SECTION 2: Administration

Federal Requirements

Overview ............................................................................................................................................................... 2-1
Management Guidelines ..................................................................................................................................... 2-1
Class V Systems .................................................................................................................................................... 2-2
Land Application Requirements ....................................................................................................................... 2-2

State Agencies

Overview ............................................................................................................................................................... 2-3

Other Minnesota Regulatory Bodies

Local Ordinances

Management ........................................................................................................................................................... 2-39
References ........................................................................................................................................................... 2-44
ADMINISTRATION

From the federal government, through state agencies and down through the local ordinance, there are many regulations to be aware of if you are involved with the design, installation, inspection, or maintenance of subsurface sewage treatment systems. This section provides an overview of those regulations.

Federal Requirements

Overview

The United States Environmental Protection Agency’s (EPA) Office of Wastewater Management (OWM) oversees a range of programs contributing to the well-being of the nation’s waters and watersheds. Through its programs and initiatives, OWM promotes compliance with the requirements of the Federal Water Pollution Control Act. Cleaning and protecting the nation’s water is an enormous task. Under the Clean Water Act, OWM works in partnership with the Environmental Protection Agency (EPA) regions, states, and tribes to regulate discharges into surface waters such as wetlands, lakes, rivers, estuaries, bays, and oceans (also called point sources). Specifically, OWM focuses on the control of water that is collected in discrete conveyances, including pipes, ditches, and sanitary or storm sewers. OWM is also home to the Clean Water State Revolving Fund, the largest water quality funding source, which focuses on funding wastewater treatment systems, non-point source projects and estuary protection. The EPA's national role is to provide direction and support to improve the standards for decentralized systems by promoting the concept of continuous management and facilitating improved professional standards of practice.

The EPA concluded in its 1997 Report to Congress that adequately managed decentralized wastewater systems are a cost-effective and long-term option for meeting public health and water quality goals, particularly in less densely populated areas (EPA, 1997). The difference between failure and success is the implementation of an effective wastewater management program. Such a program, if properly executed, can protect public health, preserve valuable water resources, and maintain economic vitality in a community. In 2002, the EPA published an updated Onsite Wastewater Treatment Systems Manual to provide supplemental and new information to the 1980 EPA Design Manual (www.epa.gov) for wastewater treatment professionals in the public and private sectors. The updated manual has a more focused approach on Subsurface Sewage Treatment System (SSTS) treatment and management.

Management Guidelines

In 2003, the EPA published Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems to help communities establish comprehensive management programs to ensure that all SSTSs function properly. Proper management of decentralized systems involves implementation of a comprehensive group of elements and activities, such as public education and participation, planning, operation and maintenance, and financial assistance and funding.
Class V Systems

Class V wells are a federal classification of dispersal systems, used to place a variety of fluids directly below the land surface (40 CFR 144.80 (e)). While most types of Class V wells are vertical boreholes used for such purposes as disposal of storm water, geothermal water reinjection, or solution mining, some SSTS's are considered class V wells if either one of the following conditions is met:

1. The SSTS, regardless of size, receives any amount of non-domestic waste (for example, industrial waste disposal wells or motor vehicle waste disposal wells). According to the EPA, industrial or commercial waste includes, but is not limited to, any waste that results from manufacturing or other industrial and commercial processes.

2. The SSTS receives solely domestic waste from more than one family residences or domestic waste from a non-residential establishment and has the capacity to serve 20 or more persons per day. In general, these systems may be found serving the following facilities: apartment buildings; trailer parks; schools and religious institutions; residential clustered or septic tank effluent pumping systems; office; shopping malls; state parks and campgrounds; recreation vehicle (RV) parks; highway rest stops; train and bus stations; hotels and restaurants; and casinos.

SSTS defined as Class V must provide inventory information (including facility name and location, legal contact name and address, ownership information, nature and type of injection wells, and operating status of the injection wells) to the state or the EPA regional UIC Program. See septic.umn.edu/ssts-professionals/forms-worksheets.

There are additional requirements for SSTSs receiving waste from a floor drain at a facility performing repair and maintenance on motor vehicles. New wells/SSTS of this nature have been banned since 2000, and existing ones in regulated areas must have been closed by January of 2007.

Visit www.epa.gov/uic/basic-information-about-class-v-injection-wells to get more information on Class V wells. Many Minnesota state agencies, including the Pollution Control Agency and Department of Health, also regulate, and in most cases, prohibit most types of Class V wells other than SSTS.

Land Application Requirements

Federal Law 40 CFR Part 503 (www.epa.gov) establishes requirements for the final use or treatment of municipal sewage sludge (biosolids) and domestic septage from SSTS tanks. Federal Law 40 CFR Part 503, www.access.gpo.gov/nara/cfr/waisidx_02/40cfr503_02.html, establishes requirements for the land application of sewage sludge (biosolids) and domestic septage. The 503 regulations, first implemented in 1993, set the minimum requirements for land application of domestic septage. All land applied septage, at a minimum, must meet these requirements.

Minnesota does not have a specific land application rule, but there are land application guidelines that are more detailed than the Federal rules; these must be followed for land application in Minnesota. Additionally, local ordinances may be stricter than the Minnesota or Federal requirements. Check with your LGU for local requirements. For more information see Section 8 or the State guidelines at www.pca.state.mn.us.
State Agencies

Overview
There are many state agencies with laws and rules relating to SSTSs. It is important that SSTS professionals in Minnesota understand all the relevant regulations to operate legally in the state.

Minnesota Pollution Control Agency
From the first voluntary state septic code - the Health Department Code in 1969 - to the development of Chapter 7080 for voluntary adoption in 1978 and statewide adoption in 1996, the rules in Minnesota have been revised over the years to reflect updated research, new technologies, and practice. US Public Health standards established in the 1950s are the basis for today’s Minnesota Rule Chapters 7080 and 7081, which regulates SSTSs. In the 1970s Minnesota developed sewage treatment rules to upgrade SSTSs in shorelands. The Minnesota Pollution Control Agency (MPCA) and local government units (LGUs), counties, cities, and townships are responsible for enforcement of these rules.

The MPCA is the primary agency with responsibility for regulating wastewater treatment in Minnesota. There are four primary types of wastewater treatment systems allowed in Minnesota, each regulated differently by the MPCA:

1. **Treatment systems that directly discharge treated effluent to surface waters such as ditches, rivers, streams, and lakes.**

2. **Treatment systems that discharge to the land surface such as spray irrigation or rapid infiltration basins.** Both of these system types are required to be permitted by the MPCA with a National Pollutant Discharge Elimination System (NPDES) permit and/or State Disposal (SDS) Permit. (These systems will be characterized as NPDES in this manual.) These systems are required to be designed by professional engineers and be operated by a Class A-D Wastewater Operator certification. Treatment facilities are classified as A, B, C, and D according to a rated point system based on the unit processes, loading to the plant, and the permitted final effluent limitations. In addition, a Type IV or V certified person disposes of the septage/biosolids from these MPCA permitted facilities. For information on training and licensing programs for these two programs see [www.pca.state.mn.us](http://www.pca.state.mn.us).

3. **Treatment systems with a designed flow greater than 10,000 gpd that disperse effluent below final grade.** These systems are characterized as Large Subsurface Sewage Treatment Systems (LSTS). LSTS are required to obtain a SDS permit and are governed under Minnesota Rules Chapter 7001. These systems are required to be designed by professional engineers and should be an Advanced Designer, be operated by a Class A-D Wastewater Operator who is also a Service Provider and a Type IV or V licensed person dispose of the septage/biosolids. Minnesota Rules Chapter 7081.0040 states, *The owner or owners of a single SSTS or a group of SSTS under common ownership must obtain an SDS permit from the agency according to chapter 7001 when all or part of proposed or existing soil dispersal components are within one-half mile of each other and the combined flow from all proposed and existing SSTS is greater than 10,000 gallons per day.*
4. "Subsurface sewage treatment system" or “SSTS” is either an individual subsurface sewage treatment system as defined in subpart 41 or a midsized subsurface sewage treatment system as defined in part 7081.0020, subpart 4, as applicable. (MN Rules Chapter 7080.1100, Subp. 82). These systems are permitted at the local level through ordinances by counties, cities, townships or other similar entities.

a) “Individual subsurface sewage treatment system” or “ISTS” means a subsurface sewage treatment system or part thereof, as set forth in Minnesota Statutes, sections 115.03 and 115.55, that employs sewage tanks or other treatment devices with final discharge into the soil below the natural soil elevation or elevated final grade that are designed to receive a sewage design flow of 5,000 gallons per day or less.

ISTS also includes all holding tanks that are designed to receive a design flow of 10,000 gallons per day or less; sewage collection systems and associated tanks that discharge into ISTS treatment and dispersal components; and privies. ISTS does not include those components defined as plumbing under the Minnesota Plumbing Code, chapter 4714, except for a building sewer connected to a subsurface sewage treatment system. (MN Rules Chapter 7080.1100, Subp. 41).

b) “Midsized subsurface sewage treatment system” or “MSTS” means a subsurface sewage treatment system, or part thereof, as set forth in Minnesota Statutes, sections 115.03 and 115.55, that employs sewage tanks or other treatment devices with final discharge into the soil below the natural soil elevation or elevated final grade and that is designed to receive sewage design flow of greater than 5,000 gallons per day to 10,000 gallons per day.

MSTS also includes sewage collection systems and associated tanks that discharge into MSTS treatment or dispersal components. MSTS does not include those components defined as plumbing under the Minnesota Plumbing Code, chapter 4714, except for a building sewer connected to a subsurface sewage treatment system. (MN Rules Chapter 7081.0020, Subp. 4).

Minnesota Statutes 115.55 and 115.56 provide the authority to the MPCA for regulations and enforcement relating to ISTS and MSTS in three main areas:
1) Revisions to the state’s SSTS code (MN Rules Chapter 7080 - 7081)
2) Assistance with and interpretations of the code
3) Administration of the statewide certification and licensing program. This includes collecting the sewage tank fee, which installers collect at the time of installation

The MPCA also administers the groundwater rules, Chapter 7060, which can affect SSTS regulations, particularly those related to nitrogen.

**Overview of Minnesota’s SSTS Rules**

The effective date of the most current SSTS Rules is September 6, 2016. These rules can be accessed online (at www.revisor.mn.gov) by entering 7080, 7081, 7082 or 7083 in the Chapter selection box. They are also available in PDF format at septic.umn.edu.
Minnesota Rules Chapter 7080 provides technical criteria for ISTS systems, including definitions, compliance criteria, acceptable and prohibited discharges, site evaluation and design procedures, applications and limitations, maintenance, and abandonment.

Minnesota Rules Chapter 7081 provides additional technical criteria for MSTS including definitions, variance procedures, compliance criteria, design procedures, applications and limitations, construction requirements, operation and maintenance and abandonment.

Minnesota Rules Chapter 7082 highlights the requirements of LGUs in administering a local ordinance. It sets definitions and provides regulatory administrative responsibilities, general requirements for local ordinances, permitting requirements, system management, and inspection.

Minnesota Rules Chapter 7083 sets the certification requirements for qualified employees who are employed by local or state government, and certification and licensing requirements for businesses who design, install, inspect, operate and maintain ISTS and MSTS systems. Chapter 7083 also contains the establishment, membership, terms and rules for the SSTS Advisory Committee. (Chapter 7083.6000) along with the requirements for product registration (Chapter 7083.4000).

**System Classifications**

All new construction or replacement ISTS must be designed to meet or exceed items A to F.

A. All treatment and dispersal methods must be designed to conform to all applicable federal, state, and local regulations.

B. Treatment and dispersal processes must prevent sewage or sewage effluent contact with humans, insects, or vermin.

C. Treatment and dispersal of sewage or sewage effluent must be in a safe manner that adequately protects from physical injury or harm.

D. An unsaturated zone in the soil must be maintained between the bottom of the soil treatment and dispersal system and the periodically saturated soil or bedrock during loading of effluent.

