R317. Environmental Quality, Water Quality.
R317-4. Onsite Wastewater Systems.
R317-4-1. Authority, Purpose, Scope, and Administrative Requirements.

(1) This rule is authorized by Title 19, Chapter 5, Water Quality Act.

(2) The purpose of this rule is to protect the public health and environment from potential adverse effects from onsite wastewater disposal within the boundaries of Utah.

(3) This rule shall apply to any onsite wastewater system.

(4) Local health departments have jurisdiction to administer this rule. Nothing contained in this rule shall be construed to prevent local health departments from:

(a) adopting stricter requirements than those contained in this rule;

(b) issuing an operating permit, with a term not exceeding five years, with an inspection showing a satisfactory performance of the permitted system by the department's staff before renewal;

(c) taking necessary steps for ground water quality protection:

(i) through adoption of a ground water quality protection management policy based on a ground water management study; or

(ii) by an onsite wastewater systems management planning policy and land use planning through the county's agency;

(d) prohibiting any alternative system within its jurisdiction;

(e) assessing administrative fees;

(f) requiring any onsite system within its jurisdiction to be managed by a:

(i) responsible management entity overseen by the local health department;

(ii) contract service provider overseen by the local health department; or

(iii) management district body politic created by the county for operating, maintaining, repairing and monitoring alternative or all onsite wastewater systems;

(g) requiring any conventional and alternative system to be serviced; or

(h) receiving a request for a variance, conducting a review, and granting either an approval or denial.

(5) Local health departments shall administer an alternative onsite wastewater system program.

(a) A local health department may restrict its administration of alternative onsite wastewater systems by notifying the division that it is exempt from this requirement by:

(i) adopting a resolution or regulation; or

(ii) presenting an ordinance.

(b) An alternative onsite wastewater system program shall:

(i) advise the owner of the:

(A) type of alternative onsite wastewater system;

(B) information concerning risk of failure;

(C) level of maintenance required;

(D) financial liability for repair, modification or replacement of a failed system; and

(E) periodic monitoring requirements;

(ii) ensure that a notice of the existence of the alternative onsite wastewater system is recorded in the chain of title for that property;

(iii) provide oversight of installed alternative onsite wastewater systems;

(iv) inspect any installed alternative onsite wastewater system at frequency specified in this rule, through:

(A) the department's staff;

(B) contracted service providers;

(C) responsible management entity; or

(D) a management district body politic created by the county for managing onsite wastewater systems;

(v) maintain records of all installed alternative onsite wastewater system, failures, modifications, repairs and all inspections, recording the condition of the system at the time of inspection, such as overflow, surfacing, ponding, and nuisance;

(vi) submit an annual report to the division on or before September 1 for the previous Utah fiscal year's activities showing:

(A) the type and number of alternative onsite wastewater systems approved, installed, modified, repaired, failed, and inspected;

(B) a summary of enforcement actions taken, pending and resolved; and

(C) a summary of performance of water quality data collected; and

(vii) require any alternative onsite wastewater system to be inspected and serviced as detailed in Section R317-4-13 Table 7 and Section R317-4-11.

(6) The division delegates the authority to grant or deny any variance to the design requirements provided for in this rule to the local health departments. The division may amend, suspend, or rescind this delegation of authority to a local health department if it determines that the local health department is not accepting or conducting onsite wastewater system reviews as described in Section R317-4-12.

(a) The local health department having jurisdiction shall accept any application for variance request on any lot that is deemed not feasible for permitting an onsite wastewater system. Upon completion of a review, the local health department shall

grant or deny a variance to this rule as outlined in Section R317-4-12. The local health department also shall submit an annual report of completed variance determinations to the division.

(b) If a local health department fails to evaluate any variance request according to Section R317-4-12, the director shall notify the local health department. The director may thereafter amend, suspend, or rescind the delegation of variance authority to the local health department. The variance authority would then revert to the division, and any variance request shall be reviewed as follows:

(i) The director may appoint a variance advisory committee to consider variance requests and make recommendations to the director. Any such advisory committee shall include at least one representative from a local health department. The director may refer any variance request to the variance advisory committee.

(ii) Upon review of the recommendation submitted by the variance advisory committee, the director shall provide a written determination of the requested variance. If no committee was appointed by the director, the director shall provide a written determination. Written determinations must be given within 180 days of the receipt of a complete and technically adequate variance request.

(iii) The director's final written determination shall be forwarded to the local health department that has jurisdiction. The local health department is not required to approve or deny an operating or construction permit based on the director's determination of a variance request.

R317-4-2. Definitions.

(1) "Absorption area" means the entire area used for the subsurface treatment and dispersion of effluent by an absorption system.

(2) "Absorption bed" means an absorption system consisting of large excavated areas utilizing drain media or chambers.

(3) "Absorption system" means a covered system constructed to receive and to disperse effluent, from gravity or a pump, in such a manner that the effluent is effectively filtered and retained below the ground surface.

(4) "Absorption trench" means an absorption system consisting of a series of narrow excavated trenches utilizing drain media, chambers, or bundled synthetic aggregate units.

(5) "Alternative onsite wastewater system" means an onsite wastewater system that is not a conventional onsite wastewater system.

(6) "At-grade system" means an alternative onsite wastewater system where the bottom of the absorption system is placed at or below the elevation of the existing site grade, and the top of the distribution pipe is above the elevation of existing site grade, and the absorption system is contained within fill that extends above that grade.

(7) "Barrier material" means an effective, pervious material such as an acceptable synthetic filter fabric, or a two-inch layer of compacted straw.

(8) "Bedrock" means the rock, usually solid, that underlies soil or other unconsolidated, superficial material.

(9) "Bedroom" means any portion of a dwelling that is so designed as to furnish the minimum isolation necessary for use as a sleeping area. It may include a den, study, sewing room, or sleeping loft. Unfinished basements shall be counted as a minimum of one additional bedroom.

(10) "Body politic" means the state or its agencies or any political subdivision of the state to include a county, city, town, improvement district, taxing district or other governmental subdivision or public corporation of the state.

(11) "Building sewer" means the pipe that carries wastewater from the building to a public sewer, an onsite wastewater system or other point of dispersal. It is synonymous with "house sewer."

(12) "Bundled synthetic aggregate trench" means an absorption trench utilizing bundled synthetic aggregate units.

(13) "Bundled synthetic aggregate unit" means a cylindrically shaped manufactured unit of synthetic aggregate enclosed in polyolefin netting, which may contain a perforated pipe.

(14) "Chamber" means an open bottom, chambered structure of an approved material and design.

(15) "Chambered trench" means an absorption trench utilizing chambers.

(16) "Cleanout" means a device designed to provide access for removal of deposited or accumulated materials, generally from a pipe.

(17) "Closed loop distribution" means a distribution method where the absorption system layout has the inlet and outlet ends of each lateral connected creating a complete and continuous pathway for effluent flow.

(18) "Coarse drain media" means drain media ranging from 3/4 to 12 inches in diameter.

(19) "Condominium" means the ownership of a single unit in a multi-unit project together with an undivided interest in common, in the common areas and facilities of the property.

(20) "Connecting trench" means an absorption trench that is used to connect other absorption trenches, is less than 20 feet in length, and may be used to calculate total required absorption area.

(21) "Construction permit" means the permit that authorizes an onsite wastewater system to be installed according to an approved design. An additional construction permit may also authorize activities associated with the repair or alteration of a malfunctioning or failing system.

(22) "Conventional onsite wastewater system" means an onsite wastewater system typically consisting of a building sewer, a septic tank, and an absorption system utilizing absorption trenches, absorption beds, deep wall trenches, or seepage pits.

(23) "Cover" means soils used to overlay the absorption area that is free of large stones 10 inches diameter or larger, frozen clumps of earth, masonry, stumps, or waste construction material, or other materials that could damage the system.

(24) "Curtain drain" means any ground water interceptor or drainage system that is backfilled with gravel or other suitable material and is intended to interrupt or divert the course of shallow ground water or surface water away from the onsite wastewater system.

(25) "Designer" means a person who fulfills the requirements of Rule R317-11.

(26) "Deep wall trench" means an absorption system consisting of deep excavated trenches utilizing coarse drain media, with a minimum sidewall absorption depth of 24 inches of suitable soil formation below the distribution pipe.

(27) "Distribution box" means a watertight structure that receives effluent and distributes it concurrently, in essentially equal portions, into two or more pipes leading to an absorption system.

(28) "Distribution pipe" means an approved pipe, solid or perforated, used in the dispersion of effluent in an absorption system.

(29) "Diversion valve" means a watertight structure that receives effluent through one inlet and distributes it to two or more outlets, only one of which is used at a time.

(30) "Domestic wastewater" means a combination of the liquid or water-carried wastes from residences, business buildings, institutions, and other establishments with installed plumbing facilities, excluding non-domestic wastewater. It is synonymous with the term "sewage."

(31) "Drain media" means media used in an absorption system. It shall consist of stone, crushed stone, or gravel, ranging from 3/4 to 2-1/2 inches in diameter. It shall be free from fines, dust, sand or organic material and shall be durable and inert so that it maintains its integrity, will not collapse or disintegrate with time. The maximum fines in the media shall be 2% by weight passing through a US Standard #10 mesh or 2 millimeter sieve. It shall be protected by a barrier material.

(32) "Drainage system" means all the piping within public or private premises that conveys sewage or other liquid wastes to a legal point of treatment and dispersal, but does not include the mains of a public sewer system or a public sewage treatment or disposal plant.

(33) "Drop box" means a watertight structure that receives septic tank effluent and distributes it into one or more distribution pipes, and into an overflow leading to another drop box and absorption system located at a lower elevation.

(34) "Dry wash" means the dry bed of an ephemeral stream that flows only after heavy rains and is often found at the bottom of a canyon.

(35) "Dwelling" means any structure, building, or any portion thereof that is used, intended, or designed to be occupied for human living purposes including houses, mobile homes, hotels, motels, and apartments.

(36) "Effluent" means the liquid discharge from any treatment unit including a septic tank.

(37) "Effluent pump" means a pump used to lift effluent.

(38) "Effluent sewer" means solid pipe that carries effluent to the absorption system.

(39) "Ejector pump" means a device to elevate or pump sewage to a septic tank, public sewer, or other means of disposal.

(40) "Ephemeral stream" means a stream that flows for a short period, a week or less, after a precipitation event.

(41) "Excessively permeable soil" means soils having an excessively high permeability, such as cobbles or gravels with little fines and large voids, and having a percolation rate faster than 1 minute per inch.

(42) "Experimental onsite wastewater system" means an onsite wastewater treatment and absorption system that is still in experimental use and requires further testing to provide sufficient information to determine its acceptance.

(43) "Filter fabric" means a synthetic, non-degradable woven or spun-bonded sheet material that has adequate tensile strength to prevent ripping during installation and backfilling, adequate permeability to allow free passage of water and gases; and adequate particle retention to prevent downward migration of soil particles into the absorption system. The minimum physical properties for the fabric shall be 4.0 ounces per square yard or equivalent.

(44) "Ground water" means that portion of subsurface water that is in the zone of soil saturation.

(45) "Ground water table" means the surface of a body of unconfined ground water in which the pressure is equal to that of the atmosphere.

(46) "Ground water table, perched" means unconfined ground water separated from an underlying body of ground water by an unsaturated zone. It is underlain by a restrictive strata or impervious layer. Perched ground water may be either permanent, where recharge is frequent enough to maintain a saturated zone above the perching bed, or temporary, where intermittent recharge is not great or frequent enough to prevent the perched water from disappearing from time to time as a result of drainage over the edge of or through the perching bed.

(47) "Gulch" means a small rocky ravine or a narrow gorge, especially one with an ephemeral stream running through it.

(48) "Gully" means a channel or small valley, especially one carved out by persistent heavy rainfall or an ephemeral stream.

(49) "Impervious strata" means a layer that prevents water or root penetration. In addition, it shall be defined as unsuitable soils or soils having a percolation rate slower than 60 minutes per inch for conventional systems.

(50) "Installer" means a qualified person with an appropriate contractor's license and knowledgeable in the installation or repair of an onsite wastewater system or its components.

(51) "Intermittent stream" means a stream that flows for a period longer than an ephemeral stream on a seasonal basis or after a precipitation event.

(52) "Invert" means the lowest portion of the internal cross section of a pipe or fitting.

(53) "Large Underground Wastewater Disposal System" means an onsite wastewater system that is designed to receive wastewater flows that may exceed more than 5,000 gallons per day, and may be designed to serve multiple dwelling units that are owned by separate owners except condominiums. A large underground wastewater disposal system usually consists of a building sewer, a septic tank and an absorption system.

(54) "Lateral" means a length of distribution pipe or chambered trenches in the absorption system.

(55) "Lot" means a portion of a subdivision, or any other parcel of land intended as a unit for transfer of ownership or for development or both and may not include any part of the right-of-way of a street or road.

(56) "Malfunctioning or failing system" means any onsite wastewater system that is not functioning in compliance with the requirements of this regulation and may include:

(a) any absorption system that seeps or flows to the surface of the ground or into waters of the state;

(b) any system that overflows from any of its components;

(c) any system that, due to failure to operate in accordance with its designed operation, causes backflow into any portion of a building drainage system;

(d) any system discharging effluent that does not comply with applicable effluent discharge standards;

(e) any leaking septic tank; or

(f) noncompliance with any standard stipulated on or by the construction permit, operating permit, or both.

(57) "Maximum ground water table" means the highest elevation that the top of the "ground water table" or "ground water table, perched" is expected to reach for any reason over the full operating life of the onsite wastewater system at that site.

(58) "Membrane Bioreactor" means an alternative onsite wastewater system that includes both biological processes and mechanical filtration processes to treat septic tank effluent before discharge to an absorption system. A membrane bioreactor unit includes a balance tank, an aeration tank, and a filtration tank. All tanks are interconnected with aeration pumps and recirculation lines.

(59) "Mound system" means an alternative onsite wastewater system where the bottom of the absorption system is placed above the elevation of the original site, and the absorption system is contained in a mounded fill body above that grade.

(60) "Non-closed loop distribution" means a distribution method where the absorption system layout has lateral ends that are not connected.

(61) "Non-domestic effluent" means the liquid discharge from any treatment unit including a septic tank that has a BOD5 equal or greater than 250 mg/L; or TSS equal to or greater than 145 mg/L; or fats, oils, and grease equal to or greater than 25 mg/L.

(62) "Non-domestic wastewater" means process wastewater originating from the manufacture of specific products. Such wastewater is usually more concentrated, more variable in content and rate, and requires more extensive or different treatment than domestic wastewater.

(63) "Non-public water source" means a culinary water source that is not defined as a public water source.

(64) "Non-residential" means a building that produces domestic wastewater, and is not a single-family dwelling.

(65) "Onsite wastewater system" means an underground wastewater dispersal system that is designed for a capacity of 5,000 gallons per day or less, and is not designed to serve multiple dwelling units that are owned by separate owners except condominiums. It usually consists of a building sewer, a septic tank and an absorption system.

(66) "Operating permit" means the permit that authorizes the operation and maintenance of an onsite wastewater system or wastewater holding tank. It may have a fee component that requires periodic renewal.

(67) "Packed bed media system" means an alternative onsite wastewater system that uses natural or synthetic media to treat wastewater. Biological treatment is facilitated via microbial growth on the surface of the media. The system may include a pump tank, a recirculation tank, or both.

(68) "Percolation rate" means the time expressed in minutes per inch required for water to seep into saturated soil at a constant rate during a percolation test.

(69) "Percolation test" means the method used to measure the permeability of the soil by measuring the percolation rate as described in this rule. This is sometimes referred to as a "perc test."

(70) "Permeability" means the rate at which a soil transmits water when saturated.

(71) "Pressure distribution" means a method designed to uniformly distribute effluent under pressure within an absorption system.

(72) "Public health hazard" means, for this rule, a condition whereby there are sufficient types and amounts of biological, chemical, or physical agents relating to water or sewage that are likely to cause human illness, disorders or disability. These may include pathogenic viruses and bacteria, parasites, toxic chemicals and radioactive isotopes. A malfunctioning onsite wastewater system constitutes a public health hazard.

(73) "Public water source" means a culinary water source, either publicly or privately owned, providing water for human consumption and other domestic uses, as defined in Title R309.

(74) "Pump tank" means a watertight receptacle equipped with a pump and placed after a septic tank or other treatment component.

(75) "Pump vault" means a device installed in a septic or pump tank that houses a pump and screens effluent with 1/8 inch openings or smaller before it enters the pump.

(76) "Recirculation tank" means the tank that receives, stores, and recycles partially treated effluent and recycles that effluent back through the treatment process or to the absorption area.

(77) "Regulatory authority" means either the Utah Division of Water Quality or the local health department having jurisdiction.

(78) "Replacement area" means sufficient land with suitable soil, excluding streets, roads, easements and permanent structures that complies with the setback requirements of this rule, and is intended for the 100% replacement of absorption systems.

(79) "Rotary tilling" means a tillage operation. Working land by plowing and harrowing to make land ready for cultivation, or employing power driven rotary motion of the tillage tool to loosen, shatter and mix soil.

(80) "Sand lined trench system" means an alternative onsite wastewater system consisting of a series of narrow excavated trenches utilizing sand media and pressure distribution.

(81) "Sand media" means sand fill meeting the ASTM C33/C33M - 11A Standard Specification for Concrete Aggregates.

