Vermont DEC Drinking Water & Groundwater Protection Division
Wastewater System and Potable Water Supply Rules

Information for a Technical Review
November 23, 2015
Last Revised January 25, 2016

Objective

The Regional Office Program (Program) has the responsibility to review and approve applications for compliance with the Wastewater System and Potable Water Supply Rules (Rules). Appendix 6-A of the Rules identifies the minimum information that an application needs for a wastewater system and water supply. Section 6-A-01(g) states "Each application shall contain plans, material specifications and construction specifications sufficient for construction of the potable water supply and wastewater system and shall include, as applicable:" and then lists the information.

To have consistent plan reviews, this document outlines the minimum basic design information expected with different types of projects. Please note we cannot anticipate every possible exception to this document. The degree of detail that the Program needs varies and is often specific to the layout of the system, supply, and site conditions. The final detail of information will be made by the Regional Office on a case-by-case basis. It is recommended a designer confer with the Regional Office staff prior to submitting an application if the designer has a concern we may be request additional information.

Coordination with Other Divisions/Sections within the Department of Environmental Conservation

The existing Wastewater System and Potable Water Supply application form has a screening question asking if a potable water supply or wastewater system is proposed in a Water Source Protection Area (SPA). In association with the SPA are Class I and Class II groundwater areas. Groundwater Areas, by statute (see Title 10 §§ 1390 to 1394), have the following four Classes:

1. Class I. Suitable for public water supply. Character uniformly excellent. No exposure to activities which pose a risk to its current or potential use as a public water supply.
2. Class II. Suitable for public water supply. Character uniformly excellent but exposed to activities which pose a risk to its current or potential use as a public water supply.
3. Class III. Suitable as a source of water for individual domestic water supply, irrigation, agricultural use and general industrial and commercial use.
4. Class IV. Not suitable as a source of potable water but suitable for some agricultural, industrial and commercial use.

When a project is located within a SPA or a Class I or Class II groundwater area, the designer needs to contact the Water Resource Section of the Drinking Water and Groundwater Protection Division.

Additionally, a designer is expected to identify a Class IV groundwater area and shall not locate a potable water supply source within the Class IV area.

Permits or approvals may be required by the Watershed Management Division when wastewater systems or potable water supplies will be located in River Corridors, wetland buffer zones, or Shoreland Protection Area. It is asked that designers state if the wastewater system or water supply is proposed in a River Corridor or Shoreland Protection Area. New application forms will have screening questions regarding River Corridors and Shoreland Protection Areas. Please see Guidance on Coordination with

Shoreland Program for Lake Front Lots at
http://drinkingwater.vt.gov/roguidance/pdf/guidance2013.01.pdf.

Definitions

A. For the purpose of this document, a sanitary sewer service line is the same as a building sewer, sewer service, or sewer service pipe. Sanitary sewer collection line is the same as a sewer collection system.

1. Sanitary Sewer Collection Line – means piping that collects and conveys wastewater from sanitary sewer service lines to the point of treatment at a wastewater treatment facility, leachfield, or an indirect discharge system.
2. Sanitary Sewer Service Line – means piping that conveys wastewater from a building or structure or campground to a leachfield, sanitary sewer collection line, pump station or Indirect Discharge System. This definition includes piping that is defined as a building sewer in the Vermont Plumbing Rules. This definition also includes a sanitary sewer collection line when:
   a. the collection line:
      (i) is not accepting wastewater from another sanitary sewer collection line;
      (ii) is less than 400 feet in length;
      (iii) does not have a manhole and is not required to have a manhole under Appendix 1-A of these Rules; or
      Note: A collection line that is treated as a service line under this definition may serve multiple sanitary sewer service lines so long as it meets the other requirements of this subdivision.
   b. the collection line is designed to convey only septic tank effluent or effluent from treatment units to a soil-based wastewater system.

