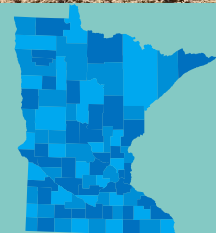


May 2024

# 2023 SSTS Annual Report

## Subsurface Sewage Treatment Systems in Minnesota



## **Author**

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## **Contributors/acknowledgements**

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# Acronyms

ALS	Alternative local standards
FTPGW	Failing to protect groundwater
GPD	Gallons per day
ITPHS	Imminent threat to public health or safety
LGU	Local governmental unit
MPCA	Minnesota Pollution Control Agency
SSTS	Subsurface sewage treatment system
TCPA	Township Cooperation Planning Association

# Executive summary

There were 192 local governmental units (LGUs) who administered subsurface sewage treatment system (SSTS) programs in 2023 that submitted annual report data to the Minnesota Pollution Control Agency (MPCA). The 192 local SSTS programs consist of 86 counties, 71 cities, 31 townships, and 4 other special purpose units of government with permitting authority.

A total of 649,493 SSTS were reported across Minnesota, representing an estimated 44.4 billion gallons of wastewater treated by SSTS per year (assuming 2.5 person/permit; 75 gallons/person; 365 days/year).

LGUs issued 10,856 SSTS construction permits in 2023 for 5,029 new systems, and 5,488 replacement systems. Additionally, there were 339 permits issued for system repairs. Of the SSTS permitted in 2023, approximately 94% serve residential dwellings and 6% serve other establishments.

Approximately 71% of the SSTS permitted in 2023 were Type I systems, including 4,610 Type I mounds. There were 1,537 Type II systems, 1,420 Type III systems, 80 Type IV systems, and 9 Type V systems permitted in 2023.

The majority of SSTS construction permits issued in 2023 were for systems with a flow volume between 1-2,499 gallons per day (gpd); however, there were 20 new, and 11 replacement systems with a flow volume between 2,500-4,999 gpd, and 4 new, and 1 replacement systems with a flow volume between 5,000-10,000 gpd permitted.

LGUs reported that 13,998 sewage tanks were installed in 2023.

There were 14,111 existing system compliance inspections conducted in 2023. LGUs reported that 793 noncompliant properties were mitigated by centralized sewer connection, abandonment or removal, or a government buyout in 2023.

Of the 194 LGUs with SSTS programs in 2023, 97% approve SSTS designs before issuing construction permits, 97% verify soils at some point during the review process, 33% track SSTS maintenance activities, and approximately 77% have property transfer compliance inspection requirements.

Over 107,000 SSTS construction permits have been issued within the last ten years, indicating that over 16% of Minnesota's 649,493 SSTS have been constructed within the last ten years or contain components that are less than ten years old.

The number of estimated compliant SSTS has increased over the last ten years, from approximately 424,000 systems in 2014 to approximately 564,600 systems in 2023.

Trends observed from the 2023 SSTS Annual Report suggest continued improvements in subsurface wastewater treatment across the state.

# Introduction

Minn. R. 7082.0040 requires local SSTS programs to submit annual reports to the MPCA by February 1 documenting their SSTS activities for the previous calendar year. Local SSTS programs occur at four governmental levels: 1) county, 2) city, 3) township, and 4) other special purpose units of government with permitting authority.

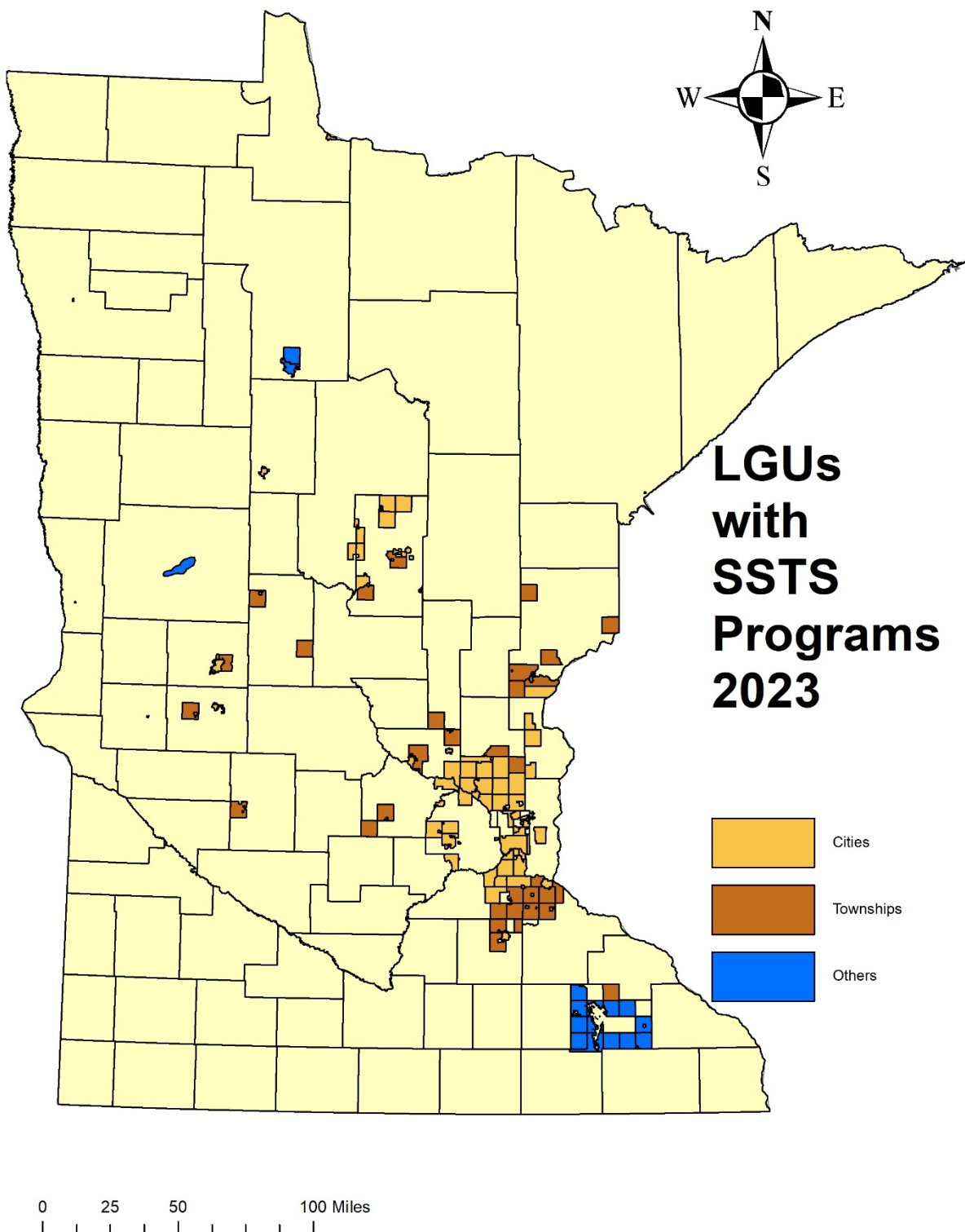
In December 2023, the MPCA sent out a web-based annual report survey to LGUs with known SSTS programs for them to complete. The annual report survey was used to obtain data from each local SSTS program so that relevant information could be summarized into a statewide 2023 SSTS Annual Report. The annual report survey is also used to track the number of sewage tanks installed and to ensure tank fee payments from licensed SSTS installers are made. Tank fees were approved by the Legislature in 2003 to help fund SSTS compliance efforts in the state.

