specific systems is acceptable.*

**Section 53.** *Decommissioning of Systems*

*1. The permittee must decommission a system when:*

*a. A sewerage system becomes available and the facility the system serves has been connected to that sewerage system;*

*b. The source of sewage has been permanently eliminated;*

*c. The system has been operated in violation of NRS and NAC and a repair permit and Certificate of Satisfactory Completion have not subsequently been issued for the system;*

*d. The system has been constructed, installed, altered, or repaired without a permit required by the division, and a permit has not subsequently been issued for the system;*

*e. The system has been operated or used without a required Certificate of Satisfactory Completion or Authorization Notice and a Certificate of Satisfactory Completion or Authorization Notice has not subsequently been issued for the system.*

*2. Procedures for decommissioning.*

*a. Tanks must be pumped by a licensed sewage disposal service to remove all septage.*

*b. If possible, tanks must have an opening made in the bottom to prevent liquid detention (note: do not enter the tank!!), be filled with reject sand, bar run gravel, or other material approved by the engineer, or the container must be removed and properly disposed. 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.*

*c. Submit a Notice of Termination (General Permit) to the Division.*

**Section 54.** *Schedule of Fees*

*The Division of Environmental Protection shall charge and collect fees for its services in accordance with the following schedule, except in areas where the laws and regulations governing Onsite Sewage Disposal Systems are administered by another administrative authority. Owners subject to an annual fee must pay the annual fee by the date specified in the permit to the division for each year the system is in operation. A system is placed in operation*

*when it first receives wastewater and remains in operation until the division receives notice the system has been decommissioned:*

*Schedule 54-1*

| | |
|---|---|
| *1. For a permit to construct an Onsite Sewage Disposal System, including a review of the plan for the system and permit* | *$200 One time fee.* |
| *2. For a permit to add an Onsite Sewage Disposal System to the General Permit* | *$0 No fee.* |
| *3. For an individual permit to construct an Onsite Sewage Disposal System, including a review of the plan for the system (includes first annual permit fee)* | *$1,000 application fee + $1,000 annual fee.* |
| *4. To extend a permit to construct an Onsite Sewage Disposal System for a 1-year period after the expiration date of the permit.* | *$200* |

**Section 55.** *Enforcement*

1. *A person who owns or operates an Onsite Sewage Disposal System contrary to the provisions of the General Permit # GNEV00000 is subject to an enforcement action pursuant to NRS 445A.675, 445A.690 to 445A.705, inclusive.*
2. *A person who violates Section 1 to Section 56 or a specific term of a general permit for an on-site wastewater treatment facility is subject to an enforcement action pursuant to NRS 445A.675, 445A.690 to 445A.705, inclusive.*
3. *The following shall be considered as violations of the monitoring requirements of the permit:*

   *a. Failure to collect, analyze and report sampling results.*

*b. The submission, by the owner or maintenance entity of an advanced treatment system or agent or employee thereof, of misleading or inaccurate information to the division, through neglect.*

4. *The submission of fraudulent data including the following:*

*a. Apparent measurement results for which no measurement or test results were actually made as determined by the absence of the supporting records that are usually made;*

*b. Measurements or test results obtained by deliberately and knowingly making measurements or collecting samples at places and times other than as specified in the permit or Section 1 thru Section 56, inclusive; and*

*c. Test results obtained through use of unapproved and erroneous sampling, preservation, storage or analysis procedures.*

**Section 56.** *Grandfather Clause*

*1. All Onsite Sewage Disposal Systems that were in operation before the adoption date of these regulations, and are operating properly, will be allowed to continue operation until any of the following occurs:*

*a. The system fails, as defined in Section 10.3;*

*b. Groundwater is impacted by the existing system;*

*c. Expansion is proposed, or*

*d. Community sewer service is provided.*

*2. When any of the above items occur, the permittee must retain an engineer to evaluate the system, submit plans and specifications to the division and perform necessary construction or alterations.*

3. *All Onsite Sewage Disposal Systems must obtain a current general permit regardless of grandfather status. No fees will be assessed until such time as the System expands.*

**Section 57.** *References*


1. *"Regulations Governing Individual Sewage Disposal Systems", Nevada Division of Health, 1999.*
2. *Design Manual: On-site Wastewater Treatment and Disposal Systems. U.S Environmental Protection Agency, EPA-625/1-80-012, October 1980.*
3. *Onsite Wastewater Treatment Systems Manual, U.S. Environmental Protection Agency, EPA/625/R-00/008, February 2002.*
4. *Wastewater Engineering: Treatment, Disposal and Reuse, Metcalf and Eddy, 3rd edition, McGraw-Hill, 1991.*
5. *Environmental Engineering and Sanitation, Salvato, 4th Edition ,Wiley, 1992.*
6. *Small and Decentralized Wastewater Management Systems, Crites and Tchobanoglous, McGraw-Hill, 1998*
7. *"Design Standards for Large On-Site Sewage Systems", Washington State Department of Health, 1994.*
8. *"Regulation Governing Individual Onsite Wastewater Disposal Systems", Mississippi State Department of Health, Draft regulations, 1995.*
9. *"Regulations and Technical Standards for Subsurface Sewage Disposal Systems", Connecticut Public Health Code, 2004*
10. *"Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-Site Sewage Treatment and Disposal Systems and for Transport and Disposal of Septage", Massachusetts Dept. of Environmental Protection, 2006.*

11. *"Standards for Onsite Sewage Treatment and Disposal Systems", Florida Department of Health, 2004.*

12. *"Guidelines on Individual Sewage Disposal Systems", Colorado Department of Public Health and Environment, Water Quality Control Division, 2004.*

13. *"Private Onsite Wastewater Treatment Systems", Wisconsin Department of Commerce, 2004.*

14. *"Sewage Treatment and Disposal Systems", North Carolina Department of Environment, Health and Natural Resources, 1990.*

15. *"Onsite Wastewater Treatment Systems", Oregon Department of Environmental Quality, 2006.*