E. ISTS components must not be designed in floodways.

F. ISTS components must meet all set backs.

(7080.2150, Subp. 2)

Chapter 7080 has a classification system that is useful to LGUs in understanding why a system is classified as it is. The classification system also provides a basis for LGUs to make a decision about whether they will allow a system to be used, regardless of its classification. The classification system also indicates when an advanced design license and a service provider are required as shown in Table 2.1.
### TABLE 2.1 System Classification Overview

<table>
<thead>
<tr>
<th>Type</th>
<th>Pre 2008 Code Change Classification</th>
<th>Wastewater Characteristics</th>
<th>Separation to Limiting Condition</th>
<th>Size/Loading Rate</th>
<th>Maintenance Frequency</th>
<th>License Needed to Design**/Maintain</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Standard</td>
<td>Domestic</td>
<td>&gt; or = 3 feet of original* soil (includes mound sand)</td>
<td>Full size</td>
<td>&lt; or = 3 years</td>
<td>Basic Designer/Maintainer</td>
</tr>
<tr>
<td>II</td>
<td>Alternative</td>
<td>Domestic</td>
<td>&gt; or = 3 feet when applicable</td>
<td>Full size</td>
<td>&lt; 3 years</td>
<td>Basic Designer/Maintainer</td>
</tr>
<tr>
<td>III</td>
<td>Other</td>
<td>Domestic</td>
<td>&gt; or = 3 feet of disturbed or original soil</td>
<td>Reduced flow or full size</td>
<td>&lt; 3 years</td>
<td>Basic Designer/Maintainer</td>
</tr>
<tr>
<td>IV</td>
<td>Performance</td>
<td>Domestic &amp; high strength</td>
<td>&lt; 3 feet of disturbed or original soil</td>
<td>Reduced or full size</td>
<td>&lt; 3 years Operating Permit</td>
<td>Advanced Designer/Service Provider</td>
</tr>
<tr>
<td>V</td>
<td>Performance</td>
<td>Domestic &amp; high strength</td>
<td>&lt; 3 feet of disturbed or original soil</td>
<td>Reduced or full size</td>
<td>&lt; 3 years Operating Permit</td>
<td>Advanced Designer &amp; PE/Service Provider</td>
</tr>
</tbody>
</table>

* See Section 4 - Site Evaluation for definition of original soil.
** An Advanced Designer is also required any time the design flows are greater than 2,500 gpd on any type of system or other establishment.

### Type I systems

Type I systems include trench systems, seepage beds, mounds, at-grade systems, and graywater systems. The prescriptive specifications for these systems are in Chapter 7080.2210 - 7080.2240. Lots platted since 1996 must have two sites for a Type I system. Some LGUs may require a Type I system to be installed, if possible, while others may allow one of the other classifications of systems. A **lot is defined in Minnesota Rules Chapter 7080.1100, Subp. 45, as a parcel of land in a plat recorded in the office of the county recorder or registrar of titles or a parcel of land created and conveyed, using a specific legal description, for a building site to be served by an ISTS.**

A **Type I system** is a technology that has proven itself over time in a variety of locations. Type I systems are supported by adequate research behind them and offer environmental protection. Research has identified many of the problems and inefficiencies of Type I systems, but additional research on these systems is needed.

The specifications offered in Chapter 7080 for Type I systems are intended to provide adequate treatment of sewage with limited monitoring, typically visual observations and evaluations of the tank at least once every three years.

Any Type I system must:
- use 7080 flow values and loading rates
- be designed with at least the minimum septic tank capacities
- be designed with required distribution and dosing
- provide flow measurement* if a pump is included in the system
- be designed and installed with a three-foot vertical separation in natural soils
- receive septic tank effluent
- generally have a management plan** with a management and operational frequency of three years or less
* Flow measurement means any method to accurately measure water or sewage flow, including, but not limited to, water meters, event counters, running time clocks, or electronically controlled dosing (Chapter 7080.1100, Subp. 35).

** A management plan means a plan that requires the periodic examination, adjustment, testing, and other operational requirements to meet system performance expectations, including a planned course of action in the event a system does not meet performance expectations (Chapter 7080.1100, Subp. 46).

Chapter 7080.1720 requires that soil observations be done by a soil pit or hand auger to observe and interpret soil structure and consistence. If soil structure cannot be determined by observation alone, a percolation test must be performed to determine the appropriate loading rate outlined in Tables IX and IXa in MN Rules Chapter 7080.2150, Subp. 3, (E).

** Type II systems**

Type II systems include a variety of systems with moderately well-proven design specifications for unique site conditions including, floodplain areas, privies/outhouses, and holding tanks. The prescriptive requirements for these systems can be found in 7080.2250. Further information on the design of systems located in floodplains can be found in Chapter 4: Site Evaluation, while information on the design and installation of holding tanks and privies can be found in Chapter 7.

Any Type II system must:

- use 7080 flow values and loading rates (for floodplains)
- provide flow measurement if a pump is included in the system
- be designed and installed with a three-foot vertical separation in natural soils (for privies and floodplains)
- generally have a management plan with a management and operational frequency of three years or less

** Type III systems**

Generally Type III systems include those installed in a location where the soil is not natural (cut, filled, compacted, etc) or where a full-sized system is not installed. There are some prescriptive design requirements provided in 7080 for these systems.

The key components of Type III systems are:

- use 7080 flow values
- provide flow measurement
- be designed and installed with a three-foot vertical separation and meet the other Type I soil treatment requirements
- receive septic tank effluent
- If a downsized soil treatment system is designed, time dosing must be used to assure the loading rates do not exceed those in Table IX of part 7080.2150, subpart 3, (E)
- generally have a management plan with a management and operational frequency of three years or less

An example of a Type III system is a mound built on fill soil with a management plan requiring monitoring such as visual observation and flow measurement.
Type IV systems

Type IV systems were created by the MPCA in response to the SSTS industry’s request to utilize pretreatment units with reduced vertical separation distances and/or system sizing, as seen in Figure 2.2. Type IV systems are analogous to the past “Performance” and “Experimental” ISTS except the Registered Product List (RPL) will provide more guidance to designers and LGUs. To be registered, the product manufacturers are required to submit design performance testing, installation, and management requirements to the MPCA, which will manage and make the information available.

FIGURE 2.2 Pretreatment Schematic

The key characteristics of Type IV systems are:

- Use Type I tank capacity if applicable
- Use 7080 flow values and provide flow measurement
- Use Type I distribution methods
- Utilize registered secondary treatment and media products. Treatment level A & B are typically associated with the effluent from pretreatment units such as aerobic treatment units and media filters. Treatment level C is the treatment system performance level for systems designed to treat high strength waste such as from a restaurant. Table 2.2 identifies performance testing parameters for the various treatment levels identified in MN Rules Chapter 7083. From MN Rules Chapter 7083.0020, Subp. 20 TN means the total nitrogen, which is the measure of the complete nitrogen content in wastewater including nitrate, nitrite, ammonia, ammonium, and organic nitrogen, expressed in mg/L. TP means total phosphorus, which is the sum of all forms of phosphorus in effluent, expressed as mg/L. Secondary treatment units are listed as treatment level A, A2, B, B2, C, TN, or TP based on the performance level testing in Table 2.2 (next page).
- Have an operating permit with a frequency of fewer than three years
- Be designed and installed with less than a three-foot vertical separation according to Table 2.3 (next page)
- The product registration process allows products to meet these levels with or without separate disinfection
Are allowed to be designed with soil loading rate at least as large as those provided in either Table IX or IXa found in MN Rules Chapter 7080.2150 or in the Forms Section of this manual. The loading rate determination depends on soil evaluation procedures, local ordinance requirements, and the designer’s professional judgement.

### TABLE 2.2 Treatment System Performance Testing Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Parameters</th>
<th>Nutrient (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CBOD₅ (mg/L)ᵃ</td>
<td>TSS (mg/L)ᵇ</td>
</tr>
<tr>
<td>A</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>A-2</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>B</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>B-2</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>C</td>
<td>125*</td>
<td>60</td>
</tr>
<tr>
<td>TN</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>TP</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

* BOD₅ = 170 mg/L

a Carbonaceous biochemical oxygen demand or CBOD₅ means the measure of the quantity of oxygen used by microorganisms in the aerobic oxidation of organic matter and other compounds containing carbon amount of oxygen required by bacteria while stabilizing, digesting, or treating the organic matter under aerobic conditions over a five-day incubation period while in the presence of a chemical inhibitor to block nitrification. CBOD₅ is commonly expressed in milligrams per liter (mg/L) (7080.0020, Subp. 12).
b Total suspended solids or TSS means solids that are in suspension in water and that are removable by laboratory filtering (7083.0020, Subp. 21).
c O&G means oil and grease, a component of sewage typically originating from foodstuffs such as animal fats or vegetable oils or consisting of compounds of alcohol or glycerol with fatty acids such as soaps and lotions, typically expressed in mg/L (7080.0020, Subp. 14).
d Fecal coliform or FC means bacteria common to the digestive systems of warm-blooded animals humans that are cultured in standard tests. Counts of these organisms are typically used to indicate potential contamination from sewage or to describe a level of disinfection, generally expressed in colonies per 100 mL (7080.0020, Subp. 30).

Category A: Designed to treat sewage with strength typical of a residential source when septic tank effluent is anticipated to be equal to or less than treatment Level C.
Category B: Designed to treat high-strength sewage when septic tank effluent is anticipated to be greater than treatment level C, including restaurants, grocery stores, mini-marts, group homes, medical clinics, residences, etc.
Total nitrogen and phosphorous reduction in Categories A and B

### TABLE 2.3 Treatment Component Performance Levels and Method of Distribution by Texture Group¹

<table>
<thead>
<tr>
<th>Vertical Separation (inches)</th>
<th>All sands and loamy sands</th>
<th>Sandy loam, loam, silt loam</th>
<th>Clay, clay loams</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 to 17³</td>
<td>Treatment level A Uniform distribution</td>
<td>Treatment level A Uniform distribution</td>
<td>Treatment level A Uniform distribution</td>
</tr>
<tr>
<td></td>
<td>Timed dosing</td>
<td>Timed dosing</td>
<td>Timed dosing</td>
</tr>
<tr>
<td>18 to 35³</td>
<td>Treatment level B Uniform distribution</td>
<td>Treatment level B Uniform distribution</td>
<td>Treatment level B Uniform distribution</td>
</tr>
<tr>
<td></td>
<td>Timed dosing</td>
<td>Timed dosing</td>
<td></td>
</tr>
<tr>
<td>36+³</td>
<td>Treatment level A-2 or B-2 Uniform distribution</td>
<td>Treatment level A-2 or B-2 Uniform distribution</td>
<td>Treatment level A-2 or B-2 Uniform distribution</td>
</tr>
<tr>
<td></td>
<td>Treatment level C</td>
<td>Treatment level C</td>
<td>Treatment level C</td>
</tr>
</tbody>
</table>

¹ The treatment component performance levels correspond with those established for treatment components under the product testing requirements in Table III in part 7083.4030.
² With less than 50 percent rock fragments.
³ Additional vertical separation distance is required as determined in part 7080.2150, subpart 3, item C, subitem (1), unit (b).
Examples of Type IV systems are:

1. A sand filter, listed in the registered product list (RPL), to a pressurized trench system and time dosing in sandy soils

2. An aerobic treatment unit, on the RPL, to a pressurized mound system overlying loam soil with a combination of 24 inches of soil treatment in the mound and existing soil

Type V systems

Type V systems are customized engineered systems. In general, they are similar to Type IV systems but lack the data to support the product registration process. They may be allowed to be designed based on environmental protection outcomes plus flows determined as per 7080. Prescriptive standards are not provided, and meeting the environmental protection outcomes should be demonstrated through the operating permit process. These systems must be designed with a vertical separation that ensures adequate sewage dispersal and treatment. Design factors to consider include, but are not limited to, effluent quality, loading rates, groundwater mounding if loading rates are in excess of those used for Type IV systems, loading methods, and soil conditions. ISTS must not contaminate undergroundwaters or zones of periodic saturation with viable fecal organisms (Chapter 7080.2400). Type V systems must be approved by the local government and be designed by a PE with an Intermediate or Advanced Design certification.

Product development permits

Chapter 7083.4110 allows product development permits to be issued by a LGU for any proprietary treatment component or sequence during the development and testing of a new product in the field. Product development permits can only be used to test products in a system that already meets standards without the device being tested. For example a new type of secondary treatment device maybe installed in an already compliant Type I system. See the Minnesota Rules chapter 7083.4110 for more information.