(82) "Saprolite" means weathered material underlying the soil that grades from soft thoroughly decomposed rock to rock that has been weathered sufficiently so that it can be broken in the hands, cut with a knife or easily dug with a backhoe and is devoid of expansive clay. It has rock structure instead of soil structure and does not include hard bedrock or hard fractured bedrock.

(83) "Scarification" means loosening and breaking up of soil compaction in a manner that prevents smearing and maintains soil structure.

(84) "Scum" means a mass of sewage solids, which is buoyed up by entrained gas, grease, or other substances, floating on the surface of wastes in a septic tank.

(85) "Seepage pit" means an absorption system consisting of one or more deep excavated pits, either hollow-lined or filled, utilizing coarse drain media, with a minimum sidewall absorption depth of 48 inches of suitable soil formation below the distribution pipe.

(86) "Septage" means the semi-liquid material that is pumped out of a septic or pump tank, generally consisting of the sludge, liquid, and scum layer.

(87) "Septic tank" means a watertight receptacle that receives the discharge of a drainage system or part thereof, designed and constructed so as to retain solids, digest organic matter through a period of detention and allow the liquids to discharge into the soil outside of the tank through an absorption system.

(88) "Sequential distribution" means a distribution method in which effluent does not pass through an absorption area before it enters the succeeding areas through a distribution box or relief line allowing for portions of the absorption area to be isolated.

(89) "Serial distribution" means a distribution method in which effluent passes through an absorption area before entering the succeeding areas through a distribution box or relief line creating a single uninterrupted flow path.

(90) "Single-family dwelling" means a building designed to be used as a home by the owner or lessee of such building.

(91) "Sludge" means the accumulation of solids that have settled in a septic tank or a wastewater holding tank.

(92) "Slope" means the ratio of the rise divided by the run between two points, typically described as a percentage (rise divided by run multiplied by 100).

(93) "Soil exploration pit" means an open pit dug to permit examination of the soil to evaluate its suitability for absorption systems. This is also referred to as a "test pit."

(94) "Soil log" means a detailed description of soil characteristics and properties.

(95) "Soil structure" means the way in which the individual particles, sand, silt, and clay, are arranged into larger distinct aggregates called peds. The main types of soil structure are granular, platy, blocky, prismatic, and columnar. Soil may not have a visible structure because it is either single grain or massive.

(96) "Soil texture" means the percent of sand, silt, and clay in a soil mixture. Field methods for judging the texture of a soil are found in Subsection R317-4-14(3) Appendix C.

(97) "Standard trench" means an absorption trench utilizing drain media into which effluent is discharged through specially designed distribution pipes.

(98) "Suitable soil" means undisturbed soil that through textural and structural analysis or percolation rate meets the requirements for placement of an absorption system.

(99) "Test pit" see "soil exploration pit."

(100) "Unapproved system" means any onsite wastewater system that is deemed by the regulatory authority to be any:

(a) installation without the required regulatory oversight, permits, or inspections;

(b) repairs to an existing system without the required regulatory oversight, permits, or inspections; or

(c) alteration to an existing system without the required regulatory oversight, permits, or inspections.

(101) "USDA system of classification" means the system of classifying soil texture used by the United States Department of Agriculture.

(102) "Wastewater" means sewage, industrial waste or other liquid substances that might cause pollution of waters of the state. Intercepted ground water that is uncontaminated by wastes is not included.

(103) "Wastewater holding tank" means a watertight receptacle designed to receive and store wastewater to facilitate treatment at another location.

(104) "Wind-blown sand" means sand that is formed by the weathering and erosion of sandstone typically found in sand-dune or sand-sheet deposits and is capable of producing sand and dust storms when disturbed.

R317-4-3. General Standards, Prohibitions, Requirements, and Enforcement.

(1) Any person failing to comply with this rule shall be subject to enforcement action as specified in Sections 19-5-115 and 26A-1-123.

(2) An onsite wastewater system may not be feasible in some areas and situations. If property characteristics show conditions that may fail in any way to meet the requirements specified in this rule, the use of an onsite wastewater system shall be prohibited.

(3) The drainage system of each dwelling, building or premises covered in this rule shall receive all wastewater, including bathroom, kitchen, and laundry wastes, and shall have a connection to a public sewer except when such sewer is not available or practicable for use, in which case connection shall be made:

(a) to an onsite wastewater system found to be adequate and constructed in accordance with this rule; or

(b) to any other type of wastewater system acceptable under Rule R317-1, R317-3, R317-5, R317-401, or R317-560.

(4) No ground water drainage, drainage from roofs, roads, yards, or other similar sources may discharge into any portion of an onsite wastewater system, but shall be disposed of so it will in no way affect the system. Non-domestic wastes such as chemicals, paints, or other substances that are detrimental to the proper functioning of an onsite wastewater system may not be disposed of in such systems.

(5) A person may not connect or expand the use of a single-family dwelling or non-residential facility connected to an existing onsite wastewater system if the projected wastewater flows would be greater than the original design flow. When the design flow is exceeded, expansion may occur if the onsite wastewater system is modified, permitted, and approved by the regulatory authority for the increased flow.

(6)All materials used in any onsite wastewater system shall comply with the standards in this rule.

(7) Any onsite wastewater system, including any replacement area, shall be located on the same lot as the building served unless, when approved by the regulatory authority, a perpetual utility easement and right-of-way is established on an adjacent or nearby lot for the construction, operation, and continued maintenance, repair, alteration, inspection, relocation, and replacement of an onsite wastewater system, including all rights to ingress and egress necessary or convenient for the full or complete use, occupation, and enjoyment of the granted easement. The easement shall be large enough to accommodate the proposed onsite wastewater system and replacement area. The easement shall meet the setbacks specified in Section R317-4-13 Table 2.

(8) Any property that utilizes an onsite wastewater system shall be required to have a replacement area. The absorption area, including installed absorption system and replacement area, may not be subject to activity that is likely to adversely affect the soil or the functioning of the system. This may include vehicular traffic, covering the area with asphalt, concrete, or structures, filling, cutting or other soil modifications.

(9) An owners of any onsite wastewater system shall operate, maintain, and service their system according to the standards of this rule.

(10) Effluent from any onsite wastewater system may not be discharged to surface waters or upon the surface of the ground. Wastewater may not be discharged into any abandoned or unused well, or into any crevice, sinkhole, or similar opening, either natural or artificial.

(11) Upon determination by the regulatory authority that a malfunctioning or unapproved onsite wastewater system creates or contributes to any dangerous or unsanitary condition that may involve a public health hazard, or noncompliance with this rule, the regulatory authority shall order the owner to take the necessary action to cause the condition to be corrected, eliminated or otherwise come into compliance.

(a) For any malfunctioning system, the local health department shall require and order:

(i) all necessary steps, such as maintenance, servicing, repairs, and replacement of system components to correct the malfunctioning system, to meet all requirements of this rule to the extent possible and may not create any new risk to the environment or public health;

(ii) effluent quality testing as required by Subsection R317-4-11(4);

(iii) evaluation of the system design including non-approved changes to the system, the wastewater flow, and biological and chemical loading to the system; and

(iv) any additional test or sample to troubleshoot the system malfunction.

(b) The regulatory authority may require fees for additional inspections, reviews, and testing.

(12) A property owner shall follow the approved procedure for wastewater system abandonment.

(a) When a dwelling served by an onsite wastewater system is connected to a public sewer, the septic tank shall be abandoned and shall be disconnected from and bypassed with the building sewer unless otherwise approved by the regulatory authority.

(b) When the use of an onsite wastewater system has been abandoned or discontinued, the owner of the real property on which such wastewater system is located shall make it safe by having the septic tank, any other tanks, hollow seepage pit, or cesspool wastes pumped out or otherwise disposed of in an approved manner. Within 30 days the tanks shall be:

(i) crushed in place and the void filled;

(ii) completely filled with earth, sand, or gravel; or

(iii) removed.

(c) The regulatory authority may require oversight, permitting, or inspection of the abandonment process.

(13) A person shall only dispose of septage, or sewage contaminated materials in a location or manner in accordance with state rules and the local health department having jurisdiction.

(14) Multiple dwelling units under individual ownership, except condominiums, may not be served by a single onsite wastewater system except where that system is under the sponsorship of a body politic. Plans and specifications for any such system shall be submitted to and approved by the division. Issuance of a construction permit by the division shall constitute approval of plans and authorization for construction. Before any permit is issued, the division shall review plans with the local health department having jurisdiction over the proposed onsite wastewater system.

R317-4-4. Feasibility Determination.

(1) The regulatory authority shall determine the feasibility of using any onsite wastewater system. The regulatory authority shall review required information for any existing or proposed lot to determine onsite wastewater system feasibility. The required information shall be prepared at the owner's expense by, or under the supervision of, a qualified person approved by the regulatory authority.

(a) The required information shall include:

(i) the county recorder's plat and parcel ID and situs address if available;

(ii) name and address of the property owner and person requesting feasibility;

(iii) statement of proposed use if other than a single-family dwelling;

(iv) the location and distance to nearest sewer, owner of sewer, whether property is located within service boundary, and size of sewer;

and

(v) the location, type, and depth of any existing and proposed non-public water supply source within 200 feet of the proposed onsite wastewater system, and of any existing or proposed public water supply source within 1,500 feet of the proposed onsite wastewater system.

(A) If the lot is located in aquifer recharge areas or areas of other particular geologic concern, the regulatory authority may require such additional information relative to ground water movement, or possible subsurface wastewater flow.

(B) If the proposed onsite wastewater system is located within any drinking water source protection zone two, this zone shall be shown.

(b) The regulatory authority shall require soil exploration and site evaluation.

(i) A minimum of one soil exploration pit shall be excavated to allow the evaluation of the soil. The soil exploration pit shall be constructed and soil log recorded as detailed in Subsection R317-4-14(3) Appendix C.

(ii) The regulatory authority shall have the option of requiring a percolation test in addition to the soil exploration pit.

(iii) The regulatory authority:

(A) shall require additional soil exploration pits, percolation tests, or both where flows are greater than 1,000 gallons per day; and

(B) may require additional soil exploration pits, percolation tests, or both where:

(I) soil structure varies;

(II) limiting geologic conditions are encountered; or

(III) the regulatory authority deems it necessary.

(iv) The percolation test shall be conducted as detailed in Subsection R317-4-14(4) Appendix D.

(v) Soil exploration pits and percolation tests shall be conducted as closely as possible to the proposed absorption system site. The regulatory authority shall have the option of inspecting the open soil exploration pits and monitoring the percolation test procedure. All soil logs and percolation test results shall be submitted to the regulatory authority.

(vi) When there is a substantial discrepancy between the percolation rate and the soil classification, it shall be resolved through additional soil exploration pits, percolation tests, or both.

(vii) Absorption system feasibility shall be based on Section R317-4-13 Table 5 or R317-4-13 Table 6.

(c) The extremely fine grained wind-blown sand found in some parts of Utah shall be deemed not feasible for absorption systems. This does not apply to lots that have received final local health department approval before the effective date of this rule. Percolation test results in wind-blown sand will generally be rapid, but experience has shown that this soil tends to become sealed with minute organic particles within a short period. For lots that have received final local health department approval before the effective date of this rule, an onsite wastewater system may be constructed in such material provided it is found to be within the required range of percolation rates specified in this rule, and provided further that the required area shall be calculated on the assumption of minimum acceptable percolation rate of 60 minutes per inch for standard trenches, deep wall trenches, and seepage pits, and 40 minutes per inch for absorption beds.

(d) For each conventional onsite wastewater system, effective suitable soil depth shall extend at least 48 inches or more below the bottom of the dispersal system to bedrock formations, impervious strata, or excessively permeable soil. An alternative onsite wastewater system may have other requirements.

(e) The elevation of the anticipated maximum ground water table shall meet the separation requirements of the anticipated absorption systems. Local health departments and other local government entities may impose stricter separation requirements between absorption systems and the maximum ground water table when deemed necessary. Building lots recorded or having received final local health department approval before May 21, 1984 shall be subject to the ground water table separation requirements of the then Part IV of the Code of Waste Disposal Regulations dated June 21, 1967, that states "high ground water elevation shall be at least 1 foot below the bottom of absorption systems and at least 4 feet below finished grade". Notwithstanding this grandfather provision for recorded or other approved lots, the depth to ground water requirements are

applicable if compelling or countervailing public health interests would require application of the more stringent requirements of this regulation.

(i) The maximum ground water table shall be determined where the anticipated maximum ground water table, including irrigation induced water table, might be expected to rise closer than 48 inches to the elevation of the bottom of the onsite wastewater system. Maximum ground water table shall be determined where alternative onsite wastewater systems may be considered based on groundwater elevations. The maximum ground water table shall be determined by the following.

(A) Regular monitoring of the ground water table, or ground water table, perched, in an observation well for a period of one year, or for the period of the maximum groundwater table.

(B) Previous ground water records and climatological or other information may be consulted for each site proposed for an onsite wastewater system and may be used to adjust the observed maximum ground water table elevation.

(C) Direct visual observation of the maximum ground water table in a soil exploration pit for evidence of crystals of salt left by the maximum ground water table or chemically reduced iron in the soil, reflected by redoximorphic features, such as a mottled coloring. Previous ground water records and climatological or other information may be consulted for each site proposed for an onsite wastewater system and may be used to adjust the observed maximum ground water table elevation in determining the anticipated maximum ground water table elevation.

(D) In cases where the anticipated maximum ground water table is expected to rise to closer than 34 inches from the original ground surface and an alternative or experimental onsite wastewater system would be considered, previous ground water records and climatological or other information shall be used to adjust the observed maximum ground water table in determining the anticipated maximum ground water table.

(ii) A curtain drain or other effective ground water interceptor may be allowed as an attempt to lower the groundwater table to meet the requirements of this rule. The regulatory authority shall require that the effectiveness of such devices in lowering the ground water table be demonstrated during the season of maximum ground water table.

(f) An Absorption system may not be placed on any slopes where the addition of fluids is judged to create an unstable slope.

(i) An absorption system may be placed on any slope between 0% and 25%, inclusive.

(ii) An absorption system may be placed on any slope greater than 25% but not exceeding 35% if:

(A) all other requirements of this rule can be met;

(B) effluent from the proposed system may not contaminate ground water or surface water, and may not surface or move off site before it is adequately treated to protect public health and the environment;

(C) no slope will fail, and there will be no other landslide or structural failure if the system is constructed and operated adequately, even if all properties in the vicinity are developed with onsite wastewater systems; and

(D) a report is submitted by a professional engineer or professional geologist that is licensed to practice in Utah. The report shall be imprinted with the engineer's or geologist's registration seal and signature and shall include the following:

(I) Predictions and supporting information of ground water transport from the proposed system and of expected areas of ground water mounding;

(II) A slope stability analysis that shall include information about the geology of the site and surrounding area, soil exploration and testing, and the effects of adding effluent; and

(III) The cumulative effect on slope stability of added effluent if all properties in the vicinity were developed with onsite wastewater systems.

(iii) An absorption system may not be placed on any slope greater than 35%.

(g) Other factors may affect onsite wastewater system feasibility, including:

(i) The location of any river, stream, creek, dry or ephemeral wash, lake, canal, marsh, subsurface drain, natural storm water drain, lagoon, artificial impoundment, either existing or proposed, that will affect the building site, shall be provided.

(ii) Any area proposed for an onsite wastewater system shall comply with the setbacks in Section R317-4-13 Table 2.

(iii) If any part of a property lies within or abuts a flood plain area, the flood plain shall be shown within a contour line and shall be clearly labeled on the plan with the words "flood plain area".

(h) Where soil and other site conditions are clearly unsuitable for the placement of an onsite wastewater system, there is no need for conducting soil exploration pits or percolation tests.

(i) One of the following two methods shall be used for determining minimum lot size. Determination of minimum lot size by the regulatory authority may not preempt local governments from establishing larger minimum lot sizes.

(A) The local health department having jurisdiction may determine minimum lot size. Under this method, a local health department may elect to involve other affected governmental entities and the division in making joint lot size determinations. The division shall develop technical information, training programs, and provide engineering and geohydrologic assistance in making lot size determinations that shall be available to local health departments upon their request. Any individual requesting a lot size determination under this method shall be required to submit to the local health department, at their own expense, a report that accurately takes into account at least the following factors:

(I) soil type and depth;

(II) area drainage, lot drainage, and potential for flooding;

(III) protection of surface and ground waters;

(IV) setbacks from items listed in Section R317-4-13 Table 2;

(V) source of culinary water;

(VI) topography, geology, hydrology and ground cover;

(VII) availability of public sewers;
(VIII) activity or land use, present and anticipated;
(IX) growth patterns;
(X) individual and accumulated gross effects on water quality;
(XI) reserve areas for additional subsurface dispersal;
(XII) anticipated wastewater volume;
(XIII) climatic conditions;
(XIV) installation plans for wastewater system; and
(XV) area to be utilized by dwelling and other structures.

(B) When a local health department does not establish minimum lot sizes for single-family dwellings that will be served by onsite wastewater systems, the requirements of Sections R317-4-13 Table 1.1 and R317-4-13 Table 1.2 shall be met.

(I) For non-residential facilities, one-half of the buildable area of the lot must be available for the absorption system and replacement area.

(II) The area required for a non-residential facility absorption system and replacement area may be adjusted by the regulatory authority during the permitting process.

(2) The regulatory authority shall determine the feasibility for any new subdivision where using onsite wastewater systems is proposed.

(a) In addition to information in Subsection R317-4-4(1), the following information must be provided on a plat map:

(i) the proposed street and lot layout with all lots consecutively numbered;

(ii) size and dimensions of each lot, with the minimum required area sufficient to permit the safe and effective use of an onsite wastewater system, including a replacement area for the absorption system;

(iii) location of all water lines;

(iv) location of any easements; and

(v) areas proposed for wastewater dispersal, including replacement area.