   Example: 2 sanitary sewer service lines connect to convey wastewater from the buildings to a sanitary sewer collection line with manholes. The 2 buildings are 50 feet apart and the wye where the 2 service lines connect has a cleanout. The total length of service lines from the building foundations to the sanitary sewer collection line with manholes is less than 400 feet. The design includes a clean out every 100 feet downstream of the wye connection connecting the two sanitary sewer service lines and the connection to the sanitary sewer collection line is into an existing manhole or by use of a wye fitting. The sanitary sewer line from the upstream wye to the final connection to the existing manhole or wye fitting to the sanitary sewer collection line may be designed using the standards for a sanitary sewer service line.
3. Water Service Line – means the piping from the valve, or curb or corporation stop on a water main to a building or structure or campground except for that portion of the piping that runs between the valve, or curb or corporation stop if it exists at the distribution main and a fire hydrant lead. This definition also includes water outlets such as drinking fountains and hose bibbs and other associated distribution, treatment and storage components unless they are regulated under the Vermont Plumbing Rules.
4. Water Service Piping – means the piping from an on-site or off site potable water supply source to a building or structure, or campground. This definition also includes water outlets such as drinking fountains and hose bibbs and all other associated distribution, treatment and storage components unless they are regulated under the Vermont Plumbing Rules.

Technical Review Checklist

The following technical review checklist identifies items that are critical to an application.

Technical Review Checklist Last Revised January 22, 2016		
Item Number	**Item Required to Complete an Application**	**Check Mark Indicates Item Not Received**
1	Basis of design provided for calculating and sizing wastewater system components are provided with the application	
2	Hydrogeologic or performance based calculations for system are provided with the application	
3	Construction details and notes for all wastewater system components provided on the plans or included with the application	
4	Groundwater monitor locations and readings are provided with the application	
5	Vertical isolation distances between the bottom of the leachfield and limiting soil condition comply with the Rules	
6	Horizontal isolation distances between the leachfield and items of concern comply with the Rules	
7	All existing and approved but not installed wastewater systems that may be affected or be affected by the project shown on the plans	
8	Presumptive zones for the wastewater system shown on the plans even if the zones remains on the lot	
9	Locations of all soil borings and percolation tests conducted on the lot shown on the plans including soil borings and percolation tests conducted on the lot but not used for the design of the wastewater system	
10	Soil descriptions accurately described per the Rules with corresponding test pit numbers shown on the plan	
11	Percolation test results reported with corresponding percolation test numbers shown on the plan	
12	Basis of design for calculating and sizing the water system components are provided with the application	
13	Hydrogeologic analysis for water source, for water quantity or interference when required by Rule, is provided with the application	
14	Construction details and notes for the water system components are shown on the plans or included with the application	
15	All existing and approved but not installed water supplies are shown on the plans	
16	Presumptive zones for a water source are shown on the plans even if the zones remain on the lot	
17	Construction benchmark as required by the Rules and existing and final contours for the potable water supply and wastewater systems are shown on the plans	

18	Man-made features including driveways, roadways, parking areas, buildings, and filled areas are shown on the plans	
19	All natural features including lakes, streams, ponds, brooks, swamps, and wetlands are shown on the plans	
20	Delineation for the 100-year flood plain is shown on the plans	
21	Sources of contamination/hazardous waste sites are identified on the plans as required by the Rules with justification or supporting data the source of contamination will not adversely affect the water source	
22	Sources of contamination/hazardous waste site identified post submittal of the application requiring mitigation measures for the water source	
23	Variance request(s) with justification is provided with the application	
24	Deeded Rights-of-Ways or Easements are shown on the plans	

Expectations for all Technical Reviews

All designs for wastewater systems and water supplies need pipe sizes and materials.

Pipe slopes are required for all sanitary sewer service lines including from the building to tankage or municipal sewer, between tanks (such as from a septic tank to a pump station), and from tankage to the leachfield.