The 2023 SSTS Annual Report generally follows the format used in the 2022 SSTS Annual Report and includes a broad analysis of SSTS trends. The analysis is based on data that LGUs provided in their annual report survey submissions. Some of the data is considered hard data, such as the reported number and types of permits issued. Other data is considered soft data, such as the estimates of SSTS compliance rates and the total number of SSTS in each jurisdiction. Additionally, the 2023 SSTS Annual Report includes information about SSTS certification and licensing, which was compiled by the MPCA's certification and training unit.

# Annual report responses

In 2023, there were 194 LGUs that administered SSTS programs in Minnesota. The number of county programs remained the same at 86; however, the number of city and township programs changed from 2022. [Appendix B1](#) contains a list of cities with SSTS programs in 2023. [Appendix B2](#) contains a list of townships with SSTS programs in 2023. [Appendix B3](#) contains a list of other special purpose units of government with SSTS programs in 2023. The distribution of LGUs with SSTS programs in 2023 is displayed in [Figure 1](#).

Figure 1. LGUs with SSTS programs in 2023



## LGU participation

In December 2023, the 196 LGUs that were reported to have SSTS programs in 2022 were contacted by the MPCA and requested to submit annual report data through a web-based survey. The 2023 surveys were sent electronically to each SSTS administrator email contact previously provided in the 2022 annual report survey. In 2023, two LGUs notified the MPCA that they no longer administer an SSTS program. The 2023 SSTS Annual Report had a 99% response rate as 192 of the 194 expected annual report surveys were submitted. [Table 1](#) provides the 2023 SSTS Annual Report response rate by LGU type.

Recipients who didn't report by the deadline were contacted by MPCA staff to determine if the LGU no longer had an active SSTS program, or to identify who was the correct LGU SSTS program contact, or assist with submission of the survey.

Ensuring the annual report survey is sent to, and completed, by the right individual can be challenging. Common reasons for issues are: county staff are unsure of the local city or township contact for programs operating within the county boundaries, city and township programs with privately contracted inspection services changed, or annual report responsibilities were not transferred when LGU staff changed.

There were 86 counties, 72 cities, 32 townships, and 4 other special purpose units of government that made up the 194 LGUs with SSTS programs as of 2023 survey. Ramsey County is not required to submit an annual report survey as their entire jurisdiction is served by city and township SSTS programs. The special purpose units of government with permitting authority are the University of Minnesota, Bemidji Joint Powers Board, Otter Tail Water Management District, and the Olmsted Township Cooperation Planning Association (TCPA).

**Table 1. 2023 SSTS Annual Report response rate by LGU type**

	County	City	Township	Other	Total
LGUs – contacted per 2022 reporting	86	74	32	4	196
LGUs – indicated no active program as of 2023	0	2		0	2
LGUs – submitted 2023 data	86	71	31	4	194
LGUs – no response	0	1	1	0	2

## Number of SSTS

In 2023, LGUs estimated that there were 649,493 total SSTS in Minnesota. In 2023, 10,856 SSTS construction permits were issued across the state. Additionally, there were 322 repair permits issued in 2023. [Table 2](#) provides statewide values, as well as the highest and lowest countywide values, for the total number of SSTS reported and construction permits issued in 2023.

The greatest number of total SSTS was reported in St. Louis County (40,549); the lowest number of total SSTS was reported in Traverse County (620). The greatest number of construction permits issued in 2023 was reported in St. Louis County (799); the lowest number of construction permits issued in 2023 was reported in Kittson County (6). City, township, and other special purpose units of government data were consolidated into their respective counties to tabulate this information.

**Table 2. Total number of SSTS reported and construction permits issued in 2023**

	Total number of SSTS	Construction permits issued in 2023
Statewide	649,493	10,856
Highest county	40,549	799
Lowest county	620	6

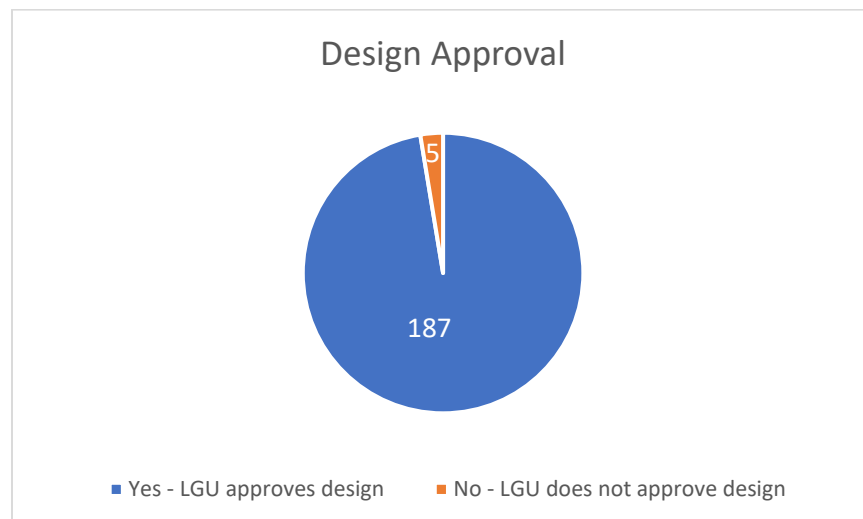
[Appendix A1](#) contains a countywide list of the following information:

1. Number of SSTS reported in 2023.
2. Number of SSTS construction permits issued in 2023.
3. Number of SSTS construction permits issued over the last 20 years (2004-2023).
4. Number of existing system compliance inspections conducted in 2023 countywide (private inspector and LGUs).
5. Percentage of existing SSTS inspected in 2023 out of total SSTS reported in county.
6. Counties with property transfer compliance inspection requirements.

## Design approval

The annual report survey asks LGUs to indicate if they approve SSTS designs before issuing construction permits. Of the 194 LGUs with SSTS programs in 2023, 187 (97.4%) reported that they approve SSTS designs before construction permit issuance ([Figure 2](#)). The seven LGUs that reported not approving SSTS designs before construction permit issuance will be contacted to discuss rule requirements.

**Figure 2. 2023 LGU status for SSTS design approval before construction permit issuance**



## Soil verification

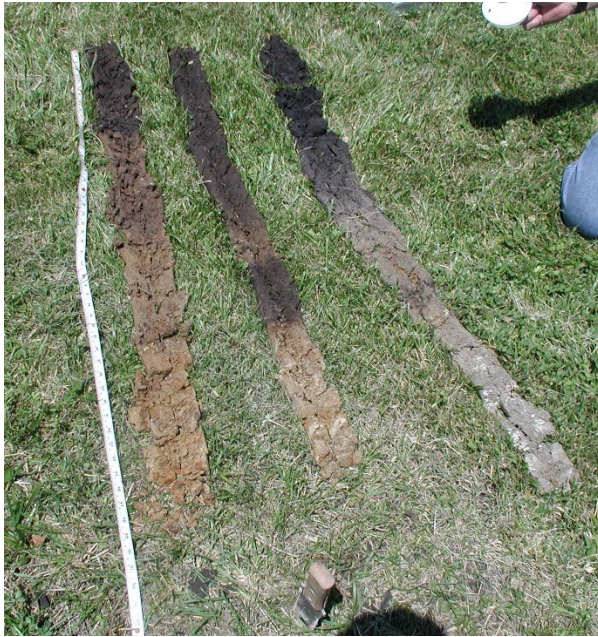
The annual report survey asks LGUs to indicate when they most often perform infield soil verification during the review process. In 2023, over 97% of LGUs reported verifying soils at some time before, during, or after system construction. There were 141 LGUs that reported verifying soils before construction permit issuance, 35 LGUs that reported verifying soils during construction, and 11 LGUs that reported verifying soils after construction. There were 5 LGUs that reported not verifying soils at any time before, during, or after system construction. Those jurisdictions that reported not verifying soils will be contacted to discuss the requirements of Minn. R. 7082.0500.

[Figure 3](#) Shows the color differences in three different soil profiles.

[Figure 4](#) provides a breakdown of when LGUs most often perform infield soil verifications in 2023.

[Figure 5](#) displays the time of soil verification throughout the state by county.