Compliance Criteria

A compliance inspection is an evaluation, investigation, inspection, or other such process conducted for the purpose of issuing a certificate of compliance or notice of noncompliance. There is typically a trigger that will require an inspection, such as the addition of a bedroom (Minn. Stat. § 115.55, Subd. 5, item (b)). Local ordinances may have multiple triggers for an inspection — always check with the LGU for differences between the statute, rule and ordinance requirements.

In all cases, the goal of the inspection is to determine whether the system is in compliance. If the system is in compliance, a certificate of compliance must be issued. If the system is not in compliance, a notice of noncompliance must be issued.

For an existing system a certificate of compliance documents that the existing system is not an imminent threat to public health, is not failing to protect groundwater, and meets its operating permit (if applicable). For an existing system the certificate of compliance documents that the existing system is not failing to protect groundwater, is not an imminent threat to public health, and meets its monitoring and operating permit requirements, if applicable. Chapter 7080.1100 Subp. 13, defines a certificate of compliance as a document, written after a compliance inspection, certifying that a system is in compliance with applicable requirements at the time of the inspection.

The compliance inspection for an existing system does not address the life expectancy (i.e. hydraulic acceptance of effluent) of the system or all of the technical requirements set by
state or local codes. More comprehensive inspections may be done, but these go beyond the minimum state standards for an existing system compliance inspection. Certificates of compliance for new construction or replacement systems are valid for five years from the date of issuance, while a certificate for an existing system is valid for three years. LGUs should still require systems to verify that they are not imminent public health threats within the time period of validity if an inspection trigger (e.g., bedroom addition) occurs.

The statute (Minn. Stat. § 115.55, Subd. 5(c) and (d)) allowing this validity time period is written to avoid multiple tank and vertical separation inspections for homes that might trigger multiple inspections during the three-to-five-year window. Validity time periods are not a guarantee that the system will hydraulically perform for that period of time after the inspection.

There is a state inspection form that must be completed when an inspection is conducted (septic.umn.edu/ssts-professionals/forms-worksheets). In order to perform a compliance inspection you must be a licensed Basic or Advanced Inspector. For both new and existing systems classified as Type IV or V or any systems over 2,500 gpd, an Intermediate or Advanced Inspector is required to perform the compliance inspection. A Basic, Intermediate or Advanced Inspector can conduct the inspection for Type I-III systems under 2,500 gpd. Some LGUs require additional forms. If replacing a component (such as a tank), the remaining components (such as soil treatment and dispersal) must not be imminent threats to public health (ITPHS) or failing to protect groundwater.

In 2006, legislation was passed that provides an additional tool for local governments in requiring upgrades of straight pipe discharges. A straight-pipe system is a sewage disposal system that transports raw or partially settled sewage directly to a lake or stream, to a drainage system, or onto the ground. The Straight-pipe Act of 2006, Chapter 224 makes for homeowners who do not correct straight-pipe discharges within 10 months subject to MPCA issued penalties of $500 per month.

Imminent Threat to Public Health or Safety (ITPHS)

From Chapter 7080.1500, Subp. 4 (A) to be in compliance, an existing ISTS must be protective of public health and safety. A system that is not protective is considered an imminent threat to public health or safety. At a minimum, a system that is an imminent threat to public health or safety is a system with a discharge of sewage or sewage effluent to the ground surface, tile drainage systems, ditches, or storm water drains or directly to surface water; systems that cause a reoccurring sewage backup into a dwelling or other establishment; systems with electrical hazards; or sewage tanks with unsecured, damaged, or weak maintenance hole covers or weak lids. A determination of protectiveness for other conditions may be made by a qualified employee inspector or licensed inspection business.

The most serious failures are classified as ITPHS. These systems are a direct threat to public health, including the health of the systems’ owners, primarily because they may be:

1. Backing-up into the home
2. Surfacing in the yard as shown in Figure 2.3
3. Surfacing into a water body (lake, river, stream, ditch, tile line)
4. Other unsafe situations such as sewage tanks with unsecured or weak maintenance hole covers or weak lids

These systems allow direct exposure to sewage and disease-causing organisms and must, by law, be brought into compliance within ten months based on state law or less based on local ordinance. The proper method for repair or replacement will be site-specific. Depending on the nature of the system failure it may be required or recommended to take immediate steps to prevent the surfacing of effluent such as utilizing the septic tanks as holding tanks until the system can be repaired or replaced.

Other types of water, including footing and roof drainage, and chemically treated hot-tub or pool water, should not be discharged to a SSTS. Graywater, including wastewater from bathing and washing dishes and clothes which does not contain toilet wastes (7080.1100, Subp. 37) is sewage, and all sewage must be properly treated. If graywater is discharging to the surface the system is considered an ITPHS.

**Failing to protect groundwater**

The second compliance measure is a determination of the system failing to protect groundwater. According to Minnesota Rules Chapter 7080.1500, a system that is failing to protect groundwater if it is:

1. a seepage pit, cesspool, drywell, leaching pit, or other pit;
2. a system with less than the required vertical separation distance;
3. a system that is no longer in use and is not abandoned in accordance with part 7080.2500. See Section 7 - Septic Tanks for information on proper system abandonment.

There are systems that do not adequately treat sewage even though sewage may not be surfacing. SSTSs are failing to protect groundwater (FPG) if they do not fully treat sewage before it enters the groundwater. Failure to treat sewage adequately can cause serious problems in surface waters and groundwater, including our valuable sources of drinking water. These water resources must be protected.

From Chapter 7080.1500, Subp. 4 (B) The ISTS must also be protective of groundwater. A system that is not protective is considered a system failing to protect groundwater. At a minimum, a system that is failing to protect groundwater is a system that is a seepage pit, cesspool, drywell, leaching pit, or other pit; a system with less than the required vertical separation; and a system not abandoned in accordance with part 7080.2500. A determination of the threat to groundwater quality for other conditions must be made by a qualified employee or licensed inspection business.

**Cesspool, seepage pit, leaching pit, drywell**

Older style SSTSs include tanks that were designed to leak. They were often installed quite deep and discharge at high rates that do not treat sewage. Cesspools and seepage pits are defined as failing to protect groundwater because they were not designed or constructed to treat waste, but only to dispose of it. Chapter 7080.1100, Subp. 15, defines a cesspool as an underground pit, receptacle, or seepage tank that receives sewage directly from a building sewer and leaches sewage into the surrounding soil, bedrock, or other soil materials. Cesspools include sewage tanks that were designed to be watertight, but subsequently leak below the designed operating depth as shown in Figure 2.4 - Midseam Tank Leak.

![FIGURE 2.4 Midseam Tank Leak](image)

Liquid level is at level of seam. This tank is leaking at the seam.

A seepage pit is different than a cesspool in that it receives effluent from a water tight septic tank (MN Rules Chapter 7080.1100, Subp. 68) as shown in Figure 2.5 (next page) - Seepage Pit Schematic. “Other pit” means any pit or other device designed to leach sewage effluent that is greater than 30 inches in height or has a bottom area loading rate of sewage greater than two gallons per square feet per day.

There are two primary reasons why seepage pits and cesspools do not provide adequate wastewater treatment: size and depth. Sewage is discharged into a small diameter pit and causes the
wastewater to disperse undersaturated, anaerobic conditions, limiting soil treatment. The small size of these systems also increases the likelihood of sewage back-up into the dwelling and surfacing sewage. Many cesspools and seepage pits were intentionally sited with the bottom of the pit in groundwater, as the natural water movement carried the sewage away. Raw or partially treated sewage should never reach groundwater, as the impacts to an aquifer are similar to the damages in a ditch, stream, or lake. There have been numerous studies documenting contamination of ground and surface water from wastewater systems in contact with groundwater (Allen and Morrison, 1973; Anan’ev and Demin, 1971; Crane and Moore, 1983; Kligler, 1921; Vaisman, 1964).

Even though Chapter 7080 identifies existing seepage pit systems as non-compliant, their continued use may be allowed under Minnesota Statutes, section 115.55, subdivision 5a, paragraph (f), by LGUs that have adopted alternative local standards for these systems under part 7082.0050, Subp 5. For the continued use of a seepage pit to be allowed an inspection must be performed to assure the system:

A. has a sewage tank that does not obviously leak below the designed liquid capacity preceding the pit;
B. has a pit that is not located in a geologic formation that is used as a source of drinking water;
C. has at least three feet of vertical separation from the bottom of the pit to the seasonally periodically saturated soil or bedrock;
D. has an absorption area that has been determined by multiplying the average daily dividing the design flow by the soil loading rate based on the weighted average of each vertical stratum penetrated by the seepage pit, drywell, or leaching pit;
E. has a pit that has not been placed in a soil stratum with a sizing classification texture group of coarse sand or coarse and medium loamy sand
F. has a pit with a minimum inside diameter of five feet; and
G. meets all setback requirements.

(MN Rule Chapter 7080.2550, Subp. 2)

Most existing seepage pits systems will not meet these criteria and will require an upgrade. In Minnesota, noncompliant seepage pits and cesspools must be replaced with a compliant system. The time period for upgrade is based on local public health and environmental priorities and varies from location to location. Be sure to check with your local governmental unit (LGU). A list of MN LGUs can be found under “SSTS Local Units of Government” at: www.pca.state.mn.us.
The noncompliant cesspool or seepage pit must be properly abandoned to eliminate the safety hazard and impact to public health and the environment. A licensed designer must be hired to evaluate site and soil conditions to determine the proper replacement ISTS to treat and disperse the wastewater at the site. This design is reviewed by a LGU to ensure it meets Minnesota Rules, Chapter 7080 and any additional LGU requirements. A list of licensed septic professionals can be found by contacting your LGU or under “SSTS Business Licensing, Individual Certification, and Enforcement” at: www.pca.state.mn.us.

**Limiting layer**

Three feet of vertical separation from a limiting layer such as periodically saturated soils or bedrock allows for wastewater to be properly treated in the soil. *Vertical separation means the vertical measurement of unsaturated soil or sand between the bottom of the distribution medium and the periodically saturated soil level or bedrock (MN Rules Chapter 7080.1100, Subp. 91).* In most soils, three feet is sufficient separation for adequate treatment. Separation from bedrock is critical because only adequate separation can ensure proper treatment and prevent the contamination of wells. Where bedrock is shallow, drinking water wells frequently draw water from cracks in the bedrock. If untreated effluent enters the bedrock, it will flow in the same cracks. Wells can be contaminated very quickly.

The depth to the limiting layer must be assessed to determine if a system is in compliance. If two independent soil borings have been performed, the inspector can use those records to verify the soil conditions. Determining whether or not a system is failing requires you to know when it was constructed and what kind of establishment it serves. For any system (1) built after March 31st, 1996 or (2) located in shoreland, a wellhead protection area or serving a food, beverage, or lodging establishment, three feet of separation is required at the time of the compliance inspection. For systems (1) built previous to April 1, 1996 and (2) not located in shoreland, a wellhead protection area or serving a food, beverage or lodging establishment, two feet of vertical separation is required.

**Systems in shoreland areas or wellhead protection areas or systems serving food, beverage, or lodging establishments (SWF)** are defined in MN Rules Chapter 7080.1100, Subp. 84:

a. SSTS constructed in shoreland areas where land adjacent to public waters has been designated and delineated as shoreland by local ordinance as approved by the Department of Natural Resources;
b. SSTS constructed in wellhead protection areas regulated under Minnesota Statutes, chapter 103I; and
c. SSTS serving food, beverage, and lodging establishments that are required to obtain a license under Minnesota Statutes, section 157.16, subdivision 1, including manufactured home parks and recreational camping areas licensed according to Minnesota Statutes, chapter 327.

Local ordinance may allow up to a 15% reduction in the vertical separation distance for existing systems to account for settling of sand or soil, normal variation of measurements, and interpretations of the limiting layer conditions. An inspector will need to check with their local permitting authority as adoption of this reduction needs to be specifically allowed in the local ordinance. This reduction does not apply to systems installed prior to April 1, 1996 in non-SWF areas, which only require two feet of separation or to Type IV or V systems designed with less than three feet of vertical separation distance.
Systems that were designed and installed with less than three feet of vertical separation in the past were labeled “Experimental”, “Other” or Performance in past version of Chapter 7080. These systems typically have an advanced treatment unit such as an aerobic treatment unit or media filter before the soil treatment system. Therefore less vertical separation is sometimes allowed in the soil treatment system. When performing compliance inspection on these systems the design and monitoring and mitigation plan must be evaluated to determine how much vertical separation was specified in the design. Then the inspector must evaluate if the system meets these design requirements along with performance data for upstream treatment units and piezometer data when available.