(b) Any surface drainage system shall be included on the plan, as naturally occurring, and as altered by roadways or any drainage, grading or improvement, installed or proposed by the developer. The details of the system shall show the surface drainage structures, whether ditches, pipes, or culverts, will in no way affect onsite wastewater systems on the property.

(c) Each proposed lot shall have at least one soil exploration pit, percolation test, or both.

(i) The regulatory authority may allow fewer tests based on the uniformity of prevailing soil and ground water characteristics and available percolation or soil log test data.

(ii) If soil conditions and surface topography show, a greater number of soil exploration pits or percolation tests may be required by the regulatory authority.

(iii) The location of all soil exploration pits and percolation test holes shall be clearly identified on the subdivision final plat and identified by a key number or letter designation.

(iv) The results of such soil tests, including stratified depths of soils and final percolation rates for each lot shall be recorded on or with the final plat.

(v) Soil exploration pits and percolation tests shall be conducted as closely as possible to the dispersal system sites on the lots or parcels.

(d) When available, information from published soil studies of the area of the proposed subdivision shall be submitted for review.

(e) If soil or site conditions exist in or near the project so as to complicate design and location of an onsite wastewater system, a detailed system layout shall be provided for those lots presenting the greatest design difficulty by meeting rules in Section R317-4-5.

(3) After review of all information, plans, and proposals, the regulatory authority shall make a written determination of feasibility stating the results of the review or the need for additional information.

(a) An affirmative statement of feasibility for a subdivision does not imply that it will be possible to install onsite wastewater systems on all the proposed lots, but shall mean that such onsite wastewater systems may be installed on the majority of the proposed lots in accordance with minimum state requirements and any conditions that may be imposed.

(b) The regulatory authority shall establish the expiration, if any, of the statement of feasibility.

R317-4-5. Plan Review and Permitting.

(1) The regulatory authority shall conduct a plan review and permit an onsite wastewater system when a property owner submits required information.

(a) Any plans and specifications shall be prepared by an individual certified in accordance with Rule R317-11.

(b) Plans and specifications for the construction, alteration, extension, or change of use of an onsite wastewater system that receives domestic wastewater shall be submitted to the regulatory authority.

(c) Plans and specifications for the construction, alteration, extension, or change of use of an onsite wastewater system that receives non-domestic wastewater shall be submitted to and approved by the local health department having jurisdiction and the division.

(d) The regulatory authority shall review plans and specifications as to their adequacy of design for the intended purpose, and shall, if necessary, require such changes as are required by this rule. When the reviewing regulatory authority is

satisfied that plans and specifications are adequate for the conditions under which a system is to be installed and used, a construction permit shall be issued to the individual making the submittal.

(e) Construction of any onsite wastewater system may not begin until a construction permit has been issued by the regulatory authority.

(f) Plans submitted for review shall be drawn to scale, 1" = 10', 20' or 30', or other scale as approved by the regulatory authority. Plans shall be prepared in such a manner that the contractor can read and follow them to install the system properly. Depending on the individual site and circumstances, or as determined by the regulatory authority, some or all the following information may be required.

(i) The name, current address, and telephone number of the applicant.

(ii) Complete address, legal description of the property, or both to be served by this onsite wastewater system.

(iii) The applicant shall submit an onsite wastewater system site plan, including:

(A) submittal date of plan;

(B) North arrow;

(C) lot size and dimensions;

(D) legal description of property;

(E) ground surface contours, preferably at 2 foot intervals, of both the original and proposed final grades of the property, or relative elevations using an established bench mark;

(F) location and explanation of type of dwelling or structure to be served by an onsite wastewater system and specifies the maximum number of bedrooms, including a statement of whether a finished or unfinished basement will be provided, or if other than a single-family dwelling, the number of occupants expected and the estimated gallons of wastewater generated per day;

(G) location and dimensions of paved and unpaved driveways, roadways and parking areas;

(H) location and dimensions of the essential components of the wastewater system including the replacement area for the absorption system;

(I) location of all soil exploration pits and all percolation test holes;

(J) location of building sewer and water service line to serve the building;

(K) location of easements or drainage right-of-ways affecting the property;

(L) location of any surface water feature within 100 feet of proposed onsite wastewater system;

(M) the location, type, and depth of all existing and proposed non-public water supply sources within 200 feet of onsite wastewater systems, and of all existing or proposed public water supply sources within 1,500 feet of onsite wastewater systems and associated source protection zones;

(N) distance to nearest public water main and size of main; and

(O) distance to nearest public sewer, size of sewer, and whether accessible by gravity.

(iv) A statement shall be included with the site plan indicating the source of culinary water supply, whether a well, spring, non-public or public system, its location and distances from all onsite wastewater systems within 200 feet.

(v) Documentation of soil exploration and site evaluation activities, including soil logs, percolation test certificates, or both. Documentation of soil exploration and site evaluation activities shall include a statement with supporting evidence indicating the maximum anticipated ground water table and the flooding potential for the onsite wastewater system site.

(vi) Show relative elevations of the following, using an established bench mark:

(A) building drain outlet;

(B) the inlet and outlet inverts of any septic tanks;

(C) septic tank access cover, including height and diameter of riser, if used;

(D) pump tank inlet, if used, including height and diameter of riser;

(E) the outlet invert of the distribution box, if provided, and the ends or corners of each distribution pipe lateral in the absorption system; and

(F) the final ground surface over the absorption system.

(vii) Details for site, plans, and specifications as listed in Section R317-4-6, shall include:

(A) schedule or grade, material, diameter, and minimum slope of building sewer and effluent sewer;

(B) septic tank and pump tank capacity, design, cross sections, materials, and dimensions. If tank is commercially manufactured, state the name and address of manufacturer;

(C) pump, if provided, details as referenced in Subsection R317-4-14(2) Appendix B;

(D) if an alternative system is designed, include all pertinent information to allow plan review and permitting for compliance with this rule;

(E) absorption system details, including the following:

(I) details of drop boxes or distribution boxes, if provided;

(II) schedule or grade, material, and diameter of distribution pipes;

(III) length, slope, and spacing of each absorption system component;

(IV) maximum slope across ground surface of absorption system area;

(V) distance of absorption system from trees, cut banks, fills, or subsurface drains; and

(F) cross section of absorption system showing the:

(I) depth and width of absorption system excavation;

(II) depth of distribution pipe;

(III) depth of filter material;

(IV) barrier material, such as synthetic filter fabric, straw, or other material acceptable to the regulatory authority, used to separate filter material from cover; and

(V) depth of cover. An applicant requesting plan approval for an onsite wastewater system shall submit enough copies of required information to enable the regulatory authority to retain one copy as a permanent record.

(h) Any application may be rejected if proper information is not submitted.

R317-4-6. Design Requirements.

(1) An onsite wastewater system may not be suitable in some areas and situations. Location and installation of each system shall be such that with reasonable maintenance, it shall function in a sanitary manner and may not create a nuisance, public health hazard, or endanger the quality of any waters of the state. In determining a suitable location for each system, due consideration shall be given to such factors as:

(a) the minimum setbacks in Section R317-4-13 Table 2;

(b) size and shape of the lot;

(c) slope of natural and final grade;

(d) location of existing and future water supplies;

(e) depth of ground water and bedrock;

(f) soil characteristics and depth;

(g) potential flooding or storm catchment;

(h) possible expansion of the system; and

(i) future connection to a public sewer system.

(2) Any onsite wastewater system, including the replacement area, shall conform to the minimum setback distances in Section R317-4-13 Table 2.

(3) Any absorption system, including the replacement area, shall conform to the ground slope requirements in Section R317-4-4.

(4) Any design for an onsite wastewater system shall include an estimate of wastewater quantity.

(a) The wastewater quantity estimate for a single-family dwelling shall be a minimum of 300 gallons per day for 1 or 2 bedroom, and 150 gallons per day for each additional bedroom.

(b) For any non-residential facility, the quantity of wastewater shall be determined accurately, preferably by actual measurement. Metered water supply figures for similar installations can usually be relied upon, providing the non-disposable consumption, if any, is subtracted. Where this data is not available, the minimum design flow figures in Section R317-4-13 Table 3 shall be used to make estimates of flow.

(c) In no event shall the anticipated maximum daily wastewater flow exceed the capacity for which a system is designed.

(5) Effluent shall be treated to levels at or below the defined parameters of non-domestic effluent before being discharged into an absorption system.

(6) Building sewer shall meet the following requirements:

(a) The building sewer shall have a minimum inside diameter of 4 inches and shall comply with the minimum standards in Section R317-4-13 Table 4. If the sewer leaving the house is 3 inches, the building sewer may be 3 inches.

(b) Building sewers shall be laid on a uniform minimum slope of not less than 1/4 inch per foot or 2.08% slope.

(c) The building sewer shall have a minimum of one cleanout and cleanouts every 100 feet.

(i) A cleanout is also required for each aggregate horizontal change in direction exceeding 135 degrees.

(ii) 90 degree ells are not recommended.

(d) The building sewer shall be separated from water service pipes in separate trenches, and by at least 10 feet horizontally, except that they may be placed in the same trench when all the following conditions are met.

(i) The bottom of the water service pipe, at all points, shall be at least 18 inches above the top of the building sewer.

(ii) The water service pipe shall be placed on a solid shelf excavated at one side of the common trench with a minimum clear horizontal distance of at least 18 inches from the sewer or drain line.

(iii) The number of joints in the water service pipe should be kept to a minimum, and the materials and joints of both the sewer and water service pipes shall be of strength and durability to prevent leakage under adverse conditions.

(iv) If the water service pipe crosses the building sewer, it shall be at least 18 inches above the latter within 10 feet of the crossing. Joints in water service pipes should be located at least 10 feet from such crossings.

(e) Each building sewer placed under driveways or other areas subjected to heavy loads shall receive special design considerations to ensure against crushing or disruption of alignment.

(7) Each septic tank shall meet the requirements of Subsection R317-4-14(1) Appendix A and be approved by the division. Septic tanks shall be constructed of sound, durable, watertight materials that are not subject to excessive corrosion, frost damage, or decay. They shall be designed to be watertight, and to withstand all expected physical forces.

(a) A septic tank that serves a non-residential facility shall have a liquid capacity of at least 1-1/2 times the designed daily wastewater flow. In all cases the capacity shall be at least 1,000 gallons.

(b) The capacity of a septic tank that serves a single-family dwelling shall be based on the number of bedrooms that can be anticipated in the dwelling served, including the unfinished space available for conversion as additional bedrooms. Unfinished basements shall be counted as a minimum of one additional bedroom.

(i) The minimum liquid capacity of the tank shall be 1,000 gallons for up to three bedroom homes.

(ii) The minimum liquid capacity of the tank shall be 1,250 gallons for four bedroom homes.

(iii) Two hundred fifty gallons per bedroom shall be added to the liquid capacity of the tank for each additional bedroom over four bedrooms.

(c) The regulatory authority may require a larger capacity than specified in this subsection as needed for unique or unusual circumstances.

(d) Multiple septic tanks may be installed in series.

(i) No tank in the series may be smaller than 1,000 gallons.

(ii) The capacity of the first tank shall be at least two-thirds of the required total septic tank volume. If a compartmented tank is used, the compartment of the first tank shall have this two-thirds capacity. A membrane bioreactor system may include the balance tank as a second tank in series where the volume of the balance tank is included in the total required septic tank liquid storage capacity.

(iii) The connecting pipe between each successive tank shall meet the slope requirements of the building sewer and shall be unrestricted except for the inlet to the first tank and the outlet for the last tank.

(iv) The maximum number of tanks and compartments in series may not exceed three.

(e) Each septic tank inlet or outlet device shall conform to the following:

(i) Approved tanks with offset inlets may be used where they are warranted by constraints on septic tank location.

(ii) Multiple outlets from septic tanks shall be prohibited unless preauthorized by the regulatory authority.

(iii) A gas deflector may be added at the outlet of the tank to prevent solids from entering the outlet pipe of the tank.

(f) Any septic tank may have an effluent screen installed at the outlet of the terminal tank. The screen shall prevent the passage of solid particles larger than a nominal 1/8 inch diameter sphere. The screen shall be easily removable for routine servicing by installing a riser to the ground surface, with an approved cover. An effluent screen is required for each non-domestic wastewater system, unless screening is achieved by some other means acceptable to the regulatory authority.

(g) Adequate access to the tank shall be provided to facilitate inspection, pumping, servicing, and maintenance, and shall have no structure or other obstruction placed over it and shall conform to all the following requirements.

(i) Watertight risers are required, extending to within 6 inches of the surface of the ground when soil covering the septic tank is greater than 6 inches. Preferably, the riser should be brought up to the final grade to encourage periodic servicing and maintenance.

(A) If a septic tank is located under paving or concrete, risers shall be extended up through the paving or concrete.

(B) If non-domestic wastewater is generated, risers shall be extended to the final grade.

(ii) The inside diameter of the riser shall be a minimum of 20 inches.

(iii) Each riser cover shall be designed and constructed in such a manner that:

(A) it may not pass through the access openings;

(B) it shall be child-proof when closed;

(C) it shall prevent entrance of surface water, dirt, or other foreign materials; and

(D) it shall seal odorous gases in the tank.

(iv) Each riser shall be constructed of durable, structurally sound materials that are approved by the regulatory authority and designed to withstand expected physical loads and corrosive forces.

(v) When a septic tank capacity exceeds 3,000 gallons, a minimum of two access risers shall be installed.

(h) Each septic tank installation located in a high groundwater area shall conform to the following additional requirements:

(i) Each septic tank located in a high groundwater area shall be designed with the appropriate weighted or anti-buoyancy device to prevent flotation in accordance with the manufacturer's recommendations.

(ii) The building sewer inlet of a septic tank may not be installed at an elevation lower than the highest anticipated groundwater elevation.

(A) If the tank serves a mound, packed bed, or membrane bioreactor alternative system and has an electronic control panel capable of detecting water intrusion, the building sewer inlet of the tank may be installed below the maximum anticipated groundwater elevation.

(B) Any component below the anticipated maximum ground water elevation shall be water tightness tested.

(i) The minimum depth of cover over a septic tank shall be at least 6 inches and a maximum of 48 inches at final grading. For unusual situations, the regulatory authority may allow deeper burial provided the following conditions are met.

(A) Each septic tank shall be approved by the division for the proposed depth and burial cover load.

(B) Each riser shall:

(I) be installed over each access opening of the inlet and outlet baffles or sanitary tees; and

(II) conform to Subsection R317-4-6(7)(g), except each riser shall be at least 24 inches in diameter.

(8) A grease interceptor tank or automatic grease removal device may be required by the regulatory authority to receive the drainage from fixtures and equipment with grease-laden waste. It shall be sized according to the current Plumbing Code.

Any grease interceptor tank or automatic grease removal device installed in the ground shall conform to Subsection R317-4-6(7)(g) for accessibility and installation, except risers are required and shall be brought to the surface of the ground. Each interior compartment shall be accessible for inspecting, servicing, and pumping.

(9) Installation of each pump and recirculation tank shall conform to the following:

(a) Each pump or recirculation tank shall be constructed of sound, durable, watertight materials that are not subject to excessive corrosion, frost damage, or decay. The tank shall be designed to be watertight, and to withstand all expected physical forces;

(b) Pump tank volume shall have a liquid capacity adequate for the minimum operating volume that includes the dead space, dosing volume, and surge capacity, and shall have the emergency operation capacity of:

(i) storage capacity for the system design daily wastewater flow;

(ii) at least two independent power sources with appropriate wiring installed; or

(iii) other design considerations approved by the regulatory authority that do not increase public health risks if pump failure occurs.

(c) Each tank shall conform to Subsection R317-4-6(7)(g) for accessibility and installation, except risers are required and shall be brought to the surface of the ground. Each interior compartment shall be accessible for inspecting, servicing, and pumping; and

(d) Each outlet of any septic tank upstream of each pump tank shall be fitted with an effluent screen, unless a pump vault is used in a pump tank.

(10) A pump vault may be used when approved by the regulatory authority.

(a) The vault shall be constructed of durable material and resistant to corrosion.

(b) The vault shall have an easily accessible screen with 1/8 inch openings or smaller.

(c) Each component of the vault shall be accessible from the surface.

(d) When a pump vault is used in a septic tank:

(i) The tank size shall be increased by the larger of the following:

(A) two hundred fifty gallons; or

(B) ten percent of the required capacity of the tank.

(ii) At least two independent power sources with appropriate wiring, or other design considerations approved by the regulatory authority that do not increase public health risks, shall be installed.

(iii) The maximum drawdown within the tank shall be no more than 3 inches per dose.

(11) Each pump shall be designed as detailed in Subsection R317-4-14(2) Appendix B.

(12) When any onsite wastewater system is required to have effluent sampling or receives non-domestic wastewater, the system shall include a sampling port at an area approved by the regulatory authority capable of sampling effluent before the absorption system.

(13) Each effluent sewer shall conform with the following:

(a) The effluent sewer shall have a minimum inside diameter of 4 inches and shall comply with the minimum standards in Section R317-4-13 Table 4;

(b) The effluent sewer shall extend at least 5 feet beyond the septic tank before entering the absorption system;

(c) The effluent sewer shall be laid on a uniform minimum slope of not less than 1/4 inch per foot or 2.08% slope. When it is impractical, due to structural features or the arrangement of any building, to obtain a slope of 1/4 inch per foot, a sewer pipe of 4 inches in diameter or larger may have a slope of not less than 1/8 inch per foot or 1.04% slope when approved by the regulatory authority;

(d) The effluent sewer line shall have cleanouts at least every 100 feet; and

(e) Each effluent sewer placed under a driveway or other area subjected to heavy loads shall receive special design considerations to ensure against crushing or disruption of alignment.