**Figure 3. Color differences in three different soil profiles**



**Figure 4. 2023 LGU status for soil verification timing**

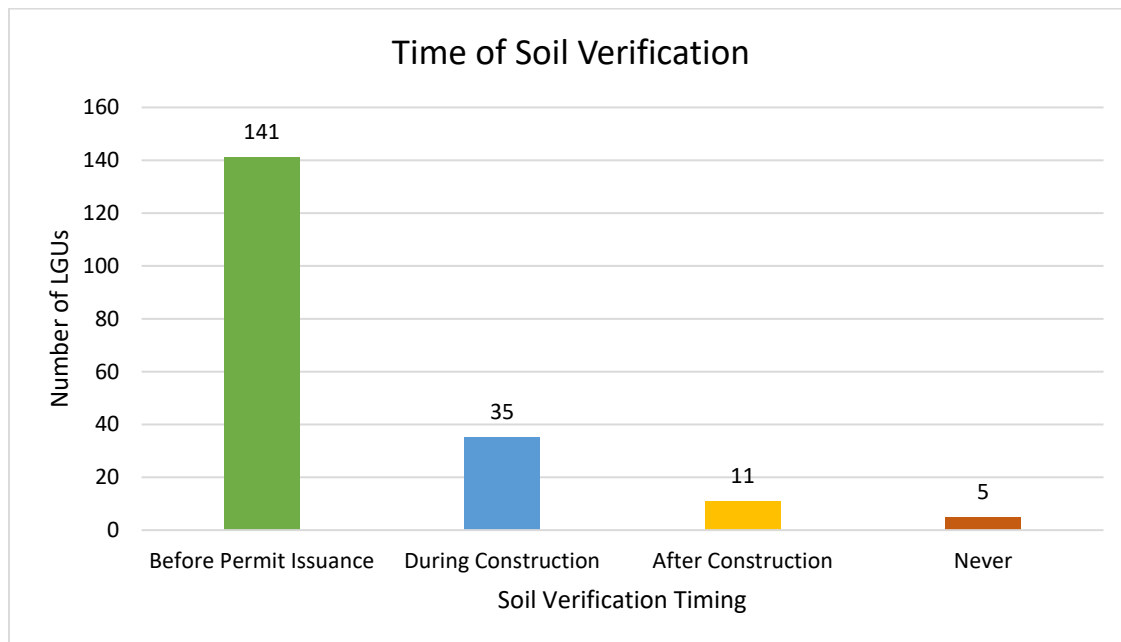
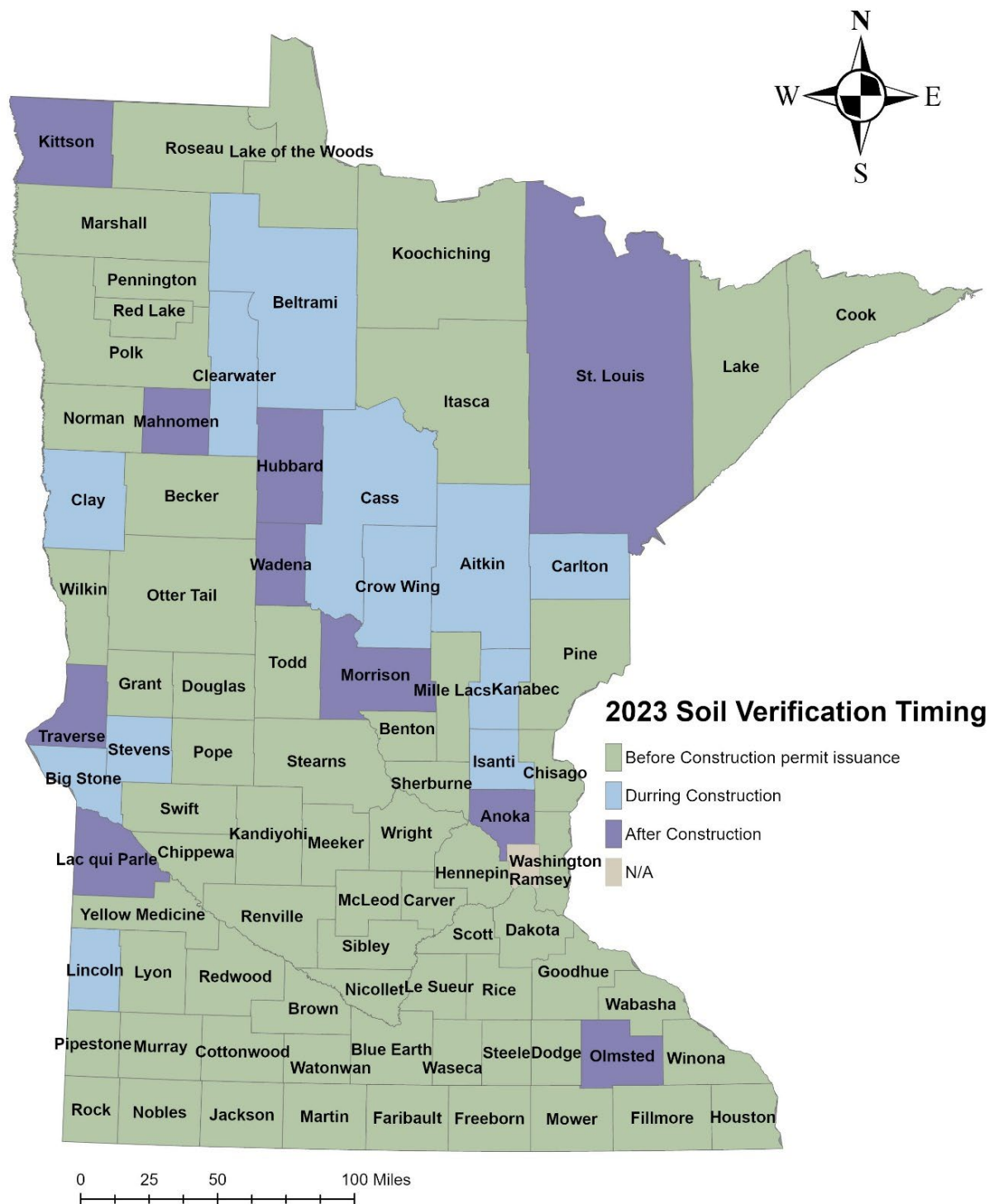


Figure 5. Timing of soil verification as of 2023 by county



## Systems by type

The following section describes each of the types of SSTS.

**Type I Systems** are mounds, at-grades, trenches, or beds built in accordance with the prescriptive requirements of Minn. R. chs. 7080-7081.

- Specific prescriptive requirements in Minn. R. chs. 7080 and 7081.
- Requires a management plan.
- Has been termed “standard systems”.
- Designed by a basic, intermediate, or advanced designer – based on flow.

**Type II Systems** are holding tanks, privies, or SSTS in floodplain areas.

- Employed to fit non-standard site conditions (e.g., floodplain) or special dwelling and “other establishment” situations (privy or holding tank).
- Requires a management plan.
- Has been termed “alternative systems”.
- Designed by a basic, intermediate, or advanced designer – based on flow.

**Type III Systems** are systems that do not have one foot of natural soil, are determined to have disturbed soils, or have limited space for a soil dispersal area, among other potential deviations.

- Deviates from certain allowable Type I prescriptive standards when needed.
- Employed to fit non-standard soil and site conditions or organic loading-limited design without the use of pretreatment.
- Requires a management plan.
- Has been termed “other systems”.
- Designed by a basic, intermediate, or advanced designer – based on flow.

**Type IV Systems** are systems, which employ a treatment component registered under Chapter 7083.4030 and can have a reduced infiltration area and/or vertical separation.

- Follows Type I prescriptive design requirements when site conditions allow.
- Deviates from Type I prescriptive standards due to the use of a registered treatment product.
- Employed to:
  - Reduce the vertical separation distance requirement.
  - Reduce the absorption area.
  - Extend the life of the soil system.
  - Reduce waste strength.
- Higher operation and maintenance requirements than a Type I – III.
- Requires a management plan.
- Requires an operating permit and service provider.
- Designed by an intermediate or advanced designer – based on flow.

**Type V Systems** are systems designed by a professional engineer that deviate from the prescriptive requirements of a Type I system.

- Does not need to follow prescriptive design standards.

- Must meet environmental and safety performance outcomes.
- Components not following Type I – IV design standards authorized by a professional engineer.
- Employed to use registered and/or non-registered treatment and dispersal products.
- Requires a management plan.
- Requires an operating permit and service provider.
- Designed by an advanced designer and signed off by a professional engineer or appropriately licensed professional.