When soil treatment systems are loaded with sewage, the groundwater beneath the system mounds and reduces the designed vertical separation. The effluent moves through the soil to the limiting layer where its flow may be retarded. A groundwater mound forms here reducing the thickness of the unsaturated zone. In addition, infringement into the vertical separation zone occurs directly below the system as a biological layer (biomat) is created. These conditions are depicted in Figure 2.6. Vertical separation is measured by performing a boring outside the area of influence on the same contour and landscape position of similar soil.

The measurement is made from the bottom of the media to the limiting condition (see Figure 2.7). The inspector finds the depth of the soil's redoximorphic features or berock, measurement “A,” and then finds the bottom of the soil treatment system, measurement “B.” For more information about redoximorphic features, see Section 3: Sewage Treatment Utilizing Soils. The calculation for vertical separation follows: $A - B = 2$ or $3$ feet or more for compliance. More than one boring should be conducted to get the best possible representation of the site.

Systems no longer in use that were not properly abandoned are considered FPG. These systems, particularly the tanks, can crumble, subside, cave in and collapse and potentially give way if they are allowed to sit empty and degrade over time. For more information on proper abandonment of tanks see Section 8.

**Systems Not Operated or Maintained Properly**

A system not operated or maintained in accordance with its operating permit is considered to be non-compliant. In order to determine if the system is in compliance the inspector must research if the requirements of the permit have been met. The steps to bring these systems into compliance are determined by the LGUs. Type IV, Type V and MSTS must all be issued an operating permit. Performance systems installed previous to the local adoption of the 2008 version of 7080 will also have operating permits.
**Systems with flows greater than 2,500 gpd**

For systems with flows greater than 2,500 gallons per day designed under part 7080.2150, Subp. 4, item A or B, must demonstrate that the additional nutrient reduction component required under those items is in place and functioning. If existing systems are receiving replacement components they must be repaired or replaced to meet technical standards and criteria for new construction according to local ordinance. The remaining components of the existing system must result in the system being in compliance (7080.1500, Subp. 6)

**Compliance criteria for systems with partial component replacement**

When components of an existing system are being repaired or replaced, the new components must meet technical standards and criteria for new construction according to the local ordinance. A repair is the action of fixing or replacing substandard or damaged components; repairs can be categorized as required repairs, recommended repairs, and upgrades. The remaining components of the existing system that do not need repair or replacement must only meet the existing system compliance criteria. For example, a four-bedroom dwelling has a watertight 1000 gallon septic tank to a soil treatment dispersal system drainfield that is found to lack vertical separation to the periodically saturated soil. In this case, the soil treatment component would need to be replaced with a new soil treatment system that meets all the new system requirements, while the 1000 gallon septic tank, which for a new system would be required to be 1,500 gallons, would not need to be replaced or another subsequent tank installed. The LGU could be more restrictive than these requirements and require the entire system to meet all the new system technical requirements. Therefore, the designer of the new component must fully evaluate the system and repair or replace all components not in compliance with existing system standards and consider upgrading the others if they are essential to the long-term performance of the system.

**Non-Code System**

In addition to the basic existing system compliance inspection elements, a number of other elements may be inspected, depending on local requirements and/or customer preferences. These include setback distances of system from wells and other structures or property lines, materials used in construction of the system, and the system size as shown in Figure 2.8. The existing system in this figure does not meet any of the setbacks required for a new system, but the system would be considered in compliance because the septic tank is watertight and the soil treatment dispersal system meets the required separation distance and is not hydraulically failing. These are compliance criteria for new systems but are not a part of an existing system inspection unless required by the LGU or your customer. An existing system may not be “up to the new construction code,” but that does not necessarily make it non-compliant. Local ordinances may be more restrictive and require these systems to be upgraded.

**Inspection Process**

Compliance inspections are required for all new system constructions and replacements (Minn. Stat. §115.55, Subd. 5). In shoreland, compliance inspections are required when any building permit or variance is requested (MN Rules 6120.3400, Subp. 3(D)). If an LGU administers a program for bedroom-
addition permits, the system must be inspected before the bedroom – addition permit is issued. The inspection requirement before issuance of a bedroom-addition permit may be temporarily waived if the permit application is made between November 1 and April 30 (during winter). Under these circumstances, an inspection must be conducted by the following June 1 and a certificate of compliance must be submitted to the LGU and property owner by September 30.

**MN Rules Chapter 7082.0700, Subp. 4** requires the following procedures be followed when completing an existing SSTS compliance inspection:

A. A compliance inspection of an existing system must first determine whether the soil dispersal system, sewage tanks, or other conditions pose an imminent threat to public health and safety as defined in part 7080.1500, subpart 4, item A. A determination must then be made as to whether the sewage tanks and soil dispersal area are failing to protect groundwater as defined in part 7080.1500, subpart 4, item B. The inspection must also verify compliance with part 7080.1500, subpart 4, item C.

B. The agency’s inspection report form for existing SSTS, supplemented with any necessary or locally required supporting documentation, must be used for the existing system compliance inspections in subitems (1) to (4). Allowable supporting documentation includes tank integrity assessments made within the past three years and prior soil separation assessments.

(1) A tank integrity and safety compliance assessment must be completed by a licensed SSTS inspection, maintenance, installation, or service provider business or a qualified employee inspector with jurisdiction. An existing compliant tank integrity and safety compliance assessment is valid for three years unless a new evaluation is requested by the owner or owner’s agent or is required according to local regulations.

(2) A soil separation compliance assessment must be completed by a licensed inspection business or a qualified employee inspector with jurisdiction. Compliance must be determined either by conducting new soil borings or by prior soil separation documentation made by two independent parties. The soil borings used for system design or previous inspections are allowed to be used. If the soil separation has been determined by two independent parties, a subsequent determination is not required unless requested by the owner or owner’s agent or required according to local regulations.

(3) Determination of hydraulic performance and other compliance in part 7080.1500, subpart 4, item A, must be completed by either a licensed inspection business or a qualified employee inspector with jurisdiction.

(4) A determination of operational performance and other compliance in part 7080.1500, subparts 4, item C, and 5, must be completed by a licensed advanced inspection business, a qualified employee with an advanced inspector certification with jurisdiction, or a service provider. A passing report is valid until a new inspection is requested.

C. A certificate of compliance or notice of noncompliance for an existing system must be based on the results of the verifications in item B. The certificate of compliance or notice of noncompliance for an existing system must be signed by a licensed inspection business or a qualified employee inspector with jurisdiction. The certificate or notice for an existing system must be submitted to the local...
unit of government with jurisdiction and the property owner or owner’s agent no later than 15 days after a compliance inspection. The completed form must also be submitted to the owner or owner’s agent. The certificate of compliance for an existing system is valid for three years from the date of issuance, unless a new inspection is requested by the owner or owner’s agent or is required according to local regulations.

D. If a compliance inspection for an existing system indicates that the system is noncompliant, the notice must be signed by a licensed inspection business or qualified employee inspector with jurisdiction, contain a statement of noncompliance, and specify the reasons for noncompliance of each component specified in item B.

Some LGU ordinances require an inspection at other times such as at property transfer, when complaints are received, as part of an area SSTS surveys, etc. These inspections are not required by state law; however, they should require a compliance inspection that complies with the criteria for state-mandated inspections.

**Disclosure vs. Inspection**

Before signing an agreement to sell or transfer real estate, the seller or transferor must disclose in writing to the buyer or transferee how sewage generated at the property is managed. The disclosure must be made by delivering a statement to the buyer or transferee that either:

1. the sewage goes to a facility permitted by the agency (i.e. wastewater treatment plant); or

2. the sewage does not go to a permitted facility and is therefore subject to applicable requirement. The disclosure must further describe the system, including the legal description of the property, the county in which the property is located, and a map drawn from available information showing the location of the system on the property to the extent practicable. If the seller or transferor knows that an abandoned SSTS exists on the property, the disclosure must include a map showing its location. In the disclosure statement, the seller or transferor must indicate whether the SSTS is in use and, to the seller’s or transferor’s knowledge, in compliance with applicable sewage-treatment laws and rules.

The statute and state rules governing SSTSs (Minn. Stat. § 115.55 and MN Rules Chapter 7080) only require the seller to complete a written disclosure statement; however, local government ordinances, especially in shoreland areas, may require a full compliance inspection before property transfer. In addition, lending institutions, buyers, or sellers may request a compliance inspection.

If someone other than the property owner evaluates the SSTS for purposes of disclosure, that party must meet the licensing and certification requirements of Chapter 7083. In other words, the party must be qualified to perform inspections. The inspector who evaluates the SSTS must perform a compliance inspection in accordance with Chapter 7080 and 7082. A compliance inspection will determine whether the system is in compliance or failing, and whether it’s an ITPHS.

**7083 Certification and Licensing Requirements**

Any business that designs, installs, maintains, pumps, or inspects SSTSs in Minnesota must be licensed by the MPCA. A restricted license is issued to a business whose Designated Certified Individual (DCI) is an apprentice working toward meeting the experience requirement under the supervision of a qualified employee or a designated...
SECTION 2: Administration

mentor. It can also be placed on a license due to enforcement actions or to address unusual work situations. To receive a license, each business needs to:

- complete MPCA License application
- provide evidence of $100,000 of general business liability insurance and worker’s compensation insurance
- provide evidence of a corporate surety bond of $25,000
- pay a $200 fee per licensed category up to a maximum of $400; and
- indicate the designated certified individual (DCI) in each licensed category.

A license is valid for one year from the date of issuance. License renewals may be requested for up to three years in advance of expiration.

Certification

A individual is certified when they meet the state training, examination, and experience requirements for working with SSTS in at least one of five specialty areas. A business must have a certified individual with a specialty in the applicable license category to qualify for a license. This employee provides direction and personal supervision to other employees who are not certified. Each LGU must have a certified inspector on staff or contracted to review, issue permits, and inspect ISTS and MSTs.

After you have taken a specialty examination, an application to become a individual professional will automatically be sent to you with the letter explaining the results of your examination. A form documenting your experience must also be submitted as part of this application. Certification applications and Experience documentation forms are also available by calling the ISTS Certification & Licensing Coordinator at (800) 657-3659.

Licensing Exemptions

From Chapter 7080.0700, Subp. 1, a license is not required for:

a. an individual who is a qualified employee performing work as directed by a state or local government employer;
b. an individual who, after obtaining a signed site evaluation and design report from a licensed design business, constructs an ISTS to serve a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual. Any assistance provided to the system owner in construction of a system under this item must be performed by a licensed installation business; an individual who performs labor or services as an employee of a licensed SSTS business;
c. an individual who performs supervised labor or services as an employee of a licensed SSTS business;
d. a farmer who pumps septage from an ISTS that serves dwellings or other establishments that are owned or leased by the farmer and applies septage on land that is owned or leased by the farmer;
e. a property owner who personally gathers existing information, evaluates, and investigates an ISTS to provide a disclosure, for a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual;
f. an individual or business who abandons a SSTS;
g. an individual who maintains a toilet waste treatment device* for a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual; or
h. an individual who performs tasks identified in the system’s management plan that do not require a maintainer or service provider license for a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual;

i. an individual or business owned by a tribal member with work conducted within the tribal reservation boundary;

j. the owner or designee of a campground or other similar facility who removes and transports sewage wastes from recreational vehicles into a holding or treatment system located on the same property as the facility.

* According to MN Rules Chapter 7080.1100, Subp. 86, Toilet waste treatment devices are defined as other toilet waste apparatuses including incinerating, composting, biological, chemical, recirculating, or holding toilets or portable restrooms.