(14) An absorption system shall consist of one or more absorption trenches, absorption beds, deep wall trenches, or seepage pits.

Absorption trenches may be standard trenches, chambered trenches, or bundled synthetic aggregate trenches.

(a) Each absorption system shall meet general requirements.

(i) A replacement area for each absorption system shall have adequate and suitable land which shall be reserved and kept free of permanent structures, traffic, or adverse soil modification for 100% replacement of each absorption system. If approved by the regulatory authority, the area between standard trenches or deep wall trenches may be regarded as replacement area. In lieu of a replacement area, two complete absorption systems shall be installed with a diversion valve. The valve shall be accessible from the final grade. The valve should be switched at least annually.

(ii) The site of the initial and replacement absorption system shall be protected and may not be covered by asphalt, concrete, structures, or be subject to vehicular traffic, or other activity that would adversely affect the soil, such as construction material storage, or soils storage. This protection applies before and after construction of the onsite wastewater system.

(iii) Each absorption system shall be sized based on Section R317-4-13 Table 5 or R317-4-13 Table 6.

(iv) Many different criteria may be used in designing an absorption system, the choice depending on the size and shape of the available areas, the capacity required, and the topography of the dispersal area.

(A) Each absorption system shall comply with the setbacks in Section R317-4-13 Table 2.

(B) An absorption system may be placed in sloping ground. Any absorption system placed in 10% or greater sloping ground shall be designed so that there is a minimum of 10 feet of undisturbed earth measured horizontally from the bottom of the distribution line to the ground surface. This requirement does not apply to drip irrigation.

(C) That portion of the absorption system below the top of distribution pipes shall be in undisturbed natural earth.

(D) All piping, chambers, and the bottoms of absorption system excavations shall be designed level.

(E) Distribution pipe for gravity-flow absorption systems shall be 4 inches in diameter and shall comply with the minimum standards in Section R317-4-13 Table 4.

(I) The pipe shall be penetrated by at least two rows of round holes, each 1/2 inch in diameter, and located at about 6 inch intervals. The perforations should be located at about the five o'clock and seven o'clock positions on the pipe.

(II) The open ends of the pipes shall be capped.

(F) Absorption system laterals should be designed to receive proportional flows of wastewater.

(G) Drain media shall be covered with a barrier material before being covered with earth backfill.

(H) The following prohibitions shall apply to the design of an absorption system:

(I) In any gravity-flow absorption system with multiple distribution lines, the effluent sewer may not be in direct line with any one of the distribution pipes, except where drop boxes or distribution boxes are used.

(II) Any section of distribution pipe laid with non-perforated pipe may not be considered in determining the required absorption area.

(III) Perforated distribution pipe may not be placed under a driveways or other area subjected to heavy loads. A deep wall trench or filled seepage pit may be allowed beneath an unpaved driveway on a case-by-case basis by the regulatory authority, if the top of the distribution pipe is at least 3 feet below the final ground surface.

(b) Effluent distribution devices may be used to distribute effluent evenly throughout an absorption system.

(i) A distribution box may be used on level or nearly level ground. Each distribution box shall be watertight and constructed of durable, corrosion resistant material. Each distribution box shall be designed to accommodate an inlet pipe and the necessary distribution lines.

(A) The outlet inverts of the distribution box may not be less than 1 inch below the inlet invert.

(B) Each distribution box shall have a riser brought to final grade.

(ii) Each drop boxes shall be watertight and constructed of durable, corrosion resistant material and may be used to distribute effluent within the absorption system and shall meet the following requirements:

(A) Each drop box shall be designed to accommodate an inlet pipe, an outlet pipe leading to the next drop box, except for the last drop box, and one or two distribution pipes leading to the absorption system.

(B) The inlet pipe to the drop box shall be at least 1 inch higher than the outlet pipe leading to the next drop box.

(C) The invert of the distribution pipes shall be 1 through 6 inches below the outlet invert. If there is more than one distribution pipe, their inverts shall be at exactly the same elevation.

(D) Each drop box shall have a riser brought to final grade.

(iii) Effluent may be pumped to an absorption system.

(A) If a pump is used to lift effluent to an absorption system, the pump tank or pump vault shall meet the requirements of Subsection R317-4-6(9) or R317-4-6(10) and the pump and controls shall meet the requirements of Subsection R317-4-14(2) Appendix B.

(B) Pumping to an absorption system may not warrant any reductions to the absorption area.

(iv) Any tee, wye, ell, or other distributing device may be used as needed to distribute proportional flow to the branches of the absorption system. A clean out or other means of access from the surface shall be provided for any such device.

(c) Effluent shall be distributed evenly throughout an absorption system using various methods.

(i) In a location where the slope of the ground over the absorption system area is relatively flat, absorption trenches should be interconnected to produce a closed loop system and the trenches shall be installed at the same elevations.

(ii) If a non-closed loop design is used, effluent shall be proportionally distributed to each lateral.

(iii) Serial or sequential distribution may be used in absorption systems designed for sloping areas, or where absorption system elevations are not equal.

(A) Serial trenches shall be connected with a drop box or watertight overflow line in such a manner that a trench shall be filled before the effluent flows to the next lower trench.

(B) The overflow line shall be a 4-inch solid pipe with direct connections to the distribution pipes. It should be laid in a trench excavated to the exact depth required. Care must be exercised to ensure a block of undisturbed earth remains between trenches. Backfill should be carefully tamped.

(iv) Pressure distribution to an absorption system shall conform to the following general requirements:

(A) All requirements stated elsewhere in this rule for design, setbacks, construction and installation details, performance, repairs, and abandonment shall apply.

(B) Each system that uses this method shall be designed by a person certified at Level 3 in accordance with Rule R317-11.

(I) The designer shall submit details of all system components with the necessary calculations.

(2)(II) The designer shall provide to the local health department and to the owner operation and maintenance instructions that include the minimum inspection levels in Section R317-4-13 Table 7 for the system.

(C) When a system utilizing pressure distribution exists on a property, notice of the existence of that system shall be recorded in the chain of title for that property.

(D) Pressure distribution may be permitted on any site meeting the requirements for an onsite wastewater system if conditions in this rule can be met. Pressure distribution should be considered when:

(I) effluent pumps are used;

(II) the flow from the dwelling or structure exceeds 3,000 gallons per day;

(III) soils are a Type 1 or have a percolation rate faster than five minutes per inch; or

(IV) soils are a Type 5 or have a percolation rate slower than 60 minutes per inch.

(E) The Utah Guidance for Performance, Application, Design, Operation and Maintenance: Pressure Distribution Systems document shall be used for design requirements, along with the following:

(I) Dosing pumps, controls and alarms shall comply with Subsection R317-4-14(2) Appendix B.

(2)(II) Pressure distribution piping, pressure transport, manifold, lateral piping, and fittings shall meet PVC Schedule 40 standards or equivalent.

(III) The ends of lateral piping shall be constructed with sweep elbows or an equivalent method to bring the end of the pipe to final grade. The ends of the pipe shall be provided with threaded plugs, caps, or other devices acceptable to the regulatory authority to allow for access and flushing of the lateral.

(d) Each absorption system shall be designed according to the requirements for the specific absorption method selected.

(i) An absorption system shall be designed to follow the ground surface contours so that variation in excavation depth shall be minimized. The excavations may be installed at different elevations, but the bottom of each individual excavation shall be level throughout its length.

(ii) Each absorption system should be constructed as shallow as is possible to promote treatment and evapotranspiration.

(iv) Observation ports may be placed to observe the infiltrative surfaces of the trenches or beds.

(v) Absorption trenches shall conform to the following:

(A) The minimum required effective absorption area shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6.

(B) The effective absorption area of absorption trenches shall be calculated as the total bottom area of the excavated trench system in square feet.

(C) The minimum number of absorption trenches shall be two.

(D) The maximum length of an absorption trench, not including any connecting trench shall be 150 feet.

(E) The minimum spacing of absorption trenches from wall to wall shall be 7 feet.

(F) The minimum width of each absorption trench excavation shall be 24 inches.

(G) The maximum width of each absorption trench excavation shall be 36 inches.

(H) The minimum depth of each absorption trench excavation below the original, natural grade shall be 10 inches.

(I) The minimum depth of soil cover over each absorption trench shall be 6 inches.

(J) The minimum separation from the bottom of each absorption trench to:

(K) the anticipated maximum ground water table shall be 24 inches; and

(L) to unsuitable soil or bedrock formations shall be 48 inches.

(vi) Each standard trench shall conform to the following:

(A) The top of any distribution pipe may not be installed above original, natural grade.

(B) The distribution pipe shall be centered in the absorption trench and placed the entire length of the trench.

(C) Drain media shall extend the full width and length of the trench to a depth of at least 12 inches.

(D) The minimum depth of drain media under the distribution pipe shall be 6 inches.

(E) The minimum depth of drain media over the distribution pipe shall be 2 inches.

(F) The minimum depth of cover over the barrier material shall be 6 inches.

(vii) Each chambered trench shall conform to the following:

(A) Each chamber shall be certified under the International Association of Plumbing and Mechanical Officials (IAPMO) standard for plastic leaching chambers.

(B) The minimum required effective absorption area of chambered trenches shall be calculated:

(I) using 36 inches for Type A Chambers; and

(II) using 24 inches for Type B Chambers.

(C) The minimum required effective absorption area of chambered trenches shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6 and may be reduced by 30%.

(D) The chambered trenches shall be designed and installed in conformance with manufacturer recommendations, as modified by this rule.

(E) Type A chambers shall have:

(I) a minimum width of 30 inches; and

(II) a maximum trench excavation width of 36 inches.

(F) Type B chambers shall have:

(I) a minimum width of 22 inches; and

(II) a maximum trench excavation width of 24 inches.

(G) The minimum elevation of the inlet pipe invert from the bottom of the chamber shall be 6 inches.

(H) Each chambered trench shall have a splash plate under the inlet pipe or another design feature to avoid unnecessary channeling into the trench bottom.

(I) Any inlet and outlet effluent sewer pipe shall enter and exit the chamber endplate.

(J) The minimum depth of cover over any chamber shall be 12 inches. The depth of cover may be reduced to no less than 6 inches, if approved by the regulatory authority, considering the protection of absorption systems as required in Subsection R317-4-6(14)(a)(ii), and other activities, as determined by the authority.

(viii) Each bundled synthetic aggregate trench shall conform to the following:

(A) Each synthetic aggregate bundle shall meet IAPMO Standards for the General, Testing and Marking and Identification of the guide criteria for Bundled Expanded Polystyrene Synthetic Aggregate Units.

(B) The effective absorption area of a bundled synthetic aggregate trench shall be calculated as the total bundle length times the total bundle width in square feet.

(C) Each bundled synthetic aggregate trench shall be designed and installed in conformance with manufacturer recommendations, as modified by this rule.

(D) Only 12-inch diameter bundles are approved in this rule.

(E) For bundles with perforated pipe the minimum depth of synthetic aggregate under pipe shall be 6 inches.

(F) The width of each bundled synthetic aggregate trench shall require:

(I) three bundles laid parallel to each other with the middle bundle containing perforated pipe when designed for a 3 foot trench; or

(II) two bundles placed on the bottom, with another bundle containing perforated pipe placed on top of the other two bundles.

(G) The minimum depth of cover over the bundles shall be 12 inches. The depth of cover may be reduced to no less than 6 inches, if approved by the regulatory authority, considering the protection of absorption systems as required in Subsection R317-4-6(14)(a)(ii), and other activities, as determined by the authority.

(ix) Each absorption bed shall conform to the requirements applicable to absorption trenches, except for the following:

(A) The minimum required effective absorption area shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6.

(B) The effective absorption area of absorption beds shall be considered as the total bottom area of the excavated bed system in square feet.

(C) An absorption bed may be built over naturally existing soil types per Section R317-4-13 Table 5 or R317-4-13 Table 6.

(D) The bottom of the entire absorption bed shall be level.

(E) The distribution pipes or chambers shall be interconnected to produce a closed loop distribution system.

(F) The minimum number of laterals in an absorption bed shall be 2.

(G) The maximum length of laterals in an absorption bed shall be 150 feet.

(H) The maximum distance between laterals shall be 6 feet.

(I) The minimum distance between laterals and sidewalls shall be 1 foot.

(J) The maximum distance between laterals and sidewalls shall be 3 feet.

(K) The minimum distance between absorption beds shall be 7 feet.

(L) The minimum depth of an absorption bed excavation from original, natural grade shall be 10 inches.

(M) Absorption beds with drain media shall conform to the following:

(I) The minimum depth of drain media under a distribution pipe shall be 6 inches.

(II) The minimum depth of drain media over a distribution pipe shall be 2 inches.

(III) The minimum depth of cover over the barrier material shall be 6 inches.

(N) Each absorption bed with chambers shall require:

(I) Chambers shall be installed with sides touching, no separation allowed.

(II) All chambers shall be connected in a closed loop distribution system.

(III) The outlet side of the chamber runs shall be connected through the bottom port of the end plates.

(IV) No absorption area reduction factor shall be given for using chambers in absorption beds.

(V) The minimum depth of cover over the chambers shall be 12 inches.

(x) Each deep wall trench shall conform to the following:

(A) The minimum required effective absorption area shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6.

(B) The effective absorption area of deep wall trenches shall be calculated using the total trench vertical sidewall area below the distribution pipe. The bottom area and any highly restrictive or impervious strata or bedrock formations may not be considered in determining the effective sidewall absorption area.

(C) If a percolation test is used, it shall be conducted in accordance with Subsection R317-4-14(4) Appendix D and in the most restrictive soil horizon.

(D) The maximum length of any trench, not including any connecting trench, shall be 150 feet.

(E) The minimum spacing of trenches from wall to wall shall be 12 feet, or three times the depth of the media under the distribution pipe, whichever is the larger distance.

(F) Each deep wall trench shall:

(I) have a minimum effective sidewall depth of 2 feet;

(II) have a maximum effective sidewall depth of 10 feet; and

(III) allow only suitable soil formation depth when calculating the absorption area.

(G) The minimum width of each trench excavation shall be 24 inches.

(H) The minimum separation from the bottom of each deep wall trench to:

(I) the anticipated maximum ground water table shall be a minimum of 48 inches; and

(II) unsuitable soil or bedrock formations shall be a minimum of 48 inches.

(I) Drain media shall cover the coarse drain media to allow for leveling of the distribution pipe and shall extend the full width and length of the trench.

(J) The minimum depth of drain media shall be 12 inches.

(K) The minimum depth of drain media under the distribution pipe shall be 6 inches.

(L) The minimum depth of drain media over the distribution pipe shall be 2 inches.

(M) The minimum depth of cover over the barrier material shall be 6 inches.

(N) The distribution pipe shall be centered in the trench and placed the entire length of the trench.

(O) The horizontal setback distance to any property line shall be a minimum of 10 feet.

(xi) A seepage pit shall be considered as a modified deep wall trench and shall conform to the requirements applicable to deep wall trenches, except for the following:

(A) The effective absorption area of a seepage pit shall be calculated using the total pit vertical sidewall area below the distribution pipe. The bottom area and any highly restrictive or impervious strata or bedrock formations may not be considered in determining the effective sidewall absorption area.

(B) The minimum diameter of a seepage pit shall be 3 feet.

(C) Each seepage pit shall:

(I) have a minimum effective sidewall depth of 4 feet;

(II) have a maximum effective sidewall depth of 10 feet; and

(III) allow only suitable soil formation depth when calculating the absorption area.

(D) In each pit filled with coarse drain media, the perforated distribution pipe shall run across each pit. A layer of drain media shall be used for leveling the distribution pipe. The entire pit shall be completely filled with coarse drain media to at least the top of any permeable soil formation to be calculated as effective sidewall absorption area.

(E) Each hollow-lined seepage pit shall conform to the following:

(I) For each hollow-lined pit, an inlet pipe shall extend horizontally at least 1 foot into the pit.

(II) The annular space between the lining and excavation wall shall be filled with crushed rock or gravel ranging from 3/4 through 6 inches in diameter and free of fines, sand, clay or organic material. The maximum fines in the gravel shall be 2% by weight passing through a US Standard #10 mesh or 2.0 millimeter sieve.

(III) The minimum width of annular space between lining and sidewall shall be 12 inches.

(IV) MThe minimum thickness of reinforced perforated concrete liner shall be 2-1/2 inches.

(V) The minimum thickness of reinforced concrete top shall be 6 inches.

(VI) The minimum depth of drain media in the seepage pit bottom shall be 6 inches.

(VII) Minimum depth of cover over seepage pit top shall be 6 inches.

(VIII) A reinforced concrete top shall be provided.

(IX) When the cover over any seepage pit top exceeds 6 inches, risers shall conform to Subsection R317-4-6(7)(g) for accessibility.

(15) Alternative onsite wastewater systems include at-grade, mound, packed media, sand lined trench, and membrane bioreactor systems. A packed bed media system may be an intermittent sand filter, a recirculating sand filter, a recirculating gravel filter, a textile filter or a peat filter.

(a) An alternative onsite wastewater system shall conform to applicable requirements stated elsewhere in this rule for design, setbacks, construction and installation details, performance, repairs and abandonment shall apply unless stated differently for a given alternative system.