## SSTS reported by type

The number of SSTS construction permits reported by system type is presented in [Table 3](#). The majority of SSTS permitted in 2023 were Type I systems; approximately 42% were mound systems. Over 5% of Type I systems permitted in 2023 contained proprietary distribution media (580 chamber trenches and 17 EZ Flow trenches).

There were 1,537 Type II systems, 1420 Type III systems, 80 Type IV systems, and 9 Type V systems permitted in 2023.

**Table 3. 2023 SSTS construction permits reported by system type**

System type	System subtype	Residential	Other establishment	Total	% Change from 2022
Type I	All	7438	203	7641	-7%
	At-Grade	369	11	380	-12%
	Chamber Trench	570	10	580	-2%
	EZ Flow Trench	15	2	17	-71%
	Mound	4489	121	4610	-7%
	Rock Trench	612	20	632	-20%
	Seepage or Pressure Beds	1383	39	1422	-2%
Type II		1316	221	1537	-24%
Type III		1374	46	1420	8%
Type IV		61	19	80	-19%
Type V		5	4	9	-256%
Total		10194	493	10687	-3%

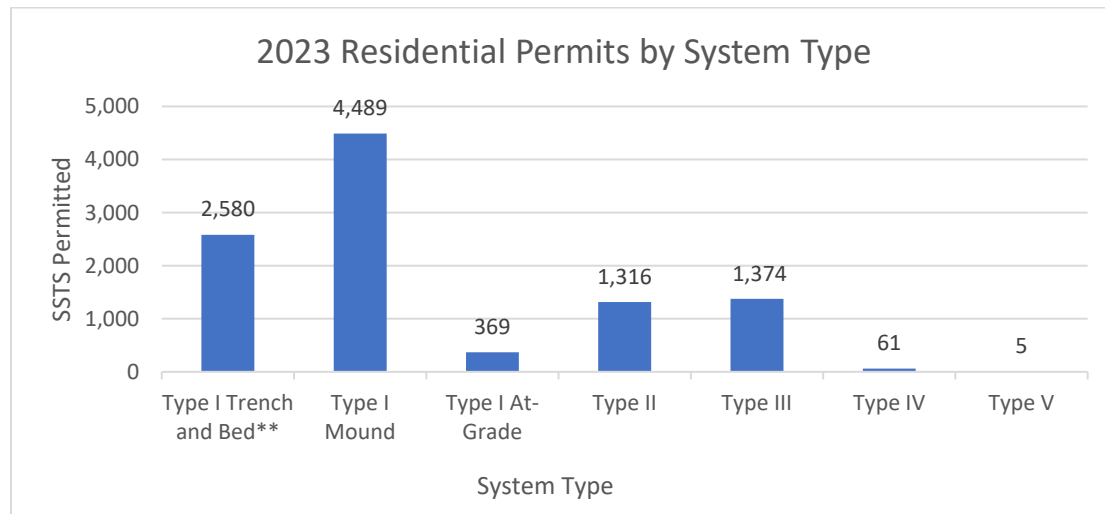
**Note:** The totals in this dataset are inconsistent with construction permit data included elsewhere in this report due to inconsistencies among reporting LGUs. This dataset should only be used for identifying trends and proportional analysis.

## Residential SSTS

The number of SSTS construction permits issued in 2023 for residential dwellings, reported by system type, is presented in [Figure 6](#). A total of 10,194 residential SSTS were permitted in 2023. Type I systems accounted for approximately 73% of total residential SSTS permitted, including 2580 trenches and beds,

4489 mounds, and 369 at-grades. There were 1316 Type II systems, 1374 Type III systems, 61 Type IV systems, and 5 Type V systems permitted in 2023 for residential dwellings.

**Figure 5. 2023 SSTS construction permits, reported by system type, for residential dwellings**

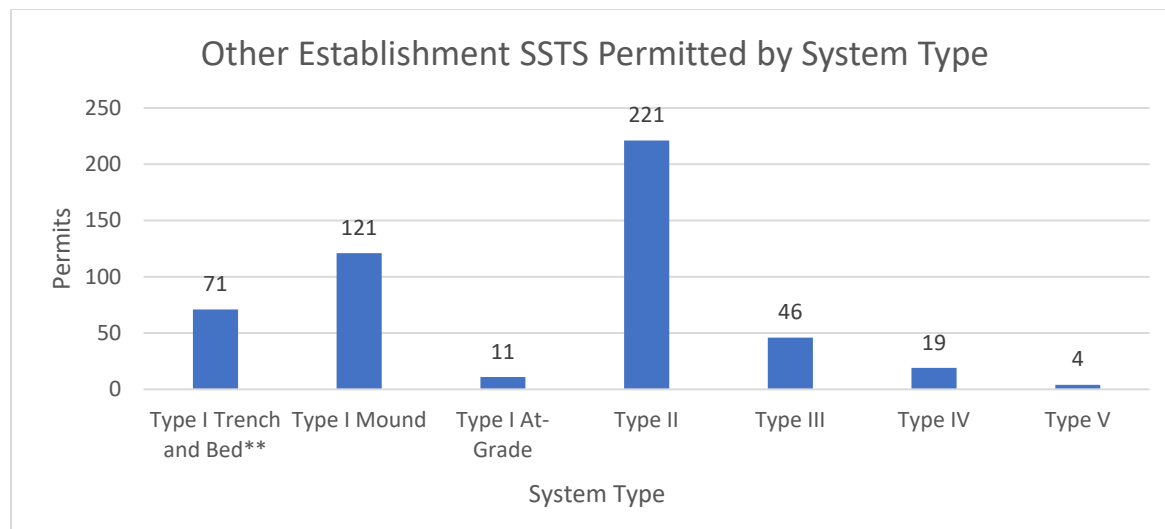


\*\*Chamber Trench, EZ Flow Trench, Rock Trench, and Seepage or Pressure Bed Type I systems

## Other establishment SSTS

The number of SSTS construction permits issued in 2023 for other establishments, reported by system type, is presented in [Figure 7](#). A total of 493 other establishment SSTS were permitted in 2023. Type I systems accounted for approximately 41% of total other establishment SSTS permitted, including 71 trenches and beds, 121 mounds, and 11 at-grades. There were 221 Type II systems, 46 Type III systems, 19 Type IV systems, and 4 Type V systems permitted in 2023 for other establishments.