Types of certification and corresponding responsibilities

There are five types of certification and licenses that a company can obtain from the MPCA:

Maintainer—(classified as Pumper prior to 2008) A DCI maintainer must have the knowledge and ability to measure scum and sludge depths for the accumulation of solids and remove these deposits; maintain toilet waste treatment devices; store and haul septage; dispose properly of septage by land application or disposal in a publicly owned treatment works; identify problems related to sewage tanks, baffles, maintenance hole covers, and extensions, and make repairs as necessary; evaluate sewage tanks, pump tanks, distribution devices, valve boxes and drop boxes for leakage; identify cesspools, seepage pits, leaching pits, and drywells; and clean supply pipes and distribution pipes. From MN Rules Chapter 7080.0770 Maintenance licensees must:

a. record pump-out date, gallons removed, any tank leakage below or above the operating depth, the access point used to remove the septage, the method of disposal, the reason for pumping, any safety concerns with the maintenance hole cover, and any troubleshooting or repairs conducted. This information must be submitted to the homeowner within 30 days after the maintenance work is performed. Maintenance business pumping record information must be maintained by the business for a period of five years;

b. observe and provide written reports of any noncompliance to the system owner within 30 days; and

c. obtain a signed statement if the owner refuses to allow the removal of solids and liquids through the maintenance hole.

Service Provider – In 2008, the Service Provider certification was created. A DCI service providers must have the knowledge and ability to assess the operational status and system performance by sampling, measuring, and observing in compliance with the management plan or operating permit; preserve, store, and ship samples for analysis and interpret sampling results; adjust, repair, or replace components to bring the system into proper operational compliance; assess the operational status of sewage collection systems and adjust, repair, or replace components to bring the system into proper operational status; complete and submit any necessary reporting to the system owner and the LGU; measure scum and sludge depths for the accumulation of solids; make observations if non-domestic wastes may have been discharged into the system; identify problems related to sewage tanks; and assess the condition of baffles, effluent screens, maintenance hole covers, and extensions.
Responsibilities

From MN Rules Chapter 7083.0780, Subp. 2, service provider licensees must: (A) report sampling results, operational observations, system adjustments, and other management activities in compliance with local ordinances, management plans, or operating permit requirements; and; (B) observe and provide written reports of any noncompliance to the system owner and the LGU within 30 days.

Installer – A DCI installer must have the knowledge and ability to construct, install, alter, extend, or maintain SSTSs; ensure all work is done in accordance with a written design report; notify the LGU with jurisdiction to ensure inspections are conducted for new construction or replacement; ensure site conditions allow for construction; provide evidence to verify compliance with applicable requirements; maintain quality control/quality assurance records; identify problems related to SSTSs and make repairs; provide upgrade, repair, and replacement advice; and maintain and submit to the LGU as-builts of all work sign off by a certified individual. The Certified installer must be onsite to determine, supervise and verify:

a. the system layout and placement;
b. that site conditions allow for construction;
c. the soil moisture conditions for excavation;
d. the elevations of sewage tanks and soil treatment system;
e. the quality of tanks and suitability of other materials;
f. solutions to problems encountered and
g. upgrade and repair advice.

Responsibilities

From MN Rules Chapter 7083.0760, Subp. 2, installation licensees must (A) ensure all work is done according to a design report approved by the local SSTS authority under part 7082.0500 and the plumbing program administrative authority as required under part 1300.0215, subpart 6; (B) provide adequate notice to the local unit of government and the plumbing program administrative authority when work requires inspection; (C) ensure that all work is done according to applicable storm water regulations and the Minnesota Plumbing Code; (D) provide as-built drawings to the owner and local unit of government within 30 days of system installation; (E) maintain quality control and quality assurance records for five years; (F) provide system owners with information concerning system operation and maintenance; (G) follow recommended standards and guidance documents for registered products and check the quality of materials used; (H) negotiate with the system owner and jointly determine who will be responsible for seeding, erosion and frost protection, watering, and other vegetation establishment activities; and; (I) pay the septic system tank fee and submit the form according to Minnesota Statutes, section 115.551, including notification if no tanks were installed during the reporting year. The form and payment are due to the commissioner by January 31 for the previous year’s installations.

Authorization

From MN Rules Chapter 7083.0760 a licensed installation business is authorized to construct, install, alter, extend, maintain, or repair all SSTS and the building sewer connected to a subsurface sewage treatment system only according to an approved design.
Designer

1. Basic Designer—must have the knowledge and ability to design Type I-III ISTS up to 2,500 gpd, conduct site and soil evaluations, design all system components (including the building sewer connected to an SSTS) and write management plans for SSTS serving dwellings or other establishments. A Basic Designer must also have knowledge to inform the proposed system owner of the system classification, estimated costs for construction, operation, monitoring, service, component replacement, management, and anticipated system life.

2. Intermediate Designer - in addition to responsibilities of a Basic Designer, may conduct site and soil evaluations, design systems, and write management plans for a Type IV-V* ISTS as described under parts 7080.2350 to 7080.2400 serving dwellings or other establishments with a design flow of 2,500 gallons per day or less.

3. Advanced Designer - in addition to the responsibilities of a Basic Designer and Intermediate Designer, may conduct site and soil evaluations, design systems, and write management plans for all types and sizes of SSTS.

Responsibilities

From MN Rules Chapter 7083.0740, Subp. 2 all design licensees must (A) inform the proposed system owner of the type classification of the system under parts 7080.2200 to 7080.2400; (B) provide written reasonable assurance of system performance to the LGU; but not limited to 1. adherence to system type requirements; or 2. technical basis for design elements for Type II to Type V systems; (C) prepare detailed design sheets, drawings, calculations, materials, system layout, and elevations; and; (D) prior to installation, submit plans and specifications for the building sewer connected to a SSTS for approval as required by part 1300.0215, subpart 6. From the same Rule, subpart 3 states that; certified designers must conduct the soil descriptions and review other site evaluations and designs by noncertified employees. This review includes both verification of field observations and conclusions and design assumptions and calculations.

Inspector

1. Basic—must have the knowledge and ability to assess site evaluations; evaluate designs; evaluate installlations, pumping and septage disposal activities; conduct compliance inspections and permitting activities; issue written certificates of compliance and notices of noncompliance; and issue and maintain inspection reports on Type I-III ISTS for up to 2,500 gpd. Each inspector from a company performing inspections must be certified.

2. Intermediate Inspector - in addition to responsibilities of a Basic Inspector, may conduct permitting and compliance management activities, compliance inspections and issue written certificates of compliance and notices of noncompliance for an existing Type IV-V ISTS as described under parts 7080.2350 to 7080.2400 serving dwellings or other establishments with a design flow of 2,500 gallons per day or less.

3. Advanced Inspector - in addition to the responsibilities of a Basic Inspector and Intermediate Inspector, may conduct permitting and compliance management activities, compliance inspections and issue written certificates of compliance and notices of noncompliance for all types and sizes of SSTS.
Responsibilities

From MN Rules Chapter 7083.0750, an inspection business is authorized to conduct compliance inspections and issue written certificates of noncompliance for an existing ISTS. It is allowed to install a new system for a property in which the business has conducted an existing ISTS compliance inspection, provided the business holds the appropriate licenses. A local unit of government is allowed to authorize a licensed inspection business to review and approve site evaluations and designs, inspect new construction and replacement systems, verify the submittal of management plans, and issue written certificates of compliance and notices of noncompliance for systems.

According to MN Rules Chapter 7083.0750, Subp. 3, certified inspectors are responsible for personally conducting the necessary procedures to assess system compliance. Certified inspectors must complete and sign the agency’s existing system inspection form. Certified inspectors may permit, inspect, or permit and inspect a building sewer connected to a subsurface sewage treatment system for compliance with the Minnesota Plumbing Code when:

A. the installation is not subject to the requirement of part 1300.0215, subpart 6, and no other approval is required by the plumbing program administrative authority; or

B. authorized by the appropriate plumbing program administrative authority.

“Public program administrative authority” means the commissioner of labor and industry or the governing body of the adopting unit of government, its agents, and its employees according to the Minnesota Plumbing Code, part 4714 (MN Rules Chapter 7080.1100, Subp. 60).

Training

To fulfill the training requirement for one or more of the specialty areas, an individual must successfully complete:

1. course work that covers basic knowledge of SSTSs and soil treatment theory; design and construction fundamentals; and state licensing requirements, standards, and criteria for systems described in Chapter 7080; and

2. course work that provides the knowledge and skills necessary to fulfill the responsibilities appropriate for each specialty area.

Training that fulfills the certification requirements must be accredited by the MPCA. The University of Minnesota’s OSTP offers a complete series of accredited SSTS workshops. For more information about these courses, visit our website at septic.umn.edu/events or call (800) 322-8642.

Continuing education

Continuing education is required to maintain certification. Examinations that qualify for certification expire if continuing education requirements are not met. If your qualifying exams expire, you must complete and submit a Conditional Certification Application and agree to complete the missing number of continuing education hours re-take up to two expired exams within a one-year timeframe.

Certified individuals must complete twelve hours of continuing education training related to SSTS every three years. At least six hours must be directly related to the administration and technical parts of Chapters 7080-7083. In addition, Designers and Inspectors must take six hours of additional continuing education with a field component.
regarding soils. Continuing education hours earned in excess of these requirements cannot be carried over to meet the requirements for future certification periods. The continuing education requirement is not increased for multiple specialty area endorsements.

Those offering continuing education workshops must have the training accredited through the MPCA.

**Exam**

The examinations are based on Minnesota Rule Chapter 7080-7083 and the skill, knowledge, and education that a person must have to perform the duties and responsibilities for each specialty area. A score of 70% or better is required to pass the exam. You must also score 70% or better on the critical field portion of the Soils Exam.

An individual who fails an examination is ineligible to retake the same examination for six months unless the person has repeated the workshop in the subject matter covered by the failed examination. Official documentation of this training must be provided at the time the examination is retaken. Training hours used to fulfill this reexamination requirement may not be used to fulfill continuing education requirements. Failure to pass the examination in a specialty area or the Basic examination does not prevent the individual from taking an examination for a different specialty area.

**Experience**

In order to gain experience, one must have an approved experience plan (as a worker or restricted license) with a mentor. The Mentor must either be fully certified in the same discipline or be an Inspector and have had no enforcement convictions within the past five years. The Mentor must be on site and co-complete the work.

This experience can be gained by working for a company already licensed, with a restricted license of your own, through a field work training program, or other methods approved by the MPCA. The experience necessary for each level of certification is as follows:

**Designer Experience** –

i. 15 system designs of Type I-III systems with design flows less than 2,500 gpd. with at least one above ground, and one below-ground system

ii. observe five installations and five service or operational instances (mentorship not required)

iii. no additional experience needed for the Intermediate or Advanced designer certification

**Installer Experience** –

i. 15 systems installations of Basic, Advanced, or MSTS systems with at least one above-ground and one below-ground system

ii. observe five service or operational instances (no mentorship needed)

**Inspector Experience** –

i. 15 system inspections of Type I-III systems with flows less than 2,500 gpd. with at least one above ground, and one below-ground system

ii. observe five soil evaluations, system designs, and management plans being developed; five system installations; and five service or operational instances (mentorship not required)

iii. no additional experience is required for an Intermediate or Advanced Inspector systems
Maintainer Experience – 15 system maintenance visits of Basic, Advanced or MSTS systems
At this time, Service Provider certification does not have an experience requirement.
The full list of 15 must be submitted along with all the documents from five jobs – all
7080 documents, experience plans, and all local approvals.

Other Minnesota Regulatory Bodies

Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design

The Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (AELSLAGID) examines, licenses, and regulates the practice of architecture, professional engineering, land surveying, landscape architecture, geoscience, and use of title for certified interior design. There are professional engineers, soil scientists, and geologists involved with the design of SSTS systems who are licensed by this board. For more information, visit their website (mn.gov/aelslagid) or reach them by phone at 651.296.2388.

Board of Water and Soil Resources

The Minnesota Board of Water and Soil Resources (BWSR) is the state's administrative agency for 90 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers. The agency's purpose, working through local government, is to protect and enhance the state's irreplaceable soil and water resources by implementing the state's soil and water conservation policy, comprehensive local water management, and the Wetland Conservation Act as it relates to the 41.7 million acres of private land in Minnesota. In reference to SSTSs, BWSR administers the wetland conservation act. (M.S. 103G and MN Rules Chapter 8420) and links water resource planning with comprehensive land use planning. SSTS professionals must understand and follow state rules and laws that outline impacts to a wetland, including the design and installation of SSTS. For more information see www.bwsr.state.mn.us or call (651) 296-3767.