Replacement wastewater systems and potable water supplies serving existing buildings or structures, or campgrounds are eligible to use the Variance Section of the Rules.

Wastewater System Designs

Construction details and notes for all components of a wastewater system including details for the septic tanks, pump stations, I/A treatment units, sand filters, distribution boxes, and leachfields.

A. Septic Tanks; Pump Stations; Distribution Boxes (D-box); Dosing Chambers

1. Tanks need not to be drawn to scale unless the tankage is to be poured-in-place, the design is special order or to confirm tankage can fit in the designated area.
2. Dimensions and material shall be identified for all tankage.
3. Calculations for pressure distribution systems shall be included when using a pump station or dosing siphon.
4. Calculations for pump discharge volumes shall be included when using a pump station or dosing siphon.
5. Provide interior dimensions, float elevations, discharge volume, storage volume, and emergency storage volume that correspond to the design calculations for pump stations or dosing siphons.
6. If the proposal is to pump to a D-box, calculations and design details must be provided to show how to regulate the flow and dissipate the flow in the d-box to ensure equal distribution to the laterals.
7. D-box needs to show the flow equalization device and riser to grade.
8. Septic tanks, pump stations, and dosing chambers need to show the riser(s) to grade.
9. Septic tanks need show the make and manufacturer of the effluent filter.

B. Innovative/Alternative Treatment Units (I/A Units) and Dispersal Product

1. Location of the I/A unit needs to be shown on the plans.

2. Identify vendor, unit and model number of the I/A unit.
3. Calculations for choosing the model I/A unit.
4. The application may consist of the vendor's cut sheets or detail on the plans for the selected I/A unit. The detail need not be drawn to scale. Details and dimensions are required when the unit as an internal pump as required for a pump station.
5. If the I/A unit or dispersal product is to treat for high strength wastewater, the designer shall provide written confirmation from the manufacturer that the unit or product is appropriate for the intended use.

C. Sand Filters

1. The sand filter location and dimensions need to be shown to scale on the plans.
2. The details for the sand filter need to be drawn to scale.
3. Provide the basis of design for sizing the sand filter.
4. Provide construction notes for the installation of the sand filter.
5. Identify all materials for the proper installation of the sand filter.

D. Soil-Based Wastewater Systems

1. Invert elevations are not needed for a sanitary sewer service line or sanitary sewer collection line that is less than 100 feet in length from the building to the septic tank, sand filter, pump station, dosing siphon, or I/A unit unless the elevations are critical to keep the tankage, filter or unit at a specific elevations due to limiting soil conditions.
2. Invert elevations are not needed for a sanitary sewer service line or sanitary sewer collection line that is less than 100 feet in length from a septic tank or I/A unit that gravity feeds to a soil-based leachfield unless the elevations are critical to keep the tankage at specific elevations due to invert elevation for the laterals in the leachfield.
3. Invert elevations are needed for a sanitary sewer service line or sanitary sewer collection line that is 100 feet or greater in length.
4. Invert elevations are needed for a pump station, sand filter, dosing siphon, or I/A unit with an internal pump.
5. An accurate cross section view of the leachfield is required that identifies:
    a. invert elevations for the laterals;
    b. depth of stone above and below the lateral;
    c. elevation of the limiting soil condition(s); and
    d. depth of topsoil over the leachfield.
6. The design of a sanitary sewer service line or sanitary sewer collection line with a manhole shall comply with **E** below.

E. Sanitary Sewer Service Lines and Sanitary Sewer Collection Lines

1. Invert elevations are not needed for a sanitary sewer service line or sanitary sewer collection line that is less than 100 feet in length unless the elevations are critical to maintain proper slopes. Examples when invert elevations are needed include:
    a. the slope of an individual sanitary sewer service line is less than allowed by the Vermont Plumbing Rules;
    b. it is evident the slope of the sanitary sewer collection line will be at the minimum allowed slope and invert elevations are important to demonstrate proper cleansing velocities; or
    c. the service or collection line or main has one or more manholes.
2. Invert elevations are needed for a sanitary sewer service line or sanitary sewer collection line that is 100 feet or greater in length.
3. A profile is needed for a sanitary sewer service line or sanitary sewer collection line that is 100 feet or greater in length.