**Figure 6. 2023 SSTS construction permits, reported by system type, for other establishments**



## Type IV systems

A total of 80 Type IV systems were permitted in 2023, consisting of 61 residential SSTs and 19 other establishment SSTs. An example of a registered proprietary treatment product used in a Type IV system is shown in [Figure 8](#). The greatest number of Type IV systems was reported in Olmsted County (16). [Figure 9](#) presents the distribution of Type IV systems permitted in 2023 by county.

**Figure 7. Type IV system using a registered proprietary treatment product of a fixed media filter.**



**2023  
Type IV  
Systems  
Permitted**

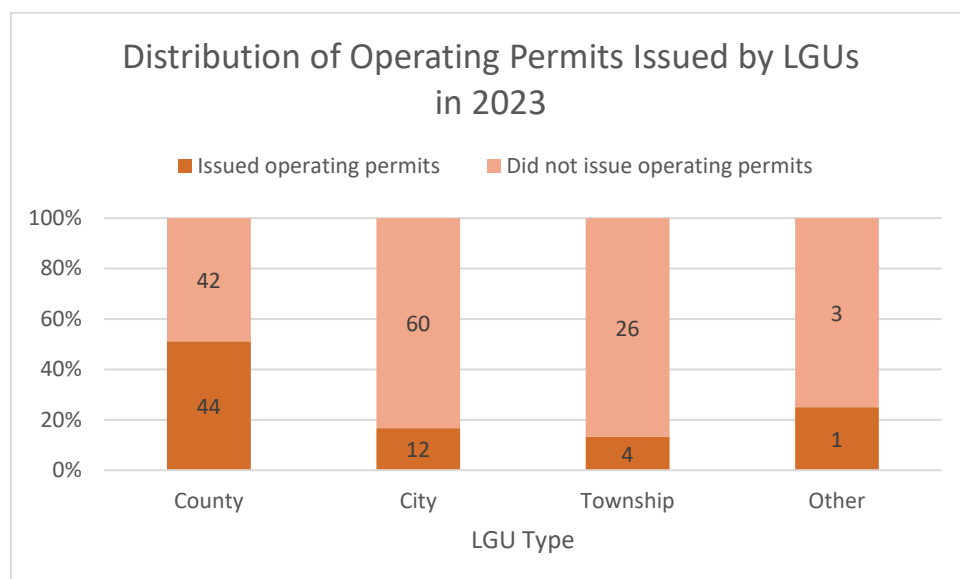
Count	Color Description
0	Lightest Purple
1	Light Purple
2 - 3	Medium-Light Purple
4 - 6	Medium Purple
7 - 10	Dark Purple
11 - 15	Darkest Purple

0 25 50 100 Miles

## Operating permit issuance

Operating permits are site-specific regulatory documents that outline various parameters for maintenance, monitoring, and other service functions for a variety of SSTS types. It was reported that 1009 operating permits were issued in 2023 for both residential and other establishment systems. The LGUs that issued operating permits in 2023 consist of 44 counties, 12 cities, 4 townships, and 1 other special purpose units of government. The distribution of LGUs who issued operating permits in 2023 is presented in [Figure 10](#).

**Figure 9. LGU status for issuing operating permits in 2023**



## SSTS by wastewater flow volume

Over 99% of the total SSTS construction permits issued in 2023 were for systems with a flow volume between 1-2,499 gpd, consisting of 9954 residential SSTS and 460 other establishment SSTS. Of the total SSTS with a flow volume between 1-2,499 gpd permitted, approximately 52% were replacement systems and 48% were new systems.

A total of 31 systems with a flow volume between 2,500 and 4,999 gpd were permitted in 2023, consisting of 14 residential SSTS and 17 other establishment SSTS. Of the total SSTS with a flow volume between 2,500 and 4,999 gpd permitted, 11 were replacement systems and 20 were new systems.

A total of 5 systems with a flow volume between 5,000 and 10,000 gpd were permitted in 2023. Of the total SSTS with a flow volume between 5,000 and 10,000 gpd permitted, 4 were new systems, consisting of 1 residential SSTS and 3 other establishment SSTS. The one replacement systems with a flow volume between 5,000 and 10,000 gpd was another establishment SSTS.

Table 4 provides the number of SSTS construction permits issued in 2023 by wastewater flow volume.

**Table 4. SSTS permitted in 2023 by flow volume**

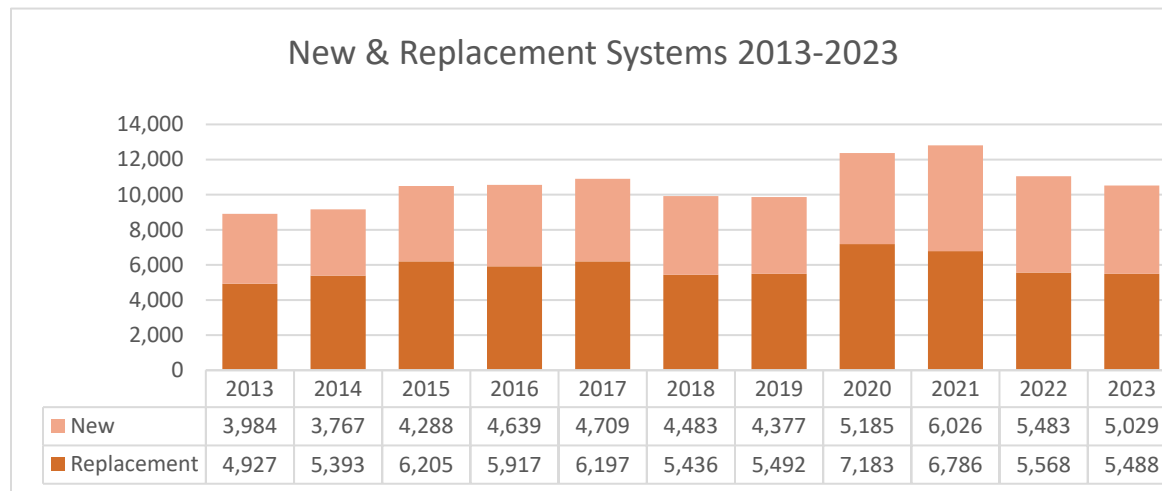
Construction Permits Issued in 2023 by flow volume					
	Residential		Other establishment		
Flow volume	New	Replacement	New	Replacement	Total
1 – 2,499 gpd	4,648	5,306	331	129	10,414
2,500 – 4,999 gpd	13	1	7	10	31
5,000 – 10,000 gpd	1	0	3	1	5
<b>Total</b>	4,662	5,307	341	140	10,450

## New and replacement SSTS

The number of SSTS construction permits issued for new and replacement systems over the last ten years is presented in [Figure 11](#). Over 107,000 construction permits have been reported by LGUs since 2014; approximately 56% were for replacement systems and 44% were for new systems.