(i) An absorption area for each alternative onsite wastewater system shall be sized based on Section R317-4-13 Table 5 or R317-4-13 Table 6 except as specified in this section.

(ii) Each alternative onsite wastewater system shall be designed by a person certified at Level 3 in accordance with Rule R317-11.

(A) The designer shall submit details of all system components with the necessary calculations.

(B) The designer shall provide to the local health department and to the owner operation and maintenance instructions that include the minimum inspection levels in Section R317-4-13 Table 7 for the system.

(iii) When an alternative system exists on a property, notice of the existence of that system shall be recorded in the chain of title for that property.

(b) The design each alternative onsite wastewater system shall be designed according to the requirements for the specific alternative system selected.

(i) Absorption trenches and absorption beds may be used in an at-grade system. Each at-grade system shall conform to the requirements applicable to absorption trenches and absorption beds, except for the following:

(A) Horizontal setbacks in Section R317-4-13 Table 2 are measured from edge of trench sidewall, except at property lines, where the toe of the final cover shall be 5 feet or greater in separation distance to a property line.

(B) The minimum number of observation ports provided within absorption area shall be 2. The ports shall be installed to the depth of the trench or bed.

(C) The depth of each absorption excavation below natural grade shall be 0-10 inches.

(D) The minimum cover over the absorption area shall be 6 inches.

(E) The maximum slope of natural ground surface shall be 4%.

(F) The maximum side slope for above ground fill shall be four horizontal to one vertical shall be a 25% slope.

(G) Where final contours are above the natural ground surface, the cover shall extend from the center of the wastewater system at the same general top elevation for a minimum of 10 feet in all directions beyond the limits of the absorption area perimeter, before beginning the side slope.

(ii) Each mound system shall conform to the following:

(A) The design shall generally be based on the Wisconsin Mound Soil Absorption System: Siting, Design and Construction Manual, January 2000 published by the University of Wisconsin-Madison Small-Scale Waste Management Project, with the following exceptions.

(B) The minimum separation distance between the natural ground surface and the anticipated maximum ground water table shall be 12 inches.

(C) A mound system may be built over naturally existing soil types per Section R317-4-13 Table 5 or R317-4-13 Table 6 provided the minimum depth of suitable soil is:

(I) 36 inches between the natural ground surface and bedrock formations or unsuitable soils; or

(II) 24 inches above soils that have a percolation rate faster than one minute per inch.

(D) The minimum depth of sand media over natural soil shall be 12 inches.

(E) The maximum slope of natural ground surface shall be 25 %.

(F) The separation distances in Section R317-4-13 Table 2 are measured from the toe of the final cover.

(G) The effluent loading rate at the sand media to natural soil interface shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6.

(H) The effluent entering a mound system shall be at levels at or below the defined parameters of non-domestic effluent.

(I) The minimum thickness of aggregate media around the distribution pipes of the absorption system shall be the sum of 6 inches below the distribution pipe, the diameter of the distribution pipe and 2 inches above the distribution pipe or 10 inches, whichever is larger.

(J) The cover may not be less than 6 inches in thickness, and shall provide protection against erosion, frost, storm water infiltration and support vegetative growth and aeration of distribution cell.

(K) A minimum of three observation ports shall be located within the mound at each end and the center of the distribution cell. At least one port shall be installed at the gravel-sand interface, and one port at the sand-soil interface.

(L) Mounds shall use pressure distribution. The Utah Guidance for Performance, Application, Design, Operation and Maintenance: Pressure Distribution Systems document and Subsection R317-4-6(14)(c)(iv) shall be used for design requirements. See Subsection R317-4-14(2) Appendix B for pump and control requirements.

(iii) Each packed bed media system shall conform to the following design criteria:

(A) For a single-family dwelling the design shall be based on a minimum of 300 gallons per day for two bedrooms and 100 gallons per day for each additional bedroom.

(B) All other flow estimates shall be based on Subsection R317-4-6(4).

(C) Special design considerations shall be given for non-domestic effluent.

(D) Effluent shall be uniformly distributed over the filter media using pressure distribution.

(E) A packed bed media absorption system may be placed where the minimum separation distance between the natural ground surface and the anticipated maximum ground water table is 12 inches.

(F) A packed bed media absorption system may be built over naturally existing soil types per Section R317-4-13 Table 5 or R317-4-13 Table 6 provided the minimum depth of suitable soils:

(I) above soils that have a percolation rate faster than one minute per inch is at least 24 inches; and

(II) at least 36 inches between the natural ground surface and bedrock formations or unsuitable soils; or

(III) there is at least 18 inches between the natural ground surface and bedrock formations or unsuitable soils,determined by an evaluation of infiltration rate and hydrogeology from a professional geologist or engineer that is certified at the appropriate level to perform onsite wastewater system design and having sufficient experience in geotechnical engineering based on the detailed subsurface geology of the vicinity, the hydrogeology of the vicinity, and the cumulative hydrogeological effect of all existing and future onsite wastewater systems within the area.

(G) A non-chemical disinfection unit, capable of meeting laboratory testing parameters in Table 7.3, and a maintenance schedule consistent to Section R317-4-13 Table 7.1 and R317-4-13 Table 7.3, shall be used in excessively permeable soils.

(H) Conformance with the minimum setback distances in Section R317-4-13 Table 2, except for the following that require a minimum of 50 feet of separation:

(I) watercourses, lakes, ponds, reservoirs;

(II) non-culinary springs or wells;

(III) foundation drains, curtain drains; or

(IV) non-public culinary grouted wells, constructed as required by Title R309.

(I) The minimum required effective absorption area shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6 and may be reduced by 30%. The use of chambered trenches with a packed bed media system may not receive additional reductions as allowed in Subsection R317-4-6(14)(d)(v).

(J) The bottom of the absorption system shall have a vertical separation distance of at least 12 inches from the anticipated maximum ground water table.

(K) A minimum of two observation ports shall be provided within the absorption area.

(L) Drip irrigation absorption may be used for packed bed media absorption system effluent dispersal based on type of soil and drip irrigation manufacturer's recommendations.

(I) Materials shall be specifically designed and manufactured for onsite wastewater applications.

(II) Non-absorption components shall be installed per Section R317-4-6 and Section R317-4-13 Table 2.

(iv) Each intermittent sand filter system shall conform to the following:

(A) Either sand media or sand fill may be used.

(I) The minimum depth of sand media or sand fill shall be 24 inches.

(II) The effective size of the sand media or sand fill shall be 0.35-0.5 millimeters.

(III) The uniformity coefficient of the sand media or sand fill shall be less than 4.0.

(IV) The maximum fines passing through #200 sieve shall be 1%.

(B) The maximum application rate per day per square foot of media surface area shall be:

(I) 1.0 gallons for sand media; or

(II) 1.2 gallons for sand fill.

(C) The maximum dose volume through any given orifice for each dosing shall be 2 gallons.

(D) Effluent entering an intermittent sand filter shall be at levels at or below the defined parameters of non-domestic effluent.

(v) Each recirculating sand filter system shall conform to the following:

(A) The minimum depth of washed sand shall be 24 inches.

(B) The effective size of the media shall be 1.5-2.5 millimeters.

(C) The uniformity coefficient shall be less than 3.0.

(D) The maximum fines passing through a #50 sieve shall be 1%.

(E) The maximum application rate per day per square foot of media surface area shall be 5 gallons.

(vi) Each recirculating gravel filter system shall conform to the following:

(A) The minimum depth of washed gravel shall be 36 inches.

(B) The effective size of the media shall be 2.5-5.0 millimeters.

(C) The uniformity coefficient shall be less than 2.0.

(D) The maximum fines passing through a #16 sieve shall be 1%.

(E) The maximum application rate per day per square foot of media surface area shall be 15 gallons.

(vii) Each textile filter system shall conform to the following:

(A) Media shall be an approved geotextile fabric.

(B) The maximum application rate per day per square foot of media surface area shall be 30 gallons.

(viii) Each peat filter system shall conform to the following:

(A) The minimum depth of peat media shall be 24 inches.

(B) The maximum application rate per day per square foot of media surface area shall be 5 gallons.

(ix) Each sand lined trench system shall conform to the following:

(A) The minimum depth of suitable soil or saprolite between the sand media in trenches and the anticipated maximum ground water table shall be 12 inches.

(B) Each sand lined trench system may be built over naturally existing:

(I) soil types 1 through 4; or

(II) soils or saprolite with a percolation rate between 1 and 60 minutes per inch.

(C) The minimum depth of suitable soil or saprolite shall be:

(I) 36 inches between the sand media in trenches and bedrock formations or unsuitable soils; or

(II) 24 inches above soils or saprolite that have a percolation rate faster than one minute per inch.

(D) Each sand lined trench shall conform to the requirements applicable to absorption trenches except for the following:

(I) For each trench in suitable soil, the minimum required effective absorption area shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6.

(II) For each trench in saprolite, the minimum required effective absorption area shall be based on percolation rate using Section R317-4-13 Table 5. This rate shall be determined by conducting percolation tests. The soil shall be allowed to swell not less than 24 hours or more than 30 hours;

(III) The use of chambered trenches with a sand media system may not receive additional reductions as allowed in Subsection R317-4-6(14)(d)(v).

(IV) The maximum width of an absorption trench excavation shall be 36 inches.

(V) The entire trench sidewall shall be installed in natural ground. An at-grade system design may not be allowed.

(VI) The minimum depth of sand media shall be 24 inches.

(VII) Each sand lined trench with drain media shall have a minimum depth of 6 inches of drain media under the pressure lateral distribution pipe.

(VIII) Each sand lined trench with drain media shall have a minimum depth of 2 inches of drain media over pressure lateral distribution pipe.

(IX) The minimum depth of soil cover or saprolite over drain media shall be 6 inches.

(X) For each sand lined trench with Type A chambers. the minimum depth of soil cover or saprolite over chambers shall be 12 inches.

(XI) The minimum number of observation ports per trench shall be 1.

(E) Effluent shall be uniformly distributed over the sand media using pressure distribution. Pressure distribution design shall generally be based on the Utah Guidance for Performance, Application, Design, Operation and Maintenance: Pressure Distribution Systems document.

(x) Each membrane bioreactor system installed as part of an alternative onsite wastewater system is intended to be installed as a complete unit. The design of any the treatment tank and all accessory components, treatment pods, aerators, blowers, pumps, membranes, and control panel shall conform to manufacturer specifications specific to the daily flows and wastewater strength proposed to be treated. Each membrane bioreactor system shall conform to the following:

(A) For a single-family dwelling the design shall be based on a minimum of 300 gallons per day for two bedrooms and 100 gallons per day for each additional bedroom.

(B) All other flow estimates shall be based on Subsection R317-4-6(4).

(C) Special design considerations shall be given for non-domestic effluent.

(D) Each membrane bioreactor system installed shall meet the requirements listed in Subsection R317-4-6(7).

(E) Each septic, equalization, recirculation, pump, or other tanks used in conjunction with any membrane bioreactor system shall meet the requirements listed in Section R317-4-6.

(F) MBR tank volume shall have a liquid capacity adequate for the minimum operating volume that includes the dead space, dosing volume, and surge capacity, and shall have the emergency operation capacity of:

(I) storage capacity for the system design daily wastewater flow;

(II) at least two independent power sources with appropriate wiring installed; or

(III) other design considerations approved by the regulatory authority that do not increase public health risks if pump failure occurs.

(G) Each membrane bioreactor system shall have a minimum of two membrane filter units installed in a manner that any unit can be maintained independently of other filter membrane units.

(H) Each membrane bioreactor overflow shall discharge directly to the septic tank.

(I) Each membrane bioreactor unit shall be installed according to manufacturer's specifications.

(J) Any membrane bioreactor system constructed above ground shall be housed in an easily accessible service building that is climate controlled. The service building shall meet the appropriate permitting and setback distances required by the building authority.

(K) Each membrane bioreactor absorption system shall conform to the following:

(I) The minimum separation distance between the natural ground surface and the anticipated maximum groundwater table shall be 12 inches.

(II) An absorption system receiving effluent from a membrane bioreactor may be built over naturally existing soil types per Section R317-4-13 Table 5 or R317-4-13 Table 6 provided the minimum depth of suitable soils above soils that have a percolation rate faster than one minute per inch is 24 inches.

(III) An absorption system receiving effluent from a membrane bioreactor may be built over naturally existing soil types per Section R317-4-13 Table 5 or R317-4-13 Table 6 provided the minimum depth of suitable soils between the natural ground surface and bedrock formations or unsuitable soils is 36 inches.

(IV) An absorption system receiving effluent from a membrane bioreactor may be built over naturally existing soil types per Section R317-4-13 Table 5 or R317-4-13 Table 6 provided the minimum depth of suitable soils between the natural ground surface and bedrock formations or unsuitable soils is at least 18 inches between the natural ground surface and bedrock formations or unsuitable soils determined by an evaluation of infiltration rate and hydrogeology from a professional geologist or engineer that is certified at the appropriate level to perform onsite wastewater system design and having sufficient experience in geotechnical engineering based on the subsurface geology of the vicinity, the hydrogeology of the vicinity, and the cumulative hydrogeological effect of all existing and future onsite wastewater systems within the area.

(L) A non-chemical disinfection unit, capable of meeting laboratory testing parameters in Table 7.3, and a maintenance schedule consistent to Sections R317-4-13 Table 7.1 and R317-4-13 Table 7.3, shall be used in excessively permeable soils.

(M) Conformance with the minimum setback distances in Section R317-4-13 Table 2, except for the following that require a minimum of 50 feet of separation:

(I) watercourses, lakes, ponds, reservoirs;

(II) non-culinary springs or wells;

(III) foundation drains, curtain drains; or

(IV) non-public culinary grouted wells, constructed as required by Title R309.

(N) The minimum required effective absorption area for an absorption system receiving effluent from a membrane bioreactor system shall be calculated using Section R317-4-13 Table 5 or R317-4-13 Table 6 and may be reduced by 30%.

(O) The use of chambered trenches with any membrane bioreactor system may not receive additional reductions as allowed in Subsection R317-4-6(14)(d)(vii)(C).

(P) The bottom of the absorption system shall have a vertical separation distance of at least 12 inches from the anticipated maximum groundwater table.

(Q) A minimum of two observation ports shall be provided within the absorption area.

(R) Drip irrigation absorption may be used for membrane bioreactor absorption system effluent dispersal based on type of soil and drip irrigation manufacturer's recommendations.

(S) Materials shall be specifically designed and manufactured for onsite wastewater applications.

(T) Non-absorption components shall be installed per Sections R317-4-6 and R317-4-13 Table 2.

(U) A membrane bioreactor manufacturer shall submit NSF/ANSI Standard 40 - Residential Wastewater Treatment Systems certification for any model proposed to be approved for use in Utah. The division may approve any membrane bioreactor model as equivalent to an NSF certified model, if the manufacturer submits a written recommendation bearing the seal of a professional engineer licensed to practice in Utah who is certified as a Level 3 Onsite Professional as defined in Rule R317-11.

R317-4-7. Construction and Installation.

(1) Each onsite wastewater system shall be constructed and installed in compliance with approved plans.

(a) The installer may not deviate from the approved plans or conditions of the construction permit without the approval of the designer and the reviewing regulatory authority.

(b) A regulatory authority may limit the time period or area in which a system can be installed to ensure that soil conditions, weather, groundwater, or other conditions do not adversely affect the reliability of the system.

(c) Construction and installation of each onsite wastewater system shall conform to the following general requirements:

(i) Before installation, all minimum setback distances shall be field verified.

(ii) Each absorption area shall be protected before and during site construction.

(iii) The regulatory authority may require a temporary barrier around the absorption area, including the replacement area for additional protection before and during any site construction. If necessary, a more permanent barrier may be required following construction.

(iv) All absorption excavations and piping shall be level within a tolerance of plus or minus 1 inch. The overall slope from effluent entry to terminus shall be no more than 4 inches per hundred feet.

(v) Absorption system excavations shall be made such that the soil in the bottom and sides of the excavation is not compacted. Strict attention shall be given to the protection of the natural absorption properties of the soil.

(vi) Any absorption system may not be excavated when the soil is wet enough to smear or compact easily.

(vii) Any smeared or compacted surfaces should be raked to a depth of 1 inch, and loose material removed before the absorption system components are placed in the excavation.

(viii) Any open absorption system excavation shall be protected from surface runoff to prevent the entrance of silt and debris.

(ix) Each absorption system shall be backfilled with earth that is free from stones 10 inches or more in diameter.

(x) Distribution pipe may not be crushed or misaligned during backfilling. When backfilling, the earth shall be mounded slightly above the surface of the ground to allow for settlement and prevent depressions for surface ponding of water.

(xi) Final grading shall prevent ponding throughout the entire system area and promote surface water runoff.

(xii) Heavy wheeled equipment may not be driven in or over any absorption system before or during construction or backfilling.

(d) Pipe, pipe fittings, and similar materials comprising building and effluent sewers shall conform to the applicable standards as outlined in Section R317-4-13 Table 4.

(i) Each length of pipe shall be stamped or marked as required by the International Plumbing Code.

(ii) Where two different sizes or types of pipe are connected, a proper type of fitting or conversion adapter shall be used.

(iii) Each building sewer:

(A) shall have watertight, root-proof joints; and

(B) may not receive any ground water or surface runoff.

(iv) Pipes shall be installed on a foundation of undisturbed earth, or stabilized earth that is not subject to settling.

(e) Tank installation shall conform to the following requirements.