4. Invert elevations are needed when it is necessary to protect a sanitary sewer service line or sanitary sewer collection line that cannot maintain the proper depths below driveways, parking areas, or roadways.
5. Construction notes and details are needed for a sanitary sewer service line or sanitary sewer collection line that is:
    a. 100 feet or greater in length; or
    b. has one or more manholes.
6. Construction details and invert elevations are needed for water and sewer crossovers.

F. Reduction in Isolation Distances to Subsurface Drains

1. The isolation distance to drains located down slope of a wastewater system shall comply with the Rules:
    a. unless the design is for a replacement wastewater system and there is no feasible alternative location for the system; and
    b. the designer provides evidence effluent should not enter the drain and subsequently discharge to the ground surface.
2. The isolation distance to drains up slope of a wastewater system can be reduced when a designer provides evidence effluent will not enter the drain and subsequently discharge to the ground surface.

G. Groundwater Mounding Analyses

1. A groundwater mounding analysis is needed for the following wastewater systems:
    a. in-ground systems with design flows of 2000 gallons per day or more;
    b. mound systems with a design flow of 1000 gallon per day or more;
    c. filtrate systems; or
    d. performance based systems.
2. The Rules specifies three methods for conducting a groundwater mounding analysis:
    a. site specific hydrogeologic analysis conducted by a qualified hydrogeologist;
    b. desk-top hydrogeologic analysis conducted by a qualified hydrogeologist; or
    c. simplified mounding analysis limited to wastewater systems with design flows of less than 1000 gallons per day.

Potable Water Supplies

1. A potable water supply source that is a drilled, driven, or dug well or a spring needs a detail when the source serves a building or structure or campground. The detail need not be drawn to scale. Exception, a drilled or driven potable water source that serves one single family residence does not need a detail of the water source unless there are construction details necessary to make the well comply with the Rules such as grouting.
2. Pump specifications are required for all water sources that are drilled, driven, or dug wells. Exception, a one single family residence that is served by its own potable water source does not need to have a pump specified unless there are construction details necessary to make the well comply with the Rules such as grouting.
3. A trench detail needs to be shown on the plans for a water service line or pipe. Exception, a trench detail for a water service line serving one single family residence is not required unless there is a water/sewer crossing.
4. Construction details and invert elevations are needed for water and sewer crossovers.
5. Construction details such as insulation or increased depth to inhibit freezing of the water is needed when a water service pipe or line is subject to freezing.

6. Construction details and invert elevations are needed when it is necessary to protect a water service pipe or line that cannot maintain the proper depths below driveways, parking areas, or roadways.
7. Storage tank details need not be drawn to scale unless the tankage is to be poured-in-place or the design is special order. Dimensions of the storage tank are required.
8. Pressure tank details and/or specifications are required for all potable water system designs. Exception, details are not required when one source serves one single family residence.
9. Pressure tanks need not be drawn to scale.
10. Replacement potable water supplies may be eligible to use the Variance Section of the Rules.

Change in Use of a Building or Structure Served by Municipal Sewer and Water

There are existing buildings that are connected to municipal sewer and water where there is a proposal to change the building use that increases the design flows or there is a modification of operational requirements. When the sanitary sewer service line or water service line is insufficient for the intended use, health issues may arise. We will:

1. need a plan by a designer, drawn to scale, identifying the approximate location, size and pipe materials for the service lines;
2. need calculations to verify that the service lines are adequately sized for the intended use of the building;
3. need a design that complies with the Rules if the service lines are not properly sized for the intended use or meet the isolation distance requirements; and
4. for a single family residence that meets an exemption in the Rules as a home occupation but applies for a permit:
    a. accept the existing installations for the water and sewer service lines even if the horizontal or vertical separation between the sewer and water do not comply with today's construction standards;
    b. accept the existing water and sewer lines even if they are not properly sized for the home occupation; and
    c. needs a designer to provide a plan identifying the existing water and sewer services and building and lot dimensions. The plan needs to be drawn to scale.