LGUs issued 10,517 construction permits (not including repair permits) in 2023 for 5,029 new systems and 5,488 replacement systems. Existing systems may be replaced due to failing to protect groundwater (FTPGW) or posing an imminent threat to public health or safety (ITPHS). These conditions are typically identified through various local inspection triggers such as: property transfer inspections, land use permits, building permits, conditional use permits, variances, and complaints.

**Figure 10. SSTS construction permits for new and replacement systems 2013-2023**



## Sewage tanks installed

LGUs reported that 13,998 sewage tanks were installed in 2023, including 13,412 standard sewage tanks and 586 performance-based system tanks. Collecting tank installation data supports the administration of Minn. Stat. § 115.551, which requires installers to pay a fee of \$25 for each tank installed in the previous year. For performance-based systems, the tank fee is limited to \$25 per household system installation.

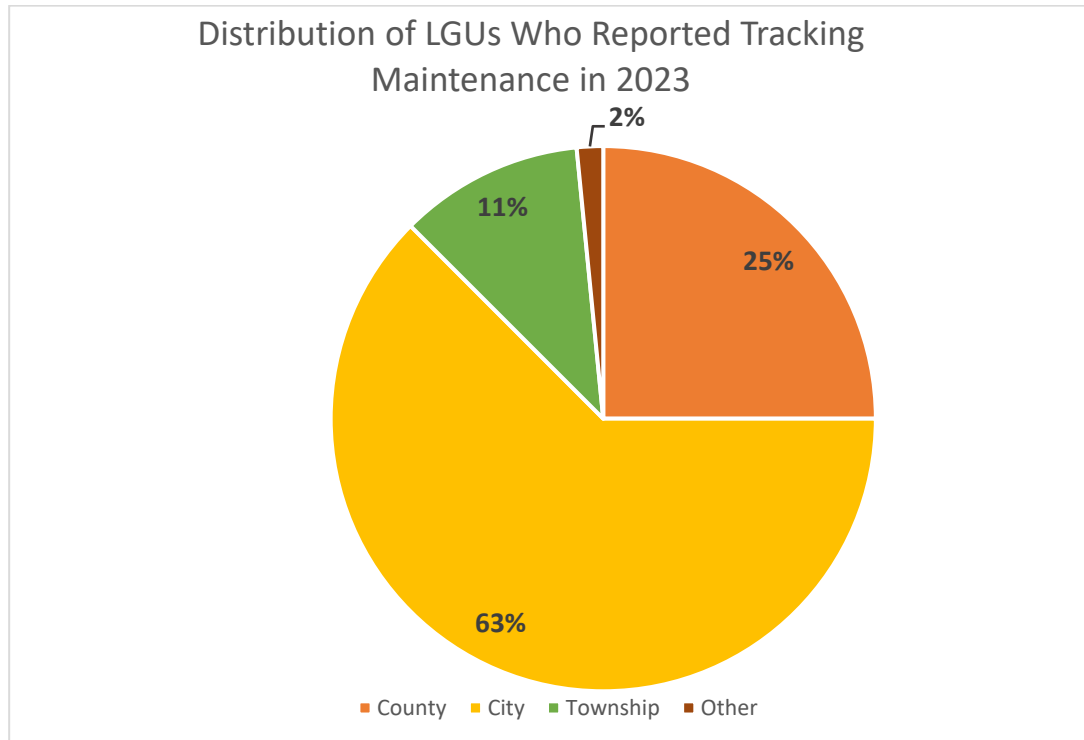
**Figure 11. New concrete tanks ready to be installed**



## Tracking SSTS maintenance activities

The annual report survey asks LGUs to indicate if they track SSTS maintenance activities. Of the 194 LGUs with SSTS programs in 2023, 64 ( 33%) reported that they track SSTS maintenance activities. There were 16 counties, 40 cities, 7 townships, and 1 other special purpose unit of government that reported tracking the maintenance of SSTS ([Figure 13](#)).The high proportion of city programs can be attributed to entities, such as the Met Council, requiring maintenance tracking in metropolitan areas.

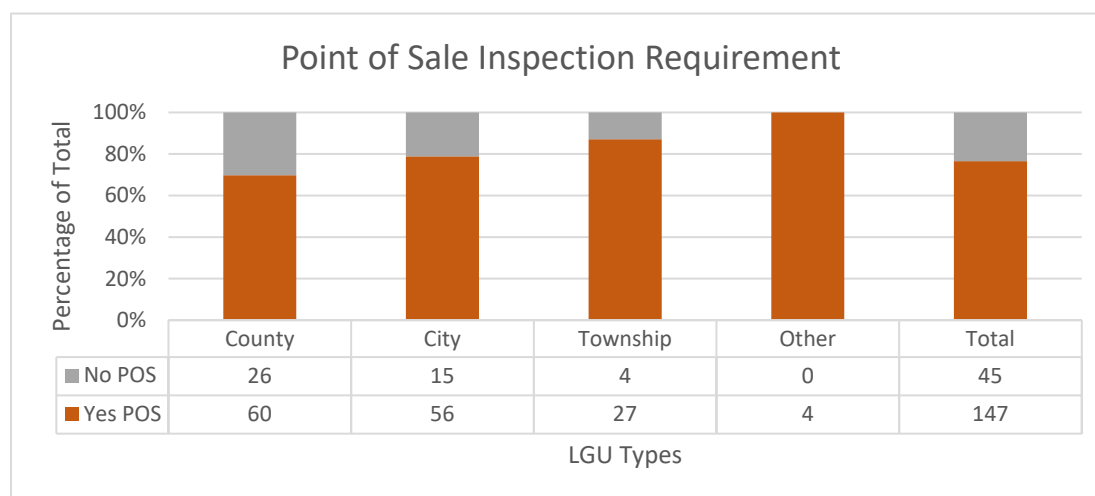
**Figure 12. 2023 LGU status for tracking SSTS maintenance activities**