Department of Health

The Minnesota Department of Health (MDH) is responsible for administering Minnesota Rules Chapter 4720 (https://revisor.mn.gov) through their Drinking Water Protection Section and Chapter 4725 through their Well Management Section. Chapter 4725 establishes the setbacks or isolation distances between wells and SSTSs, regulates the location, construction and sealing of water supply wells, dewatering wells, environmental wells, bored geothermal heat exchangers and elevator borings, and establishes specific requirements for well variances. Chapter 4720 establishes the public water supply rules, including rules for source water protection. Chapter 4717 contains the general Health Department variance rules. Food, beverage, and lodging establishments are regulated under Minnesota Statutes, Chapter 157, and Minnesota Rules, Chapter
4626, the “Food Code”. The MDH may delegate portions of the well inspection, permitting, and regulatory program to local Boards of Health. At the present time, two cities (Bloomington and Minneapolis) and eight counties (Blue Earth, Dakota, Goodhue, LeSueur, Olmsted, Wabasha, Waseca, and Winona) administer the well program.

**Existing Conditions – Wells and SSTS**
The MDH regulates the construction, repair, and sealing of wells and borings in Minnesota through Minnesota Statutes, Chapter 103I and Minnesota Rules, Chapter 4725 (Well Code). Minnesota Rules, Chapter 4725 was amended effective August 4, 2008.

**Isolation Distances**
An important provision of the Well Code is the proper separation between wells and sources of contamination. The setbacks or “Isolation Distances” apply to all “water supply” wells, including drinking water wells, and wells used for irrigation or industrial supply. The setbacks also apply to abandoned but unsealed wells, and to drivepoints. The setbacks apply to the installation of a new contamination source such as a buried septic tank, absorption area or sewer, and the replacement of an existing septic tank, absorption area or buried sewer. See Table 2.5 (next page). These setbacks or “isolation” distances are measured horizontally from the closest part of the well to the closest part of the contamination source. These isolation distances must be maintained between a water supply well and a contamination source no longer in use unless all contaminants have been removed and visibly contaminated soil has been removed.

**Sewers**
The MDH has authority for wells, and establishes the setback requirements between wells and sewers, whereas the Department of Labor and Industry manages and enforces rules pertaining to plumbing systems. For information on requirements for construction and maintenance sewer and plumbing related components see the Department of Labor and Industry section of this manual.

**Sumps, Lift Stations, Grinder Pumps**
The well code requires a 50-foot setback to a non-watertight sewage sump, and a 20-foot setback to a watertight sewage sump. In order to qualify for the 20-foot distance, a sump must be less than 100 gallons, be successfully air-tested or manometer tested, and meet the material and cover requirements of the Plumbing Code.

**Setbacks to Sensitive Wells**
The rules require that the setback between a contamination source that directly enters the soil, like a drainfield, is doubled from a water supply well more sensitive to contamination, specifically, a well that does not have 50 feet of watertight casing, and that does not have a casing that penetrates ten feet of a confining layer or confining materials. A confining layer is sediment or rock that has a vertical hydraulic conductivity of $10^6$ cm/sec or less, and includes clay, sandy clay, or silty clay. The MDH will accept multiple layers each less than 10 feet thick that added together total more than 10 feet. The setback to a “sealed” contamination source, such as a watertight septic tank, is not doubled. While many of these “sensitive” wells are shallow, it is a misnomer that this requirement only applies to shallow wells, In fact, the term “shallow well” is not used in the well code.
### TABLE 2.5 Well Setbacks

**Related Isolation Distances from Water Supply Well**  
**Minnesota Department of Health Chapter 4725, 2008**

This list of isolation distances is summarized from Minnesota Rules, Chapter 4725. For complete regulations, consult these rules and Minnesota Statutes, Chapter 1031. Additional information and explanation can be obtained by consulting the Rules Handbook: A Guide to Rules Relating to Wells and Borings, or by contacting the Well Management Section, Minnesota Department of Health: www.health.state.mn.us/divs/eh/wells

<table>
<thead>
<tr>
<th>Setback (feet)</th>
<th>Item</th>
</tr>
</thead>
</table>
| 300<sup>1</sup> | • Absorption area with design of a SSTS flow greater than 10,000 gpd  
• Wastewater stabilization pond, municipal, 500 or more gallons/acre/day of leakage |
| 150<sup>1</sup> | • Absorption area of a SSTS serving a hospital, nursing home, mortuary, veterinary clinic, health care clinic, or similar facility with infectious or pathological wastes  
• Waste water stabilization pond, municipal or industrial, less than 500 gallons/acre/day of leakage |
| 75<sup>2</sup> | • Cesspool  
• Dry Well (sewage)  
• Leaching or Seepage Pit |
| 50<sup>2</sup> | • Absorption area of a SSTS with design flows less than or equal to 10,000 gpd not serving a facility with a larger setback (hospital, nursing home, etc.)  
• Interceptor  
• Soil treatment area  
• Septic tank, sewage pump tank  
• Sewage sump unless the sump meets the criteria for the 20-foot isolation distance, watertight sewage treatment device, watertight sewage holding tank  
• Buried sewer unless the sewer meets the criteria for the 20-foot isolation distance  
• Watertight sand filter, peat filter, or constructed wetland  
• Sewage, septage, or sludge land spreading area  
• Disposal area for water treatment backwash  
• Gray-water dispersal area  
• Unused, unsealed well or boring |
| 20<sup>3</sup> | • Sewage sump which meets the Plumbing Code standards with a capacity of less than 100 gallons  
• Tested, approved material, buried sewer serving one building or two single family homes, except for a collector or municipal sewer or a sewer serving a hospital, nursing home, or similar facility with infectious or pathological wastes  
• Storm water drain pipe eight inches or larger in diameter  
• Gravel pocket or French drain for clear water drainage  
• Portable privy or toilet  
• Pit |

<table>
<thead>
<tr>
<th>Setback (feet)</th>
<th>Additional Isolation Distances for Community Water Supply Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>20&lt;sup&gt;4&lt;/sup&gt;</td>
<td>• Gravel pocket receiving clear water drainage</td>
</tr>
<tr>
<td>50&lt;sup&gt;5&lt;/sup&gt;</td>
<td>• Minimum distance from any contamination source, except as specified elsewhere in this table</td>
</tr>
</tbody>
</table>

<sup>1</sup> A water supply well with less than 50 feet of watertight casing, or which is not cased below a confining layer of at least 10 feet of thickness, must be located at least twice the indicated distance.

<sup>2</sup> A community public water supply well must be a minimum of 50 feet away from any contamination source. The 20-foot contamination distances (sewer, pit, storm water drain pipe, etc.) are increased to 50 feet for community water supply wells.
**Water Supply Pipes**

The well rules do not require any setback between a contamination source and a water supply pipe, pressure pipe or suction pipe. On the other hand, the plumbing code does not allow the installation of a new water service line within 10 feet horizontally of a contamination source (see Minnesota Rules, part 4715.1710, Subp. 3). However, the plumbing code does allow for an existing building sewer or water supply pipe to be replaced, provided that both pipes are pressure tested if they are within ten feet of each other. The plumbing code does specify the pipe material required when either pipe is replaced.

**Abandoned Wells and Abandoned SSTSSs**

The setbacks do not need to be maintained between a new SSTSS and a well sealed (abandoned) by a licensed well contractor in accordance with the sealing rules. For example, it would be allowable to place a drainfield next to a properly sealed well; however, it is recommended that a setback be maintained if possible.

MDH’s rules require that a contamination source, including an abandoned contamination source, requires a setback distance from a water supply well (unless the well is properly sealed) until contaminants are gone. A leaky sewage tank, cesspool, or privy that is abandoned in accordance with 7080, or a drainfield or septage disposal area, still has a setback, unless the “contaminated” soil is removed. MDH gages “contamination” simply by visual inspection. A watertight sewage tank, watertight holding tank, or other sealed source that is pumped and abandoned in accordance with Chapter 7080 has no distance requirement. Once a sewer is disconnected from the waste system (and doesn’t have sewage), there is no setback.

**System Compliance**

The MDH has a strong working relationship with LGUs related to the proper location of new wells and SSTSSs. However, with the new SSTSS requirements, the MDH has received numerous inquiries regarding the compliance status of existing wells and existing SSTSSs. The determination of compliance on water well/SSTSS setbacks varies according to the date of installation of the well and the SSTSS. The three time periods are: before July 1, 1974; from July 1, 1974 to June 31, 1989; and from July 1, 1989 to the present.

**Before July 1, 1974**

There was no statewide regulation of wells prior to July 1, 1974. A few counties and other LGUs regulated well construction during this time through local ordinances. For wells or SSTSSs installed before July 1, 1974, the MDH has no authority to compel any corrective actions for installations that do not meet current Well Code requirements unless the installation is a public health nuisance.

**July 1, 1974 to June 31, 1989**

The MDH regulatory program began on July 1, 1974 with the implementation of the first well code. The well code contained detailed construction standards for newly constructed wells, including minimum isolation distances to be maintained between wells to be constructed and various sources of contamination. Although rules clearly specified the proper placement of a well in relation to various existing sources of contamination, they failed to prohibit the placement of contaminant sources closer to existing wells than the distances specified in the well code. For wells constructed after July 1, 1974, the MDH does have regulatory authority to require correction of Well Code violations. For SSTSSs
installed too close to existing wells, the MDH has no regulatory authority to require corrective actions for systems installed prior to July 1, 1989, unless the installation or conditions constitute a public health nuisance and is ordered corrected by the commissioner of health.

**July 1, 1989 to present**
The Groundwater Protection Act became effective on July 1, 1989, and included a requirement prohibiting the placement of contaminant sources any closer to an existing well than the distances prescribed in the Well Code. The MDH places a high priority on inspecting wells constructed during this period. Enforcement actions are taken if wells do not comply with Well Code requirements. The MDH will initiate enforcement actions against any person responsible for the improper placement of a SSTS or other contamination source too close to an existing well. The MDH has the authority to compel the party responsible for the violation to make the appropriate corrective action necessary to remedy the violation, which generally involves moving the contamination source or the well. Any party determined to be responsible for violations may also be subject to additional enforcement actions by the MDH.

Regardless of the date of construction of the well, the MDH does have the statutory authority to order a property owner to repair or seal a well if it is determined that the well:

- Is an intermittent threat to public health or safety (ITPHS)
- Is contaminated or may lead to the spread of contamination
- Was improperly sealed
- Is located, constructed, or maintained in a matter such that its continued use or existence endangers groundwater quality or is a safety or health hazard

Local community health boards also have broad statutory authority to control public health nuisances under Minnesota Statutes, section 145A. A publication entitled “Controlling Public Health Nuisances: A Guide for Community Health Boards” is available from the MDH.

**Environmental Wells**
As of July 1, 2017, new legislation combines monitoring wells, environmental bore holes, and remedial wells into a single category called an environmental well. Any boring or well 15 or more feet deep used for remediation, water sampling, water level monitoring, or testing or measuring water or earth properties, regardless of whether or not a confining layer or water is encountered, is an environmental well. This includes monitoring wells, remedial wells, geotechnical borings, test holes, piezometers, vapor recovery wells, and others. An environmental well must be constructed by either a licensed well contractor or a licensed environmental well contractor (formerly known as a monitoring well contractor).

**Variances from the Well Code**
For new installations where provisions of the Well Code cannot be met, the MDH may consider a variance from the Well Code. Variances are carefully considered by the MDH. Before any isolation distance requirement is reduced through a variance, the MDH must confirm that additional protections are or will be in place that safeguard the water supply well from potential contamination. These protections may consist of additional casing depth, additional grouting requirements, documentation of the
presence of a low-permeability confining layer between the aquifer and the ground surface, additional testing or protections placed on the contaminant source such as containment, or additional testing of materials. Where these protections are not present, or cannot be provided, a variance from the Well Code is inappropriate. Approximately 150 variances are issued by the MDH each year to well contractors, SSTS installers, and others affected by MDH rules. A variance can only be issued by the MDH, or the MDH and a county or city with a delegated well program. Variances can not be granted after an installation has been made. The MDH recommends contacting the nearest MDH district office before submitting the variance application and fee.

For more information on wells and source water protection, contact a MDH office or visit MDH’s web site at health.state.mn.us, search MDH Source Water - or call (651) 201-5000 or (888) 345-0823.

**Source Water Protection**

There are two primary parts of the Department of Health's Source Water Protection Program:

- **Wellhead Protection**
- **Source Water Assessments**

**Wellhead Protection**

*Note: The following information was provided by the MDH’s, Source Water Protection Unit*

1. **What is wellhead protection?**

   Wellhead protection is a method of preventing contamination of a public water supply well by managing potential contaminant sources in the area which contributes water to a public water supply well.