Note 1: A designer may propose deviations from the design requirements as allowed in Appendix 1- A and Part 11 of the Water Supply Rules for pipe sizing or pipe locations when an existing building has a design flow increase or change in use that requires a permit.

Note 2: The decision to allow deviations to the design requirements is at the discretion of the Regional Office. Factors that will influence a decision will be:
    a. degree of non-compliance; and
    b. potential health effects on users. As an example, a water service line that should be ¾ inch but is only ½ inch that serves a single family residence being converted to a small office building may be viewed differently than the conversion of a small office building into multi-residential units. The potential health risks due to an inadequate water supply are greater for the multi-residential units.

Change in Use of a Building or Structure Served by a Soil-Based Wastewater and Potable (Non-Public) Water System

There are existing buildings that are served by soil-based wastewater systems or non-public water supplies where there is a proposal to change the building use resulting in a modification of operational requirements but no increase in the design flow. We will:

1. for change in use of a building when there is a change in the peak instantaneous demand, require that a designer size the well pump to meet the peak instantaneous demand; and
   Example: Conversion of a single family residence to two residential units without an increase in the number of bedrooms increases the peak demand from 5 gallons per minute to 10 gallons per minute.
2. allow for deviations from the design requirements for the sanitary sewer service lines and water service lines as allowed under "Change in Use of a Building or Structure Served by Municipal sewer and Water".

Location of Standing Waters, Surface Water, Flowing Water, Wetlands

The Rules states a plan showing "the location of all standing and flowing waters and wetlands on the lot on which the project is located that may be potentially affected by the project or that may potentially affect the project design, including, but not limited to lakes, ponds, brooks, rivers, streams, swamps, bogs, sedge meadows, and marshes". The expectation is to identify the boundary of the water body or wetland that exists on or borders the project lot. This avoids confusion when we review plans and the boundary abruptly stops just beyond the minimum isolation distance specified by the Rules. Certainly there are lots that are of such size that it is impracticable to identify the location of the boundary of the water body or wetland and it's clear there is no potential affects.

1. To avoid confusion and review comments regarding the location of the standing and flowing waters and wetlands, it is asked that:
   a. the boundary of all surface waters, wetlands, etc. that are closest to the potable water supply or wastewater system be identified when the item exists within 100 feet of the wastewater system or water supply. The delineation may taper off as the surface water or wetlands extend more than 100 feet; and
   b. the designer provides a note on the plans when such items are greater than 100 feet to the potable water supply or wastewater system.
2. Of particular concern are flowing waters when there is evidence of or potential for erosion of the banks. The Rules states that a leachfield needs to be a minimum of 50 feet to surface waters. This isolation distance is expected to be maintained for the life of the wastewater system and water supply. Therefore the plans need to identify the limits of erosion based on:
   a. information that substantiates the natural limit for erosion; or
   b. the point that stabilization of the flowing water will be required.
   c. The point that the banks for flowing water will or must be stabilized will be used to measure the:
      i. 50 foot isolation distance for a wastewater system; and
      ii. 10 foot isolation distance for a potable water source.

Variances

It is difficult to create a comprehensive document that addresses every situation when compliance is not possible. Discussions with the Regional Office is appropriate with variances are needed.

A. Use of Variances

1. Variances from the technical standards of these Rules for replacement wastewater systems and potable water supplies may be granted if the following requirements are met:

a. designs for replacement wastewater systems and replacement potable water supplies shall comply with the requirements for new systems and supplies whenever possible;
b. replacement wastewater systems and potable water supplies that serve buildings or structures, or campgrounds may be granted the minimum necessary variances from the technical standards when:
    i. full compliance cannot be obtained; or
    ii. it would not be cost effective meaning the value of the incremental increase in environmental and human health protection does not outweigh the cost of achieving the incremental increase; and
c. the design of the replacement wastewater systems or potable water supplies results in equal or better human health and environmental protection than the previous systems or supplies.