## Compliance inspections for property transfers

There is currently no state-level requirement for LGUs to require compliance inspections for property transfers; however, many LGUs have indicated that this is the most effective trigger for identifying noncompliant systems. The annual report survey asks LGUs to indicate if they require compliance inspections for property transfers. Of the 194 LGUs with SSTS programs in 2023, 147 (77 %) reported that they require compliance inspections for property transfers. The LGUs with property transfer compliance inspection requirements consist of 60 counties, 56 cities, 27 townships, and 4 other special purpose units of government ([Figure 14](#)).

**Figure 13. 2023 LGU status for requiring compliance inspections for property transfers**



## Existing system compliance inspections

LGUs reported that there were 14,111 existing system compliance inspections in 2023, representing an 3% decrease from 2022 (14,550). Compliance inspections are an important part of addressing existing systems that pose an environmental or human health risk. LGUs include inspection triggers in their ordinances, such as at the time of property transfer or when a building permit is sought, to create a mechanism for verifying system compliance and correcting noncompliant systems.

The number of existing system compliance inspections broken down by LGU type is provided in [Table 5](#); counties reported 12,134, cities reported 1,415, townships reported 330, and other special purpose units of government reported 232. [Figure 15](#) displays the total number of existing system compliance inspections reported countywide. [Figure 16](#) displays the amount of existing system compliance inspections for 2023 as a percentage of total SSTs reported countywide.

**Table 5. 2023 existing system compliance inspections by LGU type**

Local unit of government	Number of existing system compliance inspections	LGU percentage of total compliance inspections
County	12,134	86%
City	1,415	10.0%
Township	330	2.3%
Other	232	1.6%
<b>Total</b>	<b>14,111</b>	<b>100%</b>

Figure 14. 2023 existing system compliance inspections per county

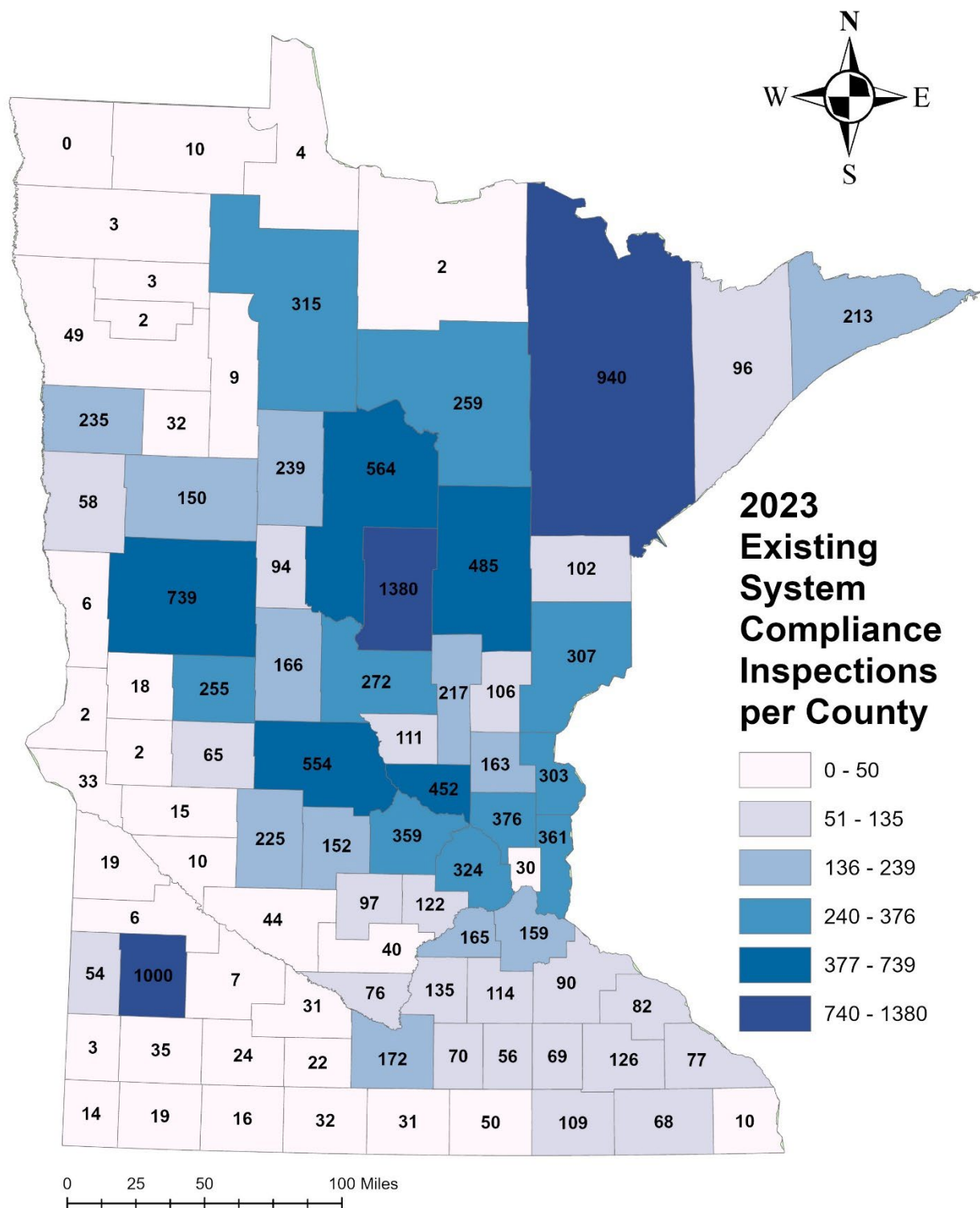