(i) Each tank shall be installed on a level, stable base that may not settle.

(ii) The hole to receive the tank shall be large enough to permit the proper placement of the tank and backfill.

(iii) Where ground water, rock or other undesirable protruding obstructions are encountered, the bottom of the hole shall be excavated an additional 6 inches, and backfilled with sand, crushed stone, or gravel to the proper grade.

(iv) backfill around and over the septic tank shall be placed in such a manner as to prevent undue strain or damage to the tank or connected pipes.

(f) Absorption system construction and installation shall conform to the following:

(i) Cover shall be evenly graded over the entire absorption area.

(ii) Distribution or drop box inlet and outlet piping shall be sealed watertight to the sidewalls of the box.

(iii) Each distribution or drop box shall be provided with a means of access. Access shall be brought to final grade.

(iv) The lid of the riser shall be adequate to prevent entrance of water, dirt or other foreign material, but made removable for observation and maintenance of the system.

(v) The top of the box shall be at least 6 inches below final grade.

(vi) The box shall be installed on a level, stable base to ensure against tilting or settling, and to minimize movement from frost action.

(vii) Each unused knock-out hole in any box shall be sealed watertight.

(g) The solid and distribution pipes shall be bedded true to line and grade, uniformly and continuously supported by firm, stable material.

(h) No cracked, weakened, modified or otherwise damaged chamber or bundled synthetic aggregate units may be used in any installation.

(i) Pressure distribution installation practices shall follow the approved design.

(j) Alternative system construction and installation practices shall follow the approved design.

(i) For each at-grade or mound system installation:

(A) The site shall be cleared of surface vegetation, without removing soil, and scarified to an approximate depth of 6 inches. Any furrows resulting from the scarification shall be perpendicular to any slope on the site. Rotary tilling shall be prohibited for scarification.

(B) The system may not be installed in wet or moist soil conditions.

(C) No equipment may be driven over the scarified area.

(D) The site shall be graded such that surface water drains away from the system and adjoining area.

(ii) Packed bed media, sand lined trench, and membrane bioreactor system installation practices shall follow the approved design.

R317-4-8. Final Inspections.

(1) The regulatory authority shall inspect the entire installation before backfilling to determine compliance with this rule. Some components or system types require additional testing or inspection methods as outlined in the following.

(a) Each tank shall be tested for water tightness before backfilling.

(i) Each tank shall be filled 24 hours before the inspection to allow stabilization of the water level. Considering water absorption by the concrete, there may not be a change in the water level nor any water moving visibly into or out of the tank. Testing shall be supervised by the regulatory authority. Tanks exhibiting obvious defects or leaks may not be approved unless such deficiencies are repaired to the satisfaction of the regulatory authority.

(A) The regulatory authority may allow two piece tanks, with the joint below the water level, to be backfilled up to 3 inches below the joint to provide adequate support to the seam of the tank.

(B) Any polyethylene or fiberglass tank may be backfilled as per manufacturers' recommendations.

(ii) If ground water elevations inhibit the ability to visibly inspect the exterior of the tank, the tank may be tested by its ability to exclude water.

(b) Each distribution or drop box should be installed level and the flow distribution lines shall be checked by filling the box with water up to the outlets.

(c) Any pump, controls, or alarms shall have its correct operation verified.

(d) Any deep wall trench or seepage pit shall have the depth of the trench excavation verified.

(e) For each at-grade or mound system:(i) the preparation of the original ground before the placement of fill shall be verified; and(ii) the final cover shall meet requirements.

(f) For each alternative or experimental system, additional inspections shall be dictated by the complexity of the system and absorption system type as identified by the regulatory authority.

(g) Final approval shall be issued by the regulatory authority before operation of any system, and shall include an as-built drawing of the completed system.

R317-4-9. Experimental Systems.

(1) Where unusual conditions exist, an experimental method of onsite wastewater treatment or dispersal may be employed provided the method is acceptable to the division and to the local health department having jurisdiction.

(a) When considering any proposal for an experimental onsite wastewater system, the division or the local health departments may not be restricted by this rule provided that:

(i) the experimental system proposed is attempting to resolve an existing pollution or public health hazard, or when the experimental system proposal is for new construction, it has been predetermined that an acceptable back-up wastewater system shall be installed in event of failure of the experiment;

(ii) the proposal for an experimental onsite wastewater system shall be in the name of and bear the signature of the person who shall own the system; and

(iii) the person proposing to utilize an experimental system has the responsibility to maintain, correct, or replace the system in event of failure of the experiment.

(b) When sufficient, successful experience is established with an experimental onsite wastewater system, the division may designate that system as an approved alternative onsite wastewater system.

(c) Following the approval of an alternative onsite wastewater system, the division may initiate rulemaking.

(2) Each experimental system shall be designed, installed and operated under the following conditions:

(a) The ground water requirements shall be determined as described in Subsection R317-4-4(1)(d).

(b) The local health department shall advise the owner of the system of the experimental status of that type of system. The advisory shall contain information concerning risk of failure, level of maintenance required, financial liability for repair, modification or replacement of a failed system and periodic monitoring requirements that are all specific to the type of system to be installed.

(c) The local health department and the owner shall be provided with sufficient design, installation and operating information to produce a successful, properly operating installation.

(d) The local health department is responsible for provision of, or oversight of an approved installation, inspection and maintenance and monitoring program for the systems. Such programs shall include approved procedures for complete periodic maintenance and monitoring of the systems.

(e) The local health department may impose more stringent design, installation, operating and monitoring conditions than those required by the division.

(f) Any failure, repair or alteration shall be reported to the local health department. Each repair or alteration shall be approved by the local health department.

(3) When an experimental wastewater system exists on a property, notification of the existence of that system shall be recorded in the chain of title for that property.

R317-4-10. Wastewater Holding Tanks Administrative, Design, and Installation.

(1) Each request for the use of a wastewater holding tank shall receive the written approval of the local health department before the installation of the holding tank and be administered under an annual operating permit.

(a) A wastewater holding tank shall only be permitted:

(i) where an absorption system for an existing dwelling has failed and installation of a replacement absorption system is not practicable;

(ii) as a temporary, not to exceed one year, wastewater system for a new dwelling until a connection is made to an approved sewage collection system;

(iii) as a temporary, not to exceed one year, wastewater system that may include construction sites, labor camps, temporary mass gatherings, or emergency refuge sheltering; or

(iv) for other essential and any unusual situation where both the division and the local health department having jurisdiction concur that the proposed holding tank shall be designed, installed and maintained in a manner that provides long term protection of the waters of the state. Each request for the use of a wastewater holding tank in this instance shall receive the written approval of both agencies before the installation of such device.

(b) Except on those lots recorded and approved for wastewater holding tanks before May 21, 1984, a wastewater holding tank may not be permitted for use in any new housing subdivision, or commercial, institutional, and recreational development except in those instances where these devices are part of a specific watershed protection program acceptable to the division and the local health department having jurisdiction.

(2) The design, site placement, installation, and maintenance of each wastewater holding tank shall comply with the following:

(a) No wastewater holding tank may be installed and used unless plans and specifications covering its design and construction have been submitted to and approved by the appropriate regulatory authority.

(b) A statement accompanying the application, that a contract with an approved pumper per Rule R317-550 shall be obtained stating that the tank shall be pumped out periodically at regular intervals or as needed, and contents shall be disposed in an approved manner.

(c) If authorization is necessary for disposal of wastewater at certain facilities, evidence of such authorization shall be submitted for review.

(3) Depending on the individual site and circumstances, or as determined by the regulatory authority, some or all the following plan information may be required.

(a) The name, current address, and telephone number of the applicant.

(b) Complete address, legal description of the property, or both, to be served by this holding tank.

(c) A plot or site plan showing:

(i) the direction of North;

(ii) the estimated daily wastewater flow;

(iii) the location and liquid capacity of the wastewater holding tank;

(iv) the source and location of the water supply;

(v) the location of any water service line and building sewer; and

(vi) the location of any surface water feature near the property.

(d) Plan detail of wastewater holding tank and high wastewater level warning device.

(e) Relative elevations of:

(i) building floor drain;

(ii) building sewer;

(iii) invert of inlet for tank;

(iv) lowest plumbing fixture or drain in building served; and

(v) the maximum liquid level of the tank.

(f) Statement indicating the maximum anticipated ground water table.

(4) The tank shall be constructed of sound and durable material not subject to excessive corrosion and decay and designed to withstand hydrostatic and external loads. Each wastewater holding tank shall comply with the manufacturing materials and construction requirements specified for septic tanks.

(a) Construction of the tank shall be such as to assure water tightness and to prevent the entrance of rainwater, surface drainage or ground water.

(b) Each tank shall be provided with a maintenance access manhole at the ground surface or above and of at least 18 inches in diameter. Access covers shall have adequate handles and shall be designed and constructed in such a manner that they cannot pass through the access opening, and when closed shall be child-proof and prevent entrance of surface water, dirt, or other foreign material, and seal the odorous gases in the tank.

(c) A high water warning device shall be installed on each tank to show when it is within 75% of being full.

(i) This device shall be either an audible or a visual alarm. Any visual alarm shall be conspicuously mounted.

(ii) Wiring and mechanical parts of such devices shall be corrosion resistant.

(iii) Any conduit passage way through the tank top or wall shall be water and vapor tight.

(d) No overflow, vent, or other opening may be provided in the tank other than the inlet sewer pipe.

(e) The regulatory authority may require that any wastewater holding tank be filled with water and allowed to stand overnight to check for leaks. Each tank exhibiting obvious defects or leaks may not be approved unless such deficiencies are repaired to the satisfaction of the regulatory authority.

(f) The building sewer shall comply with this rule.

(g) Any above ground holding tank shall be clearly labeled as "Sewage".

(5) The liquid capacity of the wastewater holding tank shall be based on wastewater flows for the type of dwelling or facility being served as identified in Section R317-4-13 Table 3 and on the desired time period between each pumping. The minimum capacity of each underground wastewater holding tank shall be 1,000 gallons.

(6) Any wastewater holding tank shall be located:

(a) in an area readily accessible to the pump truck in any type of weather that is likely to occur during the period of use;

(b) in accordance with the requirements for septic tanks as specified in Section R317-4-13 Table 2; and

(c) where it may not tend to float out of the ground due to a high ground water table or a saturated soil condition, since it will be empty or only partially full most of the time. In an area where the ground water table may be high enough to float the tank out of the ground when empty or partially full, adequate ground anchoring procedures shall be provided.

(7) Each wastewater holding tank shall be pumped periodically, at regular intervals or as needed, and the wastewater contents shall be disposed of in a manner and at a facility meeting the approval of the appropriate regulatory authority.

(a) Each wastewater holding tank for a seasonal dwelling should be pumped out before each winter season to prevent freezing and possible rupture of the tank.

(b) A record of the liquid waste hauler, pumping dates, and amounts pumped shall be maintained and made available to the appropriate regulatory authorities upon request.

(c) Each wastewater holding tank shall be checked at frequent intervals by the owner or occupant and if leakage is detected it shall be immediately reported to the regulatory authority.

(d) Any repair or replacement shall be conducted under the direction of the regulatory authority.

(e) Improper location, construction, operation, or maintenance of a particular holding tank may result in appropriate legal action against the owner by the regulatory authority having jurisdiction.

(f) Each holding tank installed under this rule, shall be inspected upon renewal of the operating permit.

R317-4-11. Operation and Maintenance of Systems.

(1) The purpose of this section is to diminish the possibility of onsite wastewater system failures by informing the owners of required periodic maintenance, servicing, and monitoring. Any more complex system shall require a higher level of operation and maintenance.

(2) Each conventional system should be assessed after the first year of operation, and thereafter at the following minimum frequency.

(a) Any system with daily flows between 1 and 3,000 gallons should be assessed every three years.

(b) Any system with daily flows between 3,001 and 5,000 gallons should be assessed every two years.

(c) Any system with non-domestic wastewater flows should be assessed yearly.

(3) Each system utilizing pressure distribution shall be inspected as outlined in Sections R317-4-13 Table 7.1 and R317-4-13 Table 7.2.

(4) Each alternative system shall be inspected as outlined in Sections R317-4-13 Table 7.1 and R317-4-13 Table 7.2.

(a) Each packed bed media system shall be sampled a minimum of every six months as outlined in Section R317-4-13 Table 7.3.

(i) The grab sample shall be taken before discharge to an absorption system.

(ii) Effluent not meeting the standards of Section R317-4-13 Table 7.3 shall be followed with two successive weekly tests of the same type within a 30-day period from the first exceedance.

(iii) If two successive samples exceed the minimum standards, the system shall be considered as malfunctioning, and shall require further evaluation and a corrective action plan, see Subsection R317-4-3(11). Effluent quality testing shall continue every two weeks until three successive samples are found to be in compliance.

(b) Each membrane bioreactor system shall be sampled a minimum of every three months as outlined in Section R317-4-13 Table 7.3.

(i) Any grab sample shall be taken before discharge to an absorption system.

(ii) Effluent not meeting the standards of Section R317-4-13 Table 7.3 shall be followed with two successive weekly tests of the same type within a 30-day period from the first exceedance.

(iii) If two successive samples exceed the minimum standards, the system shall be considered as malfunctioning, and shall require further evaluation and a corrective action plan, see Subsection R317-4-3(11) Effluent quality testing shall continue every two weeks until three successive samples are found to be in compliance.

(5) For recommended tank servicing see Subsection R317-4-14(5) Appendix E.

(6) Each distribution or drop box, if provided, should be inspected and cleaned periodically.

(7) If corrective action is required for any malfunctioning system, see Subsection R317-4-3(11).

R317-4-12. Variance to Design Requirements.

(1) An applicant may request a variance from requirements of this rule only when a property has been deemed not feasible for the design or construction of an onsite wastewater system. A variance may not be granted for separation distances from public culinary water sources.

(2) A variance may not be approved unless the applicant demonstrates that all the following conditions are met:

(a) An onsite wastewater system consistent with this rule and local health department requirements cannot be constructed and a connection to a public or community-based sewerage system is not available or practicable. This determination shall be made by the local health department.

(b) Wastewater from the proposed onsite wastewater system may not:

(i) contaminate ground water or surface water; and

(ii) surface or move off site before it is adequately treated to protect public health and the environment.

(c) The proposed system shall result in equal or greater protection of public health and the environment than is required by meeting the minimum standards and intent of this rule.

(d) An adjacent property, including the current and reasonably anticipated use of any adjacent property, may not be jeopardized if the proposed system is constructed, operated, and maintained.

(3) A variance request shall include the information and documentation described in Subsection R317-4-12(5). The local health department shall review the variance request and prepare a written determination outlining the conditions of approval or denial of the request. The review shall identify the factors considered in the process and specify the basis for the determination.

(4) A variance may not be approved unless the applicant demonstrates that all the conditions in Subsection R317-4-12(2) are met.

(a) A local health department may not issue an approval or an operating permit for an onsite wastewater system that does not comply with this rule unless a variance has been approved.

(b) Notice of the conditions shall be recorded in the chain of title for the property in the office of the county recorder. The notice shall include:

(i) the description of the system and variance conditions;

(ii) operation and maintenance requirements;

(iii) permission for the regulatory authority to access the property for inspecting and monitoring the system; and

(iv) owner responsibilities to correct, repair, or replace the system at the direction of the regulatory agency.

(5) The variance application shall include all information and documentation necessary to ensure that the standards in Subsection R317-4-12(2) shall be met. As appropriate, the information required under this section shall be submitted in a report by a professional engineer or a professional geologist that is certified at the appropriate level to perform onsite wastewater system design. An engineer or geologist who submits a report shall be licensed to practice in Utah and shall have sufficient experience and expertise to make the determinations in the report. Any such report shall include the engineer's or geologist's name and registration number, and a summary of qualifications. The report shall be imprinted with the engineer's or geologist's registration seal and signature. Information shall include at least the following:

(a) Information demonstrating that connection to a public or community-based sewerage system is not available or practicable.

(b) Technical justification and appropriate engineering, geotechnical, hydrogeologic, and reliability information justifying the request for a variance and how the conditions in 12.2 shall be met.

(c) A detailed description of the proposed system, including a detailed explanation of wastewater treatment technologies allowed by this rule that have been considered for use, and that shall provide the best available treatment.

(d) A statement of alternatives considered in lieu of a variance.

(e) An operation, maintenance, and troubleshooting plan to keep the installed system operating as described in the application.

(f) Documentation provided by the local health department that the adjoining land owners have been notified and provided opportunity for comment on the proposed variance.

R317-4-13. Tables.

TABLE 1.1 Minimum Lot Size (a) by Soil Type and Culinary Water Source

Soil Type	Public Water Supply	Non-public Water Supply (b)
1	12,000 sq. ft.	1.00 Acre
2	15,000 sq. ft.	1.25 Acres
3	18,000 sq. ft.	1.50 Acres
4	20,000 sq. ft.	1.75 Acres
5 (c)	20,000 sq. ft. (c)	1.75 Acres (c)

TABLE 1.2
Soil Type Key (d)

Soil Type	Soil Texture (e)	Soil Structure	Percolation Rate (minutes per inch)
1	Coarse Sand, Sand, Loamy Coarse Sand, Loamy Sand	Single Grain	1-10
2	Fine Sand, Very Fine Sand, Loamy Fine Sand, Loamy Very Fine Sand	Single Grain	11-20
3	Coarse Sandy Loam, Sandy Loam	Prismatic, Blocky, Granular	21-40
4	Coarse Sandy Loam, Sandy Loam Fine Sandy Loam, Very Fine Sandy Loam, Loam, Silt Loam	Massive, Platy Prismatic, Blocky, Granular	41-60
5	Fine Sandy Loam, Very Fine Sandy Loam, Loam, Silt Loam Sandy Clay Loam, Clay Loam, Silty Clay Loam Sandy Clay Loam, Clay Loam, Silty Clay Loam, Sandy Clay, Clay, Silty Clay, Silt	Massive, Platy Massive Prismatic, Blocky, Granular	61-120

6 (f)	Sandy Clay Loam, Clay Loam, Silty Clay Loam Sandy Clay, Clay, Silty Clay, Silt	Platy Massive, Platy	>120

NOTES

(a) Excluding public streets and alleys or other public rights-of-way, lands or any portion thereof abutting on, running through or within a building lot for a single-family dwelling. These minimum lot size requirements do not apply to building lots that have received final local health department approval before the adoption of this rule.