2. **What authority does the Minnesota Department of Health have to implement wellhead protection?**

   The department is granted authority under Minnesota Statutes, Section 103I, subdivision 5, and Minnesota Rules, parts 4720.5100 to 4720.5590. The statutory authority was granted in 1989 and the rules governing wellhead protection were adopted in November of 1997.

3. **What is the benefit of wellhead protection?**

   A very clear benefit of wellhead protection is the emphasis on the prevention of drinking water contamination versus the remediation of a contaminated drinking water supply. The cost of prevention is less than the cost of remediation. First and foremost to remediation, it also protects public health.

4. **Does this rule affect private wells?**

   No. It only affects public water supply wells.

5. **What is the definition of a public water supply well?**

   A public water supply well provides drinking water for human use to 15 or more service connections or to 25 or more persons for at least 60 days a year. A public water supply well is further defined as either a community or non-community water supply well.

   a. A **community water supply well** serves 15 or more service connections used by year-round residents or at least 25 year-round residents. Examples include
municipalities such as cities, and non-municipal systems such as subdivisions, nursing homes, and institutional facilities.

b. **Non-community water supply wells** are divided into two groups:

> A **non-transient** non-community supply well serves at least 25 of the same people over six months of the year. Examples include schools, factories, and hospitals.

> A **transient** non-community well serves all other public water systems. Examples include restaurants, gas stations, churches, parks, and campgrounds.

6. **Is this voluntary?**

No. All public water suppliers are required to implement wellhead protection measures as specified in Minnesota Rule 4720.

7. **What is required of public water suppliers as a regulated group?**

All public water suppliers are required to manage an inner-wellhead management zone, a 200-foot radius surrounding a public water supply, by:

- maintaining the isolation distances for newly installed potential sources of contamination defined in the state Well Code (Minnesota Rules, Chapter 4725),
- monitoring existing potential sources of contamination that do not comply with the isolation distances defined in the state Well Code, and
- implementing wellhead protection measures for potential contaminant sources in the inner-wellhead management zone.

In addition to the inner-wellhead management zone requirements, owners and operators of community and Nonmunicipal Public water supplies must prepare a wellhead protection plan which includes:

- a map showing the boundaries of the delineated wellhead protection area using the five criteria specified in the rule,
- a vulnerability assessment of the well and the wellhead protection area,
- an inventory of potential sources of contamination within the wellhead protection area based on the vulnerability assessment,
- a plan to manage and monitor existing and proposed potential sources of contamination, and
- a contingency strategy for an alternate water supply should the water supply be disrupted by contamination or mechanical failure.

8. **Does a public water supplier have to own all the property within the inner-wellhead management zone (200-foot radius of a public water supply well)?**

No. There is no requirement that a public water supplier own the property within the 200-foot radius which forms the inner-wellhead management zone.

9. **Must contaminant source control measures be implemented before a wellhead protection plan is submitted to the department for approval?**

Implementation of potential contaminant sources is done after they have been identified in the WHP plan or the Inner Well Management Zone (IWMZ) inventory. The measures are not implemented until the potential sources have been identified.

10. **How much time is allowed to prepare a wellhead protection plan?**

The minimum time is two years after entering the wellhead protection program.
Additional six-month blocks of time are automatically awarded on a cumulative basis when:

- a system has multiple wells,
- there is a lack of state and federal funding to support wellhead protection planning,
- public water supply systems are privately owned,
- the wellhead protection area is in two or more governmental jurisdictions, or
- pumping of a well in another system affects the boundaries of the wellhead protection area.

11. When does a public water supplier need to begin preparing a wellhead protection plan?

In most cases, a public water supplier must begin preparing a wellhead protection plan when notified by the Minnesota Department of Health. The Minnesota Department of Health has developed a phasing list that helps determine the order in which public water suppliers will be brought into the program. Community and Nonmunicipal Public water suppliers will be phased into the wellhead protection program as time and resources permit. Vulnerable wells have high priority. This phasing criterion includes water chemistry data, well construction information, and geological data. For more information related to the phasing criteria, please contact the Source Water Protection Unit at MDH.

12. What support will the Minnesota Department of Health provide public water suppliers preparing a wellhead protection plan?

The Minnesota Department of Health is committed to providing technical support in the form of staff resources, training, guidance documents, and forms. Two staff members, a planner and hydrologist, will be assigned to each public water supplier at the time they enter the program. The level of support will vary depending on criteria such as the: staff and financial resources of the public water supply, governmental authority of the public water supplier, existing pumping test information, vulnerability of the geological setting, and level of support from LGUs and other organizations like the American Water Works Association and Minnesota Rural Water Association. For public water supplies serving up to 3,300 people, the Minnesota Department of Health can provide technical services to aid completion of portions of the wellhead protection plan such as:

- delineation of the wellhead protection area,
- vulnerability assessment, and
- management plan.

Further details of this support will be presented to public water suppliers as they are phased into the wellhead protection program. Public water suppliers entering the program will be provided more detailed information on such topics as:

- delineating wellhead protection areas,
- assessing vulnerability,
- inventorying potential sources of contamination,
- communicating with LGUs,
reviewing and approving of wellhead protection plans by the Minnesota Department of Health,

- updating wellhead protection plans, and
- implementing wellhead protection plans.

**Source Water Assessments**

Source Water Assessments are reports that provide a concise description of the groundwater well or surface water source—such as lakes, and rivers—used by a public water system and discuss how susceptible that source may be to contamination.

The 1996 amendments to the federal Safe Drinking Water Act require states to produce source water assessments for all their public water systems and to make the results of those assessments available to the public. Assessments are now available to the public on MDH’s source water protection web page. The types of facilities for which assessments have been completed range from small businesses on their own well to large city water systems using several different water sources.

Assessments are available to the public on MDH’s source water assessment web page. You can search for an assessment either by name of the facility or by county.

**Department of Labor and Industry**

**Plumbing Code**

The Minnesota Department of Labor and Industry (DLI), through the Construction Codes and Licensing Division, has primary enforcement responsibility for the protection of public health through regulation of the installation of plumbing systems in accordance with the Minnesota Plumbing Code (Minnesota Rules, Chapter 4714). The plumbing code applies to installation of all interior plumbing, building sewer and building water service connections within the property line, and storm water drainage systems.

The DLI does not review SSTS. The line between plumbing and SSTS can sometimes be confusing. As defined in the Minnesota Plumbing Code in Minnesota Rule, Chapter 4714, Section 204.0 and MN Rules Chapter 7080.1100, Subp 11a, “Building sewer” means that part of the horizontal piping of a drainage system that extends from the end of the building drain and that receives the discharge of the building drain and conveys it to the public sewer, private sewer, private sewage disposal system, or other point of disposal. MN Rules Chapter 7080.1100 defines the “building sewer connected to an SSTS” as a component of the SSTS, which means that these sewers are co-defined as both plumbing and SSTS. This means that building sewers connected to SSTS are subject to plumbing program and SSTS program requirements. By national definition, a sewer is a pipe or conduit carrying sewage, or a conduit into which sewage can back up. Sewers include gravity and pressure sewers; drain, waste, and vent piping; pipes carrying grey water; and pipes serving floor drains that are connected to the drain, waste, and vent system. The setbacks apply to all new work, including all portions of an existing sewer that are removed and replaced. The setbacks do not apply to above-ground sewers, including sewers above grade in a crawl space. The standard setback between a water-supply well and a sewer is 50 feet. See Table 2.5 for a complete list of isolation distances from water supply wells and SSTS. A buried sewer serving one building, or two or less single-family residences, that is not a collector or municipal sewer or does not serve a facility handling infectious or
SECTION 2: Administration

pathological wastes, may be installed between 20 and 50 feet from a water supply well if all of the following conditions are met:

1. The well is not a community public supply well, meaning the well does not serve more than 15 living units or 25 year-round residents such as a city, mobile home park, apartment building, or extended health care facility.

2. The sewer is constructed of cast iron or plastic pipe approved for use as a building sewer by the Minnesota Plumbing Code in Minnesota Rules Chapter 4714, administered by the Minnesota Department of Labor and Industry (see DLI for more information). It should be noted that HDPE pipe, commonly used for pressure sewers, is not an approved plumbing code material and therefore does not qualify for the reduced setback.

3. The sewer has been successfully air tested at a uniform pressure of five pounds per square inch for 15 minutes without leakage, in accordance with the Minnesota Plumbing Code (see DLI for more information). The air test must be done by an individual who is a licensed plumber/certified pipelayer having the appropriate code compliance bond or by the property owner and witnessed by an appropriate regulatory official. Designated certified SSTS installers are all validated as pipelayers during their SSTS certification process and may conduct this testing. A written report of the test must be submitted to the MDH or kept on file. The pressure testing form can be found at septic.umn.edu/ssts-professionals/forms-worksheets.

If the waterline and building sewer are placed in the same trench the sewer pipe must be installed at least 12 inches below the waterline as shown in Figure 2.10.

The plumbing code restricts joints in water or sewer pipes for 10 feet in any direction from a crossover of the two lines as shown in

FIGURE 2.9 Pressure Testing Requirements
*Sewer lines must be pressure tested if they are within 50′ of a water supply well and cannot be placed closer than 20′ (See MN Rules Chapter 4725 for complete details)

FIGURE 2.10 Water and Sewer Excavation

*Water line and building sewer must be pressure tested

If the waterline and building sewer are placed in the same trench the sewer pipe must be installed at least 12 inches below the waterline as shown in Figure 2.10.
SECTION 2: Administration

Figure 2.11. Water and Sewer Cross Over Specifications. The setbacks for sewers relating to wells are covered under the Minnesota Department of Health section.

A reminder to all SSTS professionals that the plumbing code has been in effect statewide since 2007. All building sewers are considered plumbing and must meet the conditions of the plumbing code.

1. SSTS designers must submit building sewer plans to the DLI when designing SSTS for all other establishments with five or more units. This application includes plan submittal instructions. Unless defined as a "state building project", all SSTS in plumbing code-enforced areas are subject to local plumbing program plan approval and inspection requirements. Use this tool to find local plumbing code jurisdictions.

2. SSTS installers must hold a current pipelayer certification or individual plumbing license and work for an appropriately licensed business when installing building sewers. Installers must provide adequate notice to the local septic system program AND appropriate plumbing program representative when work requires inspection. Designated certified SSTS Installers are all validated as pipelayers during their SSTS certification process and may conduct this testing.

3. SSTS inspectors may permit and/or inspect building sewers connected to septic systems for compliance with the Minnesota Plumbing Code when a plumbing inspection is not required or the inspector has prior permission from the local or state plumbing program with jurisdiction.

The Minnesota Plumbing Code covers plumbing systems inside buildings and also the privately owned water, sanitary sewer, and storm sewer lines inside the property lines or to the point of disposal, whichever comes first. The point of disposal can be either a SSTS or collector sewer line permitted by MPCA.

The plumbing code applies statewide to all new plumbing installations, including additions, extensions, alterations, and replacements connected to a water or sewage disposal system owned or operated by or for a municipality, institution, factory, office building, hotel, apartment building, or other place of business regardless of location or the population of the city or town in which it is located.

All plumbing installations must comply with the Minnesota Plumbing Code (Code). For more information, please visit the Minnesota Department of Labor and Industry website at www.dli.mn.gov/CCLD/Plumbing.asp

The DLI also licenses plumbing and water conditioning professionals, registers plumbing code compliance bonds, and reviews courses for pipelayer certification. The DLI carries out these responsibilities through a variety of compliance activities, including: engineering plan review and inspection of water distribution and building drain and sewer systems construction; plumbing and water conditioning licensing and bond administration activities; training; technical assistance; and public outreach.

More information is available at the DLI website at www.dli.mn.gov/CCLD/Plumbing.asp or by calling (651) 284-5067 or (800) 657-3944.

Occupational Safety and Health

The DLI through the Occupational Safety and Health Administration (OSHA), has responsibility to enforce the federal OSHA rules and works to assure that every worker in the state has a safe and healthful workplace by helping Minnesotans improve workplace safety and health. MNOSHA is involved with SSTS particularly in the areas of
trench/excavation safety and competent person requirements. Services provided by MNOSHA include outreach, consultation, and enforcement efforts. For more information, visit OSHA’s website at http://www.dli.mn.gov/MnOsha.asp or call (651) 284-5050 or 1-800-DIAL-DLI (800-342-5354).