B. Cost Effective Determination

1. The determination related to whether or not a system is cost effective will always be somewhat case specific however there are some general factors that should be considered in making the decision.
2. The ability of the landowner to pay for a replacement system is not considered in deciding whether or not a particular system will be cost effective.
    a. This decision is related to whether or not the increased cost of the system will provide a significant increase in environmental and human health protection.
    b. One example is where a pump station would be required to obtain the required 36 inches of separation between the bottom of a system using septic tank effluent (STE) and the seasonal high water table (SHWT). If 32 inches could be achieved with gravity flow, there would be a strong case that the additional money needed for a pump station might not be cost effective for a replacement system. The landowner may apply for a variance, based on a written recommendation by a designer which includes an analysis of why the balance between compliance and cost favors approval of the variance.

C. Hydrogeologic Assessment

1. A hydrogeologic assessment may be required to demonstrate:
    a. the length of the leachfield required to comply with the technical standards of the Rules;
    b. the depth of unsaturated native soil at the edge of the fill material and/or 25 feet downslope of the edge of the material; or
    c. the likelihood effluent will surface at the toe of the edge of the fill material following construction of the wastewater system.
2. If the design of the proposed system uses the only available site on the lot and the design is as close to the size required for new projects as possible, a hydrogeologic study may not be required. The decision will consider:
    a. whether or not the replacement system has the potential to operate as a failed system after construction;
    b. whether or not the replacement system will be closer to a potable or public water source than the existing system when the existing system does not comply with the isolation distances;
    c. whether or not the depth of unsaturated native soil is sufficient that surfacing of effluent at the toe should not occur; and

d. whether or not the design maximizes the length of the leachfield to minimize the linear loading rate.

D. Reduction in Separation Distances to Bedrock and Seasonal High Groundwater Table

1. Small reductions to the vertical separation distance between the bottom of a replacement system and limiting soil condition shall be considered based on being cost.
2. A designer's requests to decrease the vertical separation between the bottom of a replacement system and limiting soil condition must take into consideration that the unsaturated zone beneath the leachfield is one of the most important factor protecting the groundwater table.
3. Mound type fill will normally be required to provide the separation distance even if side slopes are steeper than allowed by Rule.

E. Reduction in Horizontal Isolation Distances to Water Supplies

1. There is a presumption that the replacement wastewater system shall maintain an equal or greater isolation distance to a water supply than the failed system has.
   Note: A replacement system that has equal or greater isolation distance to a water supply but will be more upslope of the supply or the replacement system is located closer to the supply then the system it is replacing may need a 2 year time of travel study if the isolation distance does not comply with the Rules.
2. The isolation distance shall be increased to as close to the requirement for fully complying systems when possible.
3. There is no presumption that a water supply must be relocated at the same time to provide increased horizontal separation from the wastewater system.
4. Depending on the design and relationship to an existing water supply, measures to protect the water supply may be requested.

F. Reduction in Isolation Distance to Surface Water

1. The 50 foot isolation distance between a wastewater system and surface water shall be maintained whenever possible.
2. When the choice is between reducing the isolation distances between a wastewater system and a source of drinking water or reducing the isolation distance between a wastewater disposal system and surface water, the drinking water source shall be given priority.
3. Other isolation distances, such as property lines, buildings, roads, etc. should generally be reduced proportionately more than the distance to surface water.

G. Slope

1. The replacement system may be installed on slopes exceeding 30 percent if such a location provides the best protection for drinking water sources and surface water.
2. Slopes greater than 30 percent may be used provided appropriate construction and erosion control measures are included as part of the design.