Any lot that is part of a subdivision that has received final local health department approval before the adoption of this rule is only exempt from the minimum lot size requirements if the developer has and is proceeding with reasonable diligence. Notwithstanding this grandfather provision for approved lots, the minimum lot size requirements are applicable if compelling or countervailing public health interests would require application of these more stringent requirements. The shape of the lot shall also be acceptable to the regulatory authority.

(b) See the separation requirements in Section R317-4-13 Table 2.

(c) A packed bed media or membrane bioreactor system is required for this soil type.

(d) When there is a substantial discrepancy between the percolation rate and the soil classification, it shall be resolved to the satisfaction of the regulatory authority, or the soil type requiring the largest lot shall be used.

(e) See the USDA soil classification system for a more detailed description.

(f) These soils are unsuitable for any absorption system.

TABLE 2
Minimum Separation Distances in Feet (a)

Item Requiring Setback	From Building Sewer or Effluent Sewer	From Septic, Pump, or Other Tank	From Absorption Area or Replacement Area
Absorption or Replacement Area		5	(b)
Public Culinary Water Source	(c)	100 (c)	100 (c)
Individual or Non-public Culinary Water Source (d)	25	50	100 (c)
Culinary Water Supply Line	(f)	10 (f)	10 (f)
Lake, Pond, Reservoir (a)	10	25	100
Watercourse (live or		25	100 (g)

ephemeral stream, river, subsurface drain, or canal, storm water drainage systems)			
Building Foundation Without foundation drain With foundation drain		5 10	5 (h) 100 (i)
Curtain Drain	10	10	100 (i)
Dry wash, gulch, or gully		25	50 (j)
Swimming pool, below ground	3	10	25
Dry wells, basins		5	25
Down slope that exceed 35%. This includes any all natural slope or escarpment and any artificial cut, retaining wall, or embankment.		10	50 (j)
Property line	5	5	5

NOTES

(a) All distances are from edge to edge. Where surface waters are involved, the distance shall be measured from the high water line.
(b) See Subsection R317-4-6(14) for setback requirements.
(c) All distances shall be consistent with Rules R309-600 and R309-605.
(d) Compliance with separation requirements does not guarantee acceptable water quality in every instance. Where geological or other conditions warrant, greater distances may be required by the regulatory authority.
(e) For an ungrouted well or spring the distance shall be 200 feet. A private or individual well is considered to be grouted if it meets the construction standards required in Section R655-4-11, which requires a minimum 30-foot deep grout surface seal. Any private or individual well not constructed to this minimum standard is considered to be ungrouted. Although this distance shall be generally adhered to as the minimum required separation distance, exceptions maybe approved by the regulatory authority, taking into account geology, hydrology, topography, existing land use agreements, consideration of the drinking water source protection requirements, protection of public health and potential for pollution of water source. Any person proposing to locate an absorption system closer than 200 feet to an individual or non-public ungrouted well or spring must submit a report to the regulatory authority that considers the above items. In no case

may the regulatory authority grant approval for an onsite wastewater system to be closer than 100 feet from an ungrouted well or a spring.
(f) If the water supply line is for a public water supply, the separation distance shall comply with the requirements of Rule R309-550. No culinary water service line may pass through any portion of an absorption area.
(g) Lining or enclosing any watercourse with an acceptable impervious material may permit a reduction in the separation requirement. In any situation where the bottom of a canal or watercourse is at a higher elevation than the ground in which the absorption system is to be installed, a reduction in the distance requirement may be justified, but each case shall be decided on its own merits by the regulatory authority.
(h) Horizontal setback between a deep wall trench or seepage pit and a foundation of any building is at least 20 feet.
(i) The regulatory authority may reduce the separation distance, if it can be shown that the effluent will not enter the drain, but each case must be decided on its own merits by the regulatory authority. In no case may the regulatory authority grant approval for an absorption area to be closer than 20 feet.
(j) This setback may be reduced if a 53 foot reference line originating at the bottom of the distribution pipe, sloped at 35% below horizontal, will not daylight or intersect the ground surface.

TABLE 3
Estimated Flow Rates of Wastewater (a)

Type of Establishment	Gallons per Day
Airports	
a. per passenger	3
b. per employee	15
Boarding and Rooming Houses	
a. for each resident boarder and employee	50 per person
b. additional for each nonresident boarder	10 per person
Bowling Alleys, not including food service	85 per alley
Camps	
a. developed with flush toilets and showers	30 per person 20 per person
b. developed with flush toilets	5 per person
c. developed with no flush toilets	
Churches, per person	5
Condominiums, Multiple Family Dwellings, or Apartments	150 per bedroom
Dentist's Office	
a. per chair	200
b. per staff member	35
Doctor's Office	
a. per patient	10
b. per staff member	35
Fairgrounds	1 per person
Fire Stations	
a. with full-time employees and food preparation	70 per person
b. with no full-time employees and no food preparation	5 per person
Food Service Establishment (b)	
a. ordinary restaurants, not 24 hour service	35 per seat
b. 24 hour service	50 per seat

c. single service customer utensils only d. or, per customer served, includes toilet and kitchen wastes	2 per customer 10
Gyms a. participant and staff member b. spectator	 25 per person 4 per person
Hairdresser, per chair	65
Highway Rest Stops, improved with restroom facilities	5 per vehicle
Hospitals	250 per bed space
Hotels, Motels, and Resorts	125 per unit
Industrial Buildings, exclusive of industrial waste a. with showers, per 8 hour shift b. with no showers, per 8 hour shift	 35 per person 15 per person
Labor or Construction Camps	50 per person
Launderette	580 per washer
Mobile Home Parks	400 per unit
Movie Theaters a. auditorium b. drive-in	 5 per seat 10 per car space
Nursing Homes	200 per bed space
Office Buildings and Business Establishments, not including food service, per eight hour shift	15 per employee
Picnic Parks, toilet wastes only	5 per person
Recreational Vehicle Parks a. temporary or transient with no sewer connections b. temporary or transient with sewer connections	 50 per space 125 per space
Recreational Vehicle Dump Station, per self-contained vehicle	50
Schools a. boarding b. day, without cafeteria, gymnasiums or showers c. day, with cafeteria but no gymnasiums and showers d. day, with cafeteria, gymnasium and showers	 75 per person 15 per person 20 per person 25 per person
Service Stations, per day, per pump	250
Skating Rink, Dance Halls, Ski Areas, or other recreation facility	10 per person
Stores, including Convenience Stores a. per public toilet room b. per employee	 500 11
Swimming Pools and Bathhouses, Using Maximum Bather Load	10 per person
Taverns, Bars, Cocktail lounges with No Food Service	20 per seat
Visitor Centers	5 per visitor
NOTES	
(a) When more than one use will occur, the multiple use shall be considered in determining total flow. Small industrial plants maintaining a cafeteria or showers and club houses or motels maintaining swimming pools or laundries are typical examples of multiple uses. Uses other than those listed above shall be considered in relation to established flows from known or similar installations.	

(b) No commercial food waste disposal unit shall be connected to an onsite wastewater system unless first approved by the regulatory authority.

TABLE 4
Minimum Standards for Building Sewer, Effluent Sewer, and Distribution Pipe Materials (a)

Acceptable Building Sewer and Effluent Sewer Materials

Type of Pipe	Minimum Standard
Acrylonitrile-Butadiene Styrene (ABS)	ASTM (b) D-2680 (c), D-2751, F-628
Polyvinyl Chloride (PVC)	ASTM D-2665, D-3033, D-3034

Acceptable Distribution Pipe Materials

Type of Pipe	Minimum Standard
ABS	ASTM D-2661, D-2751
Polyethylene (PE), Smooth Wall	ASTM D-3350
PVC	ASTM D-2665, D-3033, D-3034, D-2729 (d)

NOTES

(a) Each length of building sewer, effluent sewer, and distribution pipe shall be stamped or marked.
(b) American Society for Testing and Materials.
(c) For domestic wastewater only, free from industrial wastes.
(d) Although perforated PVC, ASTM D-2729 is approved for absorption system application, the solid-wall version of this pipe is not approved for any application.

TABLE 5
Maximum Hydraulic Loading Rates for Percolation Testing

Percolation Rate (Minutes per Inch)	Absorption Systems Hydraulic Loading Rates (a) (gal/ft2/day) (c)(d)(e)	Absorption Beds and Mound Systems Hydraulic Loading Rates (b) (gal/ft2/day) (c)(d)(f)
0-10 (g)	0.90	0.45
11-20	0.70	0.35
21-30	0.60	0.30
31-40	0.55	0.27
41-50	0.50	0.25 (h)
51-60	0.45	0.22 (h)
61-90 (i)	0.40	(j)
91-120 (i)	0.35	(j)

NOTES

(a) The following formula may be used in place of the values in this table: q = 2.35 divided by the square root of the percolation rate and then add 0.15 where q is the hydraulic loading rate. In no case may the loading rate be greater than 1.0.
(b) The following formula may be used in place of the values in this table: q = 1.2 divided by the square root of the percolation rate and then add 0.08 where q is the hydraulic

loading rate. In no case may the loading rate be greater than 0.5.
(c) Minimum absorption area is equal to the actual or estimated wastewater flow in gallons per day shown in Section R317-4-13 Table 3, divided by the hydraulic loading rate within the applicable percolation rate category.
(d) For non-residential facilities, if a garbage grinder is not used, the absorption area may be reduced by 10% (0.9 multiplier). If any automatic sequence washer is not used, the absorption area may be reduced by 30% (0.7 multiplier). If both of these appliances are not used, the absorption area may be reduced by 40% (0.6 multiplier).
(e) For any non-residential facility, a minimum of 150 square feet of trench bottom or sidewall absorption area shall be provided.
(f) For any non-residential facility, a minimum of 300 square feet of absorption area shall be provided.
(g) Soils with a percolation rate faster than 1 minute per inch are only acceptable with the use of an alternative packed bed media or membrane bioreactor system with a disinfection unit.
(h) Not suitable for absorption beds.
(i) Acceptable for alternative packed bed media or membrane bioreactor system only.
(j) Not suitable for absorption beds or mounds.

TABLE 6
Maximum Hydraulic Loading Rates for Soil Classification

Texture	Structure	Absorption Systems Hydraulic Loading Rate (gal/ft2/day) (a)(b)(c)	Absorption Beds and Mound Systems Hydraulic Loading Rate (gal/ft2/day) (a)(b)(d)
Coarse sand, sand, loamy coarse sand, loamy sand	Single grain	0.90 (e)	0.45 (e)
Fine sand, very fine sand, loamy fine sand, loamy very fine sand	Single grain	0.70	0.35
Coarse sandy loam, sandy loam	Massive Platy Prismatic, blocky, granular	0.45 0.50 0.65	0.22 (f) 0.25 (f) 0.32 (f)
Fine sandy loam, very fine sandy loam	Massive Platy Prismatic, blocky, granular	0.40 0.35 0.50	(g) (g) 0.25 (f)
Loam	Massive Platy Prismatic, blocky, granular	0.40 (e) 0.50	(g) (g) 0.25 (f)
Silt loam	Massive	(e)	(g)

	Platy Prismatic, blocky, granular	(e) 0.45	(g) 0.22 (f)
Sandy clay loam, clay loam, silty clay loam	Massive Platy Prismatic, blocky, granular	(e)(h) (i) 0.40 (e)(h)	(g) (i) (g)
Silt, silty clay, sandy clay, clay	Massive Platy Prismatic, blocky, granular	(i) (i) 0.35 (e)(h)	(i) (i) (g)

NOTES

(a) Minimum absorption area is equal to the actual or estimated wastewater flow in gallons per day, using Section R317-4-13 Table 3, divided by the hydraulic loading rate within the applicable soil texture and structure category.
(b) For any non-residential facility, if a garbage grinder is not used, the absorption area may be reduced by 10% (0.9 multiplier). If any automatic sequence washer is not used, the absorption area may be reduced by 30% (0.7 multiplier). If both of these appliances are not used, the absorption area may be reduced by 40% (0.6 multiplier).
(c) For any non-residential facility, a minimum of 150 square feet of trench bottom or sidewall absorption area shall be provided.
(d) For any non-residential facility, a minimum of 300 square feet of absorption area shall be provided.
(e) These soils are usually considered unsuitable for absorption systems, but may be suitable, depending upon the percentage and type of fines in coarse grained porous soils, and the percentage of sand and structure in fine grained soils. Percolation testing shall be used for further evaluation.
(f) Not suitable for absorption beds.
(g) Not suitable for absorption beds or mounds.
(h) These soils may be permissible for a packed bed media or membrane bioreactor absorption system only.
(i) These soils are unsuitable for any absorption system.

TABLE 7.1
Alternative Onsite Wastewater System
Minimum Inspection Frequency(a)

Type of System	Annual	Semi-annual	Quarterly
Pressure Distribution	X		
At-Grade (first 5 years only)	X		
Mound	X		
Packed Bed Media		X	
Sand Lined Trench	X		
Membrane Bioreactor			X
Holding Tank	X		
Experimental System		X	

NOTES

(a) Or more frequently as directed by the regulatory authority.

TABLE 7.2
Components

Type of System	Septic Tank and Other Tanks	Distribution or Drop Boxes (if accessible)	Pumps, floats settings, Control Panel	Pressure Laterals, Absorption Area	Disinfection Unit (c)
Pressure Distribution	X		X	X	
At-Grade	X	X	X	X	
Mound	X		X	X	
Packed Bed Media	X	X	X	X	X
Sand-Lined Trench	X		X	X	
Membrane Bioreactor	X		X	X	X
Holding Tank	X	X	X	X	
Experimental	X	X	X	X	X

NOTES

(a) Inspect other components as directed by the regulatory authority.
(b) Including pumping records.
(c) Required for absorption systems installed in excessively permeable soils, or as directed by the regulatory authority.

TABLE 7.3
Effluent Sampling Parameters

Packed Bed Media and Membrane Bioreactor System
Routine Sampling Parameters
Must sample Turbidity, or BOD5 and TSS.

Field Testing	Maximum Value
Turbidity	=<20 NTU
Laboratory Testing	**Maximum Value**
BOD5	=<25 mg/l
TSS	=<25 mg/l
COD (a)	=<75 mg/l
E. coli (b)	26/100 ml

NOTES

(a) Chemical oxygen demand (COD) may be used in place of BOD5.
(b) E. coli testing required when a disinfection unit is installed.

R317-4-14. Appendices.

(1) Appendix A. Septic Tank Construction.

(a) Plans for each septic tank or underground holding tank shall be submitted to the division for approval. Such plans shall show all dimensions, capacities, reinforcing, maximum depth of soil cover, and such other pertinent data as may be required. Each tank shall conform to the design drawing and shall be constructed under strict, controlled supervision by the manufacturer.

(i) Each precast reinforced concrete tank shall conform to the following:

(A) The walls and base of each precast tank shall be securely bonded together and the walls shall be of monolithic or keyed construction.

(B) The sidewalls and bottom of such a tank shall be at least 3 inches in thickness.

(C) The top shall have a minimum thickness of 4 inches.

(D) Each tank shall have reinforcing of at least 6 inch x 6 inch No. 6, welded wire fabric, or equivalent. Exceptions to this reinforcing requirement may be considered by the division based on an evaluation of acceptable structural engineering data submitted by the manufacturer.

(E) All concrete used in each precast tank shall be Class A, at least 4,000 pounds per square inch, and shall be vibrated or well-rodded to minimize honeycombing and to assure water tightness.

(F) Precast sections shall be set evenly in a full bed of sealant. If grout is used it shall consist of two parts plaster sand to one part cement with sufficient water added to make the grout flow under its own weight.

(G) Any excessively mortared joint should be trimmed flush.

(H) The inside and outside of each mortar joint shall be sealed with a waterproof bituminous sealing compound.

(I) For early reuse of forms, the concrete may be steam cured. Other curing by water spraying or a membrane curing compound may be used and shall comply to best acceptable methods as outlined in Guide to Curing Concrete, ACI308R-01, by American Concrete Institute, Farmington Hills, Michigan.

(ii) Each poured-in-place concrete septic tank shall conform to the following:

(A) The top of each poured-in-place septic tank with a liquid capacity of 1,000 to 1,250 gallons shall be a minimum of 4 inches thick, and reinforced with 3/8 inch reinforcing rods 12 inches on center both ways, or equivalent.

(B) The top of each tank with a liquid capacity of greater than 1,250 gallons shall be a minimum of 6 inches thick, and reinforced with 3/8 inch reinforcing rods 8 inches on center both ways, or equivalent.

(C) The walls and floor shall be a minimum of 6 inches thick. The walls shall be reinforced with 3/8 inch reinforcing rods 8 inches on center both ways, or equivalent. Inspections by the regulatory authority may be required of the tank reinforcing steel before any concrete is poured.