**Boilers Operator License**

The DLI also licenses those who operate boilers and install high pressure piping. Depending on the type of equipment used, those steaming out frozen SSTS may need a boiler license. For more information, visit their website at http://www.dli.mn.gov/CCLD/Boiler.asp or call (651) 284-5544 or 1-800-DIAL-DLI (800-342-5354).

**Department of Natural Resources**

The 1969 Shoreland Management Act required counties to adopt land use controls for their unincorporated shorelands bordering lakes and streams, and directed the Department of Natural Resources to establish statewide standards for the counties to follow. In addition to lot size, setback and other requirements, the standards required sewage treatment system setbacks from lakes and rivers. The current 1989 statewide shoreland management standards apply to both counties (unincorporated land) and municipalities (incorporated land). Septic system setbacks based on shoreland classifications are found in Minnesota Rules, Chapter 6120.3400, Subp. 3c (www.revisor.mn.gov). The shoreland rules reference the Pollution Control Agency, Chapter 7080 for septic system design standards. DNR shoreland program standards require a certificate of compliance, consistent with Minnesota Rules Chapter 7082.0700 Subp. 3, whenever a permit or variance of any type is required for any improvement on or use of the property. A sewage treatment system shall be considered compliant if the only deficiency is the system’s improper setback from the ordinary high water level. There are numerous triggers instituted by local units of government to identify non-compliant systems including requiring inspections at property transfer or with a request for a building permit.

Similar standards apply for Wild and Scenic Rivers, Minnesota Rules, Chapter 6105.0120 (www.revisor.mn.gov). These standards are administered by local governments through their wild and scenic rivers ordinances. Table 2.6 has the DNR minimum setback distances for SSTS in shoreland areas. Be sure to verify with your LGU as they maybe more restrictive.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Septic, Holding Tank or Other Watertight Component (feet)</th>
<th>Soil Treatment or Absorption Area (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Environment Lake</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Recreational Development Lake</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>General Development Lake</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Wild River</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Remote River Segments</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Scenic River</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Forested River Segments</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Transition River Segments</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Agricultural River Segments</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Recreational River or Tributary</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>
MN Rules 103G.005 Subd. 14(1) state that normal high-water mark means a mark delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape as shown in Figure 2.12. The normal high-water mark and the ordinary high-water mark are commonly points where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. In areas where the ordinary high-water mark is not evident, setbacks shall be measured from the stream bank of the following water bodies that have permanent flow or open water: the main channel, adjoining side channels, backwaters, and sloughs.

![FIGURE 2.12 Lake and River Setbacks](image)

From MN Rules 6105.0040, Subp. 20a, setback is defined as the minimum horizontal distance between a structure and the normal high water mark or between a structure and a road or highway.

The DNR Floodplain Management Program oversees the administration of the state Floodplain Management Program by promoting and ensuring sound land use development in floodplain areas in order to promote the health and safety of the public, minimize loss of life, and reduce economic losses caused by flood damages. This unit also exists to oversee and administer the National Flood Insurance Program (NFIP) for the State of Minnesota. The DNR along with the Federal Emergency Management Agency (FEMA) sets the floodway and floodplain elevations shown in Figure 2.13. See Section 4 for information relating to the placement of SSTs in floodplains.
**Department of Transportation**

The Minnesota Department of Transportation (MnDOT) sets the vehicle, road weight restrictions, and driver requirements for commercial vehicles. This affects Maintainer, Installer, and Designer vehicle load securement, maximum weights, seasonal usage/exemptions for road restrictions, and driver license requirements. See MnDOT’s website at dot.state.mn.us or reach them by phone at (800) 657-3774.

**Local Ordinances**

LGUs are required to adopt and enforce Chapter 7080-7081 to regulate SSTS within their jurisdiction. Because of unique local conditions, ordinances may be more or less restrictive than state rules for both new and existing systems. More restrictive rules are adopted for many reasons, including sensitive environmental conditions, and high densities, among many other reasons. Less restrictive standards for new construction are only allowed by counties in areas with current and projected low densities and where evidence can be provided that the alternative standards will protect public health and the environment. Alternative standards are not allowed in shoreland, wellhead protection areas, or food and beverage and lodging establishments. Proposed alternative standards must be submitted to the Minnesota Pollution Control Agency (MPCA) for review.

LGUs are responsible for administering and enforcing their local SSTS ordinance. For counties, this includes assuring that there is a SSTS ordinance with a permitting and inspection program covering the entire county. If cities and towns have their own local ordinance, they must be as restrictive as the county. Each LGU is required to file an annual report with the MPCA. See 7082.0040, Subp. 5 for the list of required reporting items.

Always check with the local government (township, city or county) first to determine what the local SSTS ordinance requires. Visit the website www.pca.state.mn.us for those ordinances available online or to find contact information for a LGU.

According to Minnesota Rules Chapter 7082.0040, Subp. 4, All local governments that administer SSTS programs must have:

A. adequate personnel to properly conduct SSTS technical and administrative functions. All local governments that administer SSTS programs must have:

   (1) at least one certified inspector as described in part 7083.1010, subpart 2, who is employed by the local unit of government or a contracted licensed SSTS inspection business. Multiple local units of government are allowed to contract for services with the same certified inspector; and

   (2) at least one person who is employed by the local unit of government who has received accredited training on administration of local SSTS programs; and

B. an enforceable ordinance that meets the requirements of this chapter.

Each ordinance at a minimum must contain the following requirements:

1. New construction or replacement and/or repair scenarios
2. Permitting and compliance inspection requirements
3. The requirement for management plans as part of design
4. Maintenance requirements
5. Class V reporting and disclosure requirements
6. Two sites for SSTS for each newly platted lot requirements
SECTION 2: Administration

7. Provision that a failing or imminent public health threat systems be upgraded in a specified time period
8. Abandonment requirements
9. Variance procedures
10. Allowed holding tank and floodplain applications
11. A provision that prohibits surface discharge unless a NPDES permit is obtained from the MPCA
12. Conflict resolution process
13. Operating permits requirements for Type IV, V and MSTS

Each ordinance may address:

1. Allowance/disallowance of certain Types (I-V) of systems
2. Allowance/disallowance of warrantied systems
3. Septage requirements
4. Secondary site protection requirements
5. Provision if primary or secondary site is damaged

Each ordinance must be reviewed by the MPCA within 30 days of adoption. Each LGU must prepare and make available to the MPCA and to the public a written list of all technical and administrative differences between its ordinance and Chapters 7080 and 7081.

LGUs can either adopt a conventional or performance program. Conventional programs adopt the technical requirements of 7080 and 7081 at a base level. Conventional programs can permit all types of systems in 7080 and 7081. Performance programs are more comprehensive, going beyond the minimums of 7080 and 7081, and include an education program for users, risk assessment, performance requirements based on the receiving environment, operating permits, septage tracking, enforcement, record keeping and a financial assistance program. The Performance program option is geared towards LGUs with strong local commitment to overall SSTS program management.

System Performance vs. Program Performance

The overall goal of state and local requirements regarding septic systems is to ensure that septic systems are designed, installed, and taken care of properly. The framework of the specific regulations affecting the onsite industry is based on administrative rules, which are adopted by the MPCA and administered and enforced through ordinance by local units of government. This common method of program administration allows for minimum standards to be set state-wide while allowing local flexibility to implement local programs based on the needs of each specific jurisdiction, which vary in land-use, development pressure, site conditions, political will, and natural resources. It is important to recognize, however, that high-quality work often exceeds basic requirements. This goes for private professionals, who are responsible for meeting technical standards for system design, installation, and care, and for local program administrators, who are responsible for system permitting and inspection.

Each jurisdiction is required under 7082.0100 subp 1 and 3 to draft an ordinance that outlines the administration of its program and related requirements. The rule poses a list of over 20 general requirements for all local ordinances and an optional list of recommended provisions. If a local unit of government intends to permit performance-based systems (Type IV and V), its ordinance must also define the provisions below.
The University of Minnesota recommends the addition of a management program to all local programs, regardless of whether they permit performance systems.

**Local Ordinance Requirements for Performance Programs**
- Homeowner education program
- Risk assessment protocol for SSTS receiving environments
- Monitoring standards specification
- Site evaluation protocol
- Renewable operating permit program for certain systems
- Electronic inventory, tracking, and management program
- Septage hauling, treatment, and disposal tracking program
- Reporting program to notify homeowners of upcoming management responsibilities
- Financial support to sustain the management program
- Enforcement program including penalties for failure to comply with the ordinance

It is the private professional’s responsibility to ensure that all local and state requirements are met through proper system design, installation, and management. It is the local unit of government’s responsibility to make sure that septic systems permitted and inspected in its jurisdiction meet those requirements. This check and balance, if properly implemented, provides an effective method of ensuring that homeowners receive what they purchased, a functioning long-term solution for their sewage treatment needs. An additional, important part of making sure that septic systems work is ensuring that system owners are aware of their responsibilities regarding this important infrastructure.

**Management**

The goal of SSTSs is to protect human health and the environment by safely recycling wastewater back into the natural environment in a cost-effective manner as shown in Figure 2.14. The on-site treatment of wastewater is dependent on a properly designed, installed, operated, and maintained treatment system. A good system will not properly treat sewage throughout its intended life without appropriate and timely operation and maintenance—management!

Total management of a system must involve the residents generating the sewage with varying levels of assistance from professionals. The individual owner will likely determine management responsibilities of a single household system. Traditional trench and mound systems requiring relatively simple management are typically managed by the owner using licensed Maintainers and other professionals as needed. Homeowners are capable of handling typical management tasks if they are aware of what
needs to be done and make a commitment to do it. Owners of complex systems or those unwilling to make the commitment may feel the necessity or be required to hire outside professional management. More opportunities to contract out some steps will likely be available in the future.

**Individual Type I-III systems** are likely to be owned and managed by the individual owner. These systems typically require less management than Type IV and V systems. Owners may wish to or be required to hire professional management of their systems. Knowledge of the system and its operation and maintenance is necessary and should be provided in the system's management plan. Most systems installed prior to 2008 will not have formal management plans and may need one developed.

**Type IV and V systems and those serving multiple dwellings or commercial establishments** require a higher level of management. Each homeowner must be responsible for their usage of the system and rely on co-users to do the same. All of the users collectively must be responsible for the operation and maintenance of the commonly used portions of the system. Type IV and V systems may use mechanical components, living plants, or other processes that require special attention.

Management of the system must include all aspects of the system, but key components to be managed are:

- Amounts of wastewater generated by each unit and the accumulated flow
- Contents of the wastewater (solids, chemicals, nutrients, etc.)
- Maintenance of tanks, pumps, and filters
- Monitoring of overall system performance

The amount and cost of management will vary considerably with the size, type, and complexity of the treatment system. New technology usually requires more attention by the owners and regulators because of its unfamiliarity and unproven track record, so the management necessary for new technology must be established at the beginning of a project. A plan must determine who will do what and when and how they will do it. It must also be carried out to be effective! Over time, the plan will need to be re-evaluated and adjusted as necessary to ensure proper operation.

When multiple-household units and ‘alternative treatment’ systems are used in new developments, the local government unit and the developer likely make the ownership and management structure decisions for the future owners. When these systems are installed in existing neighborhoods, the organizational structure decision will likely involve all owners and their LGU.

In Minnesota, there are six management structure options (see Organizational Structure Matrix at septic.umn.edu):

- Environmental Subordinate Service Districts
- Sanitary Sewer Districts
- Home Owner Associations
- Municipal Utilities
- Homeowner Cooperatives
- Private Joint Ventures
The first four are currently in operation in Minnesota. Each has strengths and weaknesses to be considered in any local application.

No matter which organizational structure is used, all residents must take an active responsibility for the amounts and contents of the wastewater they generate. They must all be willing to adequately finance the care and monitoring of the entire system. Establishing rules for system users to follow in the day-to-day use of the system may be necessary to resolve problems should they arise, but early and effective education of all users is likely to be more effective in assuring appropriate day-to-day usage.

In order for a management program to be effective, it must have risk assessments, operation and maintenance, monitoring, reporting, and funding components.
References