H. Mandatory Use of a Holding Tank

1. There is a presumption that a landowner, based on a recommendation from a designer, may install a replacement soil-based disposal system even on a site with severe limitations. The designer needs to provide an assessment of the site and conclude:
   a. there is some hydraulic capacity in the native soils (may require a hydrogeologic analysis); and

b. there is a reasonable chance a replacement system will function without surfacing.

Note: The use of a holding tank, particularly for a residential building, may be so expensive as to limit the use of the building, which should not be required unless it has been demonstrated that a soil-based system will not function on the site.

I. Mandatory Flow Reduction

1. There is no presumption that a landowner must reduce the design flow in order to achieve compliance with the rules.
2. Requesting low flow plumbing fixtures may be mandated depending on the variances granted for sizing a leachfield.
3. The landowner, in consultation with a designer, should consider the risks and benefits of low flow fixtures.
4. If a permitted replacement system fails, the Agency will require further action. The further action may include mandatory use of low flow fixtures or flow reduction deemed appropriate to abate the failed wastewater system.

J. Siting a Replacement Potable Water Source

1. The Technical Advisory Committee (TAC) evaluated different sources of contamination and the potential each source may have on human health when siting a replacement potable water source under the variance section of the Rules.
2. The Table below begins with a ranking of 1, a source of contamination that may pose the highest degree of risk to human health, to 24, a source of contamination that is of least concern.
3. This table is guidance. Designers need to use their professional judgment based on site specific conditions when determining the isolation distances that need to be decreased.

Considerations for Siting a Replacement Potable Water Supply Under the Variance Section of the Rules	
Priority Ranking	Potential Source of Contamination
1	Solid waste disposal facility, hazardous waste facility or contaminated site
2	Concentrated livestock holding area & manure storage systems
3	Wastewater System – Leachfield located up-gradient from water source
4	Property line adjacent to agricultural cropland
5	Wastewater disposal spray areas & lagoons
6	Salvage yard
7	Composing site (commercial or agricultural
8	Solid waste transfer facility
9	Wastewater System – Leachfields located downgradient from water source
10	Herbicide or pesticide application on utility right of way. Applies to ROW where herbicides either have been applied in the last 12 months or may be applied within the next 12 months
11	Cemetery
12	Fertilizer or pesticide storage tank-buried tank of any size; above ground tank > 1,500 gallons; dry or liquid; and serving a non-residential facility.

13	Fuel oil, gasoline & other petroleum tanks and piping (not including liquefied petroleum gas tank)
14	Wastewater subsurface piping, sanitary sewer service lines, sanitary sewer collection lines, septic tank and related tanks (e.g. pump station tankage)
15	Stormwater infiltration basin and subsurface system – unlined
16	Property line not adjacent to agricultural cropland
17	Silage storage
18	Driveway (3 or more residences), roadway, parking lot
19	Driveway (fewer than 3 residences)
20	Grease interceptor (buried)
21	Stormwater detention basins – lined
22	Wetlands
23	Non-potable ground water source
24	Buildings and Structures

Common Reasons for Technical Review Letters

1. Too few soil test pits to confirm soils.
   a. lack of soil testing 25 feet downslope of the toe of a mound or at-grade system, or 25 feet downslope of the enclosure for a bottomless sand filter.
   b. lack of soil testing between acceptable soils and soils reported with limiting conditions.
2. Bottom of the leachfield is too deep in the soil profile based on limiting soil conditions.
3. Leachfield is not laid parallel to ground contours resulting in portions either being out of the ground or too deep in the soil profile.
4. Lack of pipe elevations from the building to the leachfield to confirm lateral can be at the proposed elevations.
5. Leachfield cross section does not account for sloping sites where upslope portion of the field will be deeper in the soil than the downslope edge and the basis for the vertical separation is using the downslope edge.
6. Pump's gallons per minute does not match the needed gallons per minute based on the number of orifices.