(D) A 6 inch water stop shall be used at the wall-floor juncture to ensure water tightness.

(E) All concrete used in poured-in-place tanks shall be Class A, at least 4,000 pounds per square inch, and shall be vibrated or well-rodded to minimize honeycombing and to ensure water tightness.

(F) Curing of concrete shall comply with the requirements in Subsection R317-4-14(1)(a)(i)(II).

(iii) Each fiberglass tank shall conform to the following:

(A) Each fiberglass tank shall comply with one of the following criteria for acceptance:

(I) The Interim Guide Criteria for Glass-Fiber-Reinforced Polyester Septic Tanks, International Association of Plumbing and Mechanical Officials Z1000-2007. The identifying seal of the International Association of Plumbing and Mechanical Officials shall be permanently embossed in the fiberglass as evidence of compliance.

(II) Manufactured to meet the structural requirements of Underwriters Laboratories (UL) Standard 1316.

(III) Professionally engineered plans demonstrating compliance to tank configuration requirements of this rule including acceptable structural calculations or other pertinent data as may be required.

(B) Each inlet or outlet tee shall be attached to the tank by a rubber or synthetic rubber ring seal and compression plate, or in some other manner approved by the division.

(C) Each tank shall be installed in accordance with the manufacturer's recommendations.

(iv) Each polyethylene tank shall conform to the following:

(A) Each polyethylene tank shall comply with the criteria for acceptance established in Prefabricated Septic Tanks and Wastewater Holding Tanks, Can3-B66-10 by the Canadian Standards Association, Ontario, Canada.

(B) Each inlet or outlet tee shall be attached to the tank by a rubber or synthetic rubber ring seal and compression plate, or in some other manner approved by the division.

(C) Each tank shall be installed in accordance with the manufacturer's recommendations.

(b) Each prefabricated or precast tank that is commercially manufactured shall be plainly, legibly, and permanently marked or stamped with:

(i) the manufacturer's name and address, or nationally registered trademark;

(ii) the liquid capacity of the tank in gallons on the exterior at the outlet end within 6 inches of the top of the wall; and

(iii) the inlet and outlet of all such tanks shall be plainly marked as "IN" or "OUT" respectively.

(c) Each inlet, outlet, or tank compartment shall meet the minimum diameter requirements for building sewers.

(i) Only one inlet or outlet is allowed, unless preauthorized by the regulatory authority.

(ii) An inlet and outlet shall be located on opposite ends of each tank.

(A) The invert of flow line of the inlet shall be located at least 2 inches, above the invert of the outlet to allow for momentary rise in liquid level during discharge to the tank.

(B) An approved tank with offset inlets may be used when approved by the regulatory authority.

(iii) Each inlet and outlet shall have a baffle or sanitary tee.

(A) An inlet baffle or sanitary tee of wide sweep design shall be provided to divert the incoming wastewater downward. This baffle or tee is to penetrate at least 6 inches below the liquid level, but the penetration is not to be greater than that allowed for the outlet device.

(B) For each tank with vertical sides, the outlet baffle or sanitary tee shall extend below the liquid surface a distance equal to about 40% of the liquid depth. For each horizontal cylindrical tank or tank of any other shape, that distance shall be reduced to about 35% of the liquid depth.

(C) Each baffle shall be constructed from sidewall to sidewall or shall be designed as a conduit.

(D) Each sanitary tee shall be permanently fastened in a vertical, rigid position.

(iv) Each inlet and outlet pipe connection to the septic tank shall be sealed and adhere to the tank and pipe to form a watertight connection with a bonding compound or sealing ring.

(v) Any inlet or outlet device may not include any design feature preventing free venting of gases generated in the tank or absorption system back through the roof vent in the building plumbing system. The top of each baffle or sanitary tee shall extend at least 6 inches above the liquid level to provide scum storage, but no closer than 1 inch to the inside top of the tank.

(d) Liquid depth of each tank shall be at least 30 inches. Depth greater than 72 inches may only be considered in calculating liquid volume required in Subsection R317-4-6(7) if the tank length is at least two times the liquid depth.

(e) The maximum burial depth shall be stated on the plans submitted.

(f) Any septic tank may be divided into compartments provided the tank meets the following:

(i) The volume of the first compartment shall equal or exceed two-thirds of the total required septic tank volume.

(ii) No compartment may have an inside horizontal dimension less than 24 inches.

(iii) Each inlet or outlet shall be designed as specified for tanks, except that when a partition wall is used to form a multi-compartment tank, an opening in the partition may serve for flow between compartments provided the minimum dimension of the opening is 4 inches, the cross-sectional area is not less than that of a 6 inch diameter pipe (28.3 square inches), and the mid-point is below the liquid surface a distance about equal to 40% of the liquid depth of the tank.

(g) Scum storage volume shall consist of 15% or more of the required liquid capacity of the tank and shall be provided in the space between the liquid surface and the top of inlet and outlet devices.

(h) Adequate access to each tank shall be provided to facilitate inspection, servicing and maintenance, and shall have no structure or other obstruction placed over it and shall conform to the following requirements:

(i) Access to each compartment of any tank shall be provided through properly placed manhole openings not less than 18 inches in diameter, in minimum horizontal dimension or by an easily removable lid section.

(ii) Each access cover shall be designed and constructed in such a manner that it may not pass through the access openings, and when closed shall be child-proof and prevent entrance of surface water, dirt, or other foreign material, and seal the odorous gases in the tank. Each concrete access cover for a manhole opening shall have adequate handles.

(iii) Access to each inlet or outlet device shall be provided through a properly spaced opening not less than 12 inches in minimum horizontal dimension or by an easily removable lid section.

(2) Appendix B. Pressure Distribution, Pumps, Controls, and Alarms.

(a) Each absorption system designed to use pressure distribution shall conform to the following:

(i) Pressure distribution design shall generally be based on the Utah Guidance for Performance, Application, Design, Operation and Maintenance: Pressure Distribution Systems document with the following exceptions:

(A) Design and equipment shall emphasize ease of maintenance, longevity, and reliability of components and shall be proven suitable by operational experience, test, or analysis, acceptable to the regulatory authority.

(B) Electrical disconnects shall be provided that are appropriate for the installation and shall have gas-tight junction boxes or splices. Each electrical component used in an onsite wastewater system shall comply with applicable requirements of the State of Utah Electrical Code.

(C) Each component shall be constructed and installed to facilitate ease of service without having to alter any other part.

(ii) Before final approval for operation, each pump, control and related apparatus shall be field tested and found to operate as designed.

(A) When a duplex pump system is designed, controls shall be provided that an alarm shall signal when one of the pumps malfunctions.

(B) Where multiple pumps are operated in series, controls shall be installed to prevent the operation of a pump or pumps preceding a station that experiences a high level alarm event.

(C) Controls shall be capable of controlling all functions incorporated or required in the design of the system.

(I) The control panel for each pressure distribution system shall include a pump run-time hour meter and a pump event counter or other acceptable flow measurement method.

(II) The control panel shall be installed within sight of the access risers. An other location may be approved by the regulatory authority.

(III) Supporting hydraulic calculations and pump curve analysis shall be submitted to the regulatory authority with the design.

(3) Appendix C. Soil Exploration Pits, Soil Logs, Soil Evaluations.

(a) Soil conditions shall be obtained from a soil exploration pit dug to a depth of 10 feet in the absorption area, or to the ground water table if it is shallower than 10 feet below ground surface. If an absorption system excavation will be deeper than 6 feet, the soil exploration pit shall extend to a depth of at least 4 feet below the bottom of the proposed absorption system

excavation. Each soil exploration pit shall be constructed in a manner to reduce potential for physical injury. One end of each pit should be sloped gently or "stair-stepped" to permit easy entry if necessary.

(b) The soil log shall contain the following information.

(i) A signed statement certifying that the log was evaluated and recorded in accordance with this rule.

(ii) The names of all qualified individuals per Rule R317-11 conducting the tests.

(iii) The location of the property.

(iv) The location of the soil exploration pit on the property.

(v) The date of the log.

(vi) A description and depths of the soil horizons throughout the soil exploration pit to include:

(A) soil texture and structure using the USDA system of classification;

(B) estimated volume percentage of coarse fragments defined as:

(I) "Gravel" means a rock fragment from 0.1 inches to 3 inches in diameter;

(II) "Cobble" means rock fragment from 3 inches to 10 inches in diameter;

(III) "Stone" means a rock fragment greater than 10 inches in diameter;

(C) the presence and abundance of mottling defined as:

(I) "Few" when less than 2% of the exposed surface is occupied by mottles;

(II) "Common" when from 2% to 20% of the exposed surface is occupied by mottles; and

(III) "Many" when more than 20% of the exposed surface is occupied by mottles;

(D) depth to groundwater or bedrock, if encountered, and maximum anticipated groundwater table; and

(E) any other pertinent information.

(c) Soils shall be evaluated using the USDA Soil Texture Classification method. The soil horizon with the lowest loading rate shall be used in calculating the required absorption area.

(4) Appendix D. Percolation Method.

(a) Each percolation test shall be completed by an individual certified per Rule R317-11 and shall be conducted in accordance with the instructions in this appendix.

(b) When a percolation test is conducted, the test shall be conducted at a point and elevation selected as typical of the area in which the absorption system shall be located.

(c) Percolation test results shall be submitted on a signed "Percolation Test Certificate". The test certificate shall contain the following:

(i) A signed statement certifying that the test was conducted in accordance with this rule.

(ii) The names of all individuals per Rule R317-11 conducting the test.

(iii) The location of the property.

(iv) The location of the percolation test on the property.

(v) The depth to the bottom of the percolation test hole from the existing grade.

(vi) The final stabilized percolation rate of each test in minutes per inch.

(vii) The date of the test.

(viii) Any other pertinent information.

(d) Each percolation test shall be conducted at the owner's expense and in accordance with the following:

(i) A percolation test may not be conducted in any test hole that extends into ground water, bedrock, or frozen ground. Where shrink-swell clays, fissured soil formations, or saprolite is encountered, each test shall be made under the direction of the regulatory authority.

(ii) Since the appropriate percolation test depth depends on the soil conditions at a specific site, the percolation test shall be conducted only after the soil exploration pit has been dug and examined for suitable and porous strata and ground water table information. Percolation test results should be related to the soil conditions found.

(iii) Each percolation test hole should begin in a specially prepared larger excavation, preferably made with a backhoe, of sufficient size that extend to a depth about 6 inches above the strata to be tested.

(iv) Each test hole shall be dug or bored, preferably with hand tools such as shovels or augers, and shall have horizontal dimensions ranging from 4 to 18 inches, preferably 8 to 12 inches. The vertical sides shall be at least 12 inches deep, terminating in the soil at an elevation 6 inches below the bottom of the proposed onsite wastewater system. In testing individual soil strata for deep wall trenches and seepage pits, the percolation test hole shall be located entirely within the strata to be tested, if possible.

(v) Each percolation test hole shall be properly prepared. Carefully remove any smeared soil surfaces to provide an open, natural soil interface into that water may percolate. Remove all loose soil from the bottom of the hole. Add 2 to 3 inches of clean pea gravel to protect the bottom from scouring or sealing with sediment when water is added. Caving or sloughing in some test holes can be prevented by placing in the test hole a wire cylinder or perforated pipe surrounded by clean pea gravel.

(vi) Adequate saturation and swelling of the soil shall be completed. It is important to distinguish between saturation and swelling. Saturation means that the void spaces between soil particles are full of water. This can be accomplished in a relatively short period. Swelling is a soil volume increase caused by intrusion of water into the individual soil particles. This is a slow process, especially in clay-type soil, and is the reason for requiring a prolonged swelling period.

(vii) Water should be placed carefully into the test hole using a small diameter siphon hose or other suitable method to prevent washing down the side of the hole.

(viii) Necessary equipment for measuring the percolation rate should consist of a tape measure with at least 1/16 inch calibration or float gauge, and a time piece or other suitable equipment. All measurements shall be made from a fixed reference point near the top of the test hole to the surface of the water.

(ix) Each percolation test shall follow a consistent procedure. The hole shall be carefully filled with clear water and a minimum depth of 12 inches shall be maintained above the gravel for at least a four hour period by refilling when necessary. Water remaining in the hole after four hours may not be removed. Immediately following the saturation period, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately following the soil swelling period, the percolation rate measurements shall be made as follows:

(A) Any soil that has sloughed into the hole shall be removed and water shall be adjusted to 6 inches over the gravel.

(B) Thereupon, from the fixed reference point, the water level shall be measured and recorded at about 30 minute intervals for a period of four hours.

(I) If 6 inches of water seeps away in less than 30 minutes, a shorter time interval of 15 minutes between measurements may be used.

(II) If 6 inches of water seeps away in less than 15 minutes, a shorter time interval of 5 minutes between measurements may be used.

(III) Eight consecutive time intervals shall be recorded unless two successive water level drops do not vary more than 1/16 of an inch and show that an approximate stabilized rate has been obtained.

(C) The hole shall be filled with 6 inches of clear water above the gravel after each time interval.

(D) In no case may the water depth exceed 6 inches above the gravel.

(E) The final water level drop shall be used to calculate the percolation rate. If no stabilized rate is achieved, the smallest drop shall be used to make this calculation.

(F) Precautions shall be taken to prohibit water or soil from freezing during the test procedure.

(x) The percolation test procedure for Type 1 or Type 2 soils shall follow a separate procedure. The hole shall be carefully filled with clear water to a minimum depth of 12 inches over the gravel and the time for this amount of water to seep away shall be determined. The procedure shall be repeated and if the water from the second filling of the hole at least 12 inches above the gravel seeps away in 10 minutes or less, the test may proceed immediately as follows:

(A) Water shall be added to a point not more than 6 inches above the gravel.

(B) Thereupon, from the fixed reference point, water levels shall be measured at 10 minute intervals for a period of one hour.

(I) If 6 inches of water seeps away in less than 10 minutes, a shorter time interval of 5 minutes between measurements may be used.

(II) Six consecutive time intervals shall be recorded unless two successive water level drops do not vary more than 1/16 of an inch and show that an approximate stabilized rate has been obtained.

(C) The hole shall be filled with 6 inches of clear water above the gravel after each time interval.

(D) In no case shall the water depth exceed 6 inches above the gravel.

(E) The final water level drop shall be used to calculate the percolation rate. If no stabilized rate is achieved, the smallest drop shall be used to make this calculation.

(xi) The percolation rate is equal to the time elapsed in minutes for the water column to drop, divided by the distance the water dropped in inches and fractions thereof.

(xii) The minimum or slowest percolation rate shall be used in calculating the required absorption area.

(5) Appendix E. Septic Tank Operation and Maintenance.

(a) Each septic tank shall be emptied before too much sludge or scum is allowed to accumulate and seriously reduce the tank volume settling depth. If either the settled solids or floating scum layer accumulate too close to the bottom of the outlet baffle or bottom of the sanitary tee pipe in the tank, solid particles may overflow into the absorption system and eventually clog the soil and ruin its absorption capacity.

(b) A septic tank that receives normal loading should be inspected as stated in Section R317-4-11 to determine if it needs emptying. Although there are wide differences in the rate that sludge and scum accumulate in tanks, a septic tank for a private residence requires emptying every three to five years. Actual measurement of scum and sludge accumulation is the only sure way to determine when a tank needs to be emptied. Experience for a particular system may show the desirability of longer or shorter intervals between inspections.

(c) The tank should be completely emptied if either the bottom of the floating scum mat is within 3 inches of the bottom of the outlet baffle or tee or the sludge level has built up to about 12 inches from the bottom of the outlet baffle or tee, or the scum and sludge layers together equal 40% or more of the tank volume. All scum and solids should be washed out and removed from the tank.

(d) If multiple tanks or tanks with multiple compartments are provided, care should be taken to ensure that each tank or compartment is inspected and emptied.

(e) Septic tank wastes contain disease causing organisms and shall be disposed of only in areas and in a manner that is acceptable to local health authorities and consistent with state rules.

(f) Immediate replacement of any damaged inlet or outlet fitting in the septic tank is essential for effective operation of the system.

(g) Remove any effluent screen or filter in a manner that prevents solids from passing to the absorption system. Wash the filter over the inlet side of septic tank. Replace the cleaned filter back into the outlet tee.

(h) When the tank is empty, the interior surfaces of the tank should be inspected for leaks or cracks using a strong light.

(i) A written record of any maintenance of the septic tank and absorption system should be kept by the owner of that system.

(j) The functional operation of a septic tank is not improved by the addition of yeasts, disinfectants, additives or other chemicals; therefore, use of these materials is not recommended.

(k) The advice of the regulatory authority should be sought before chemicals arising from a hobby or home industry or other unusual activities are discharged into a septic tank system.

(l) Economy in the use of water helps prevent overloading of a septic tank system that could shorten its life and require expensive repairs. The plumbing fixtures in the building should be checked regularly to repair any leaks that can add substantial amounts of water to the system. Industrial wastes and other liquids that may adversely affect the operation of the onsite wastewater system should not be discharged into such a system. Paper towels, facial tissue, disinfectant wipes, newspaper, wrapping paper, disposable diapers, sanitary napkins, coffee grounds, rags, sticks, and similar materials should also be excluded from the septic tank since they do not readily decompose and can lead to clogging of both the plumbing and the absorption system.

(m) Any measurable amount of sludge or scum present in any other tank should be removed. If an effluent screen or filter is present, it should be cleaned over the inlet side of the septic tank.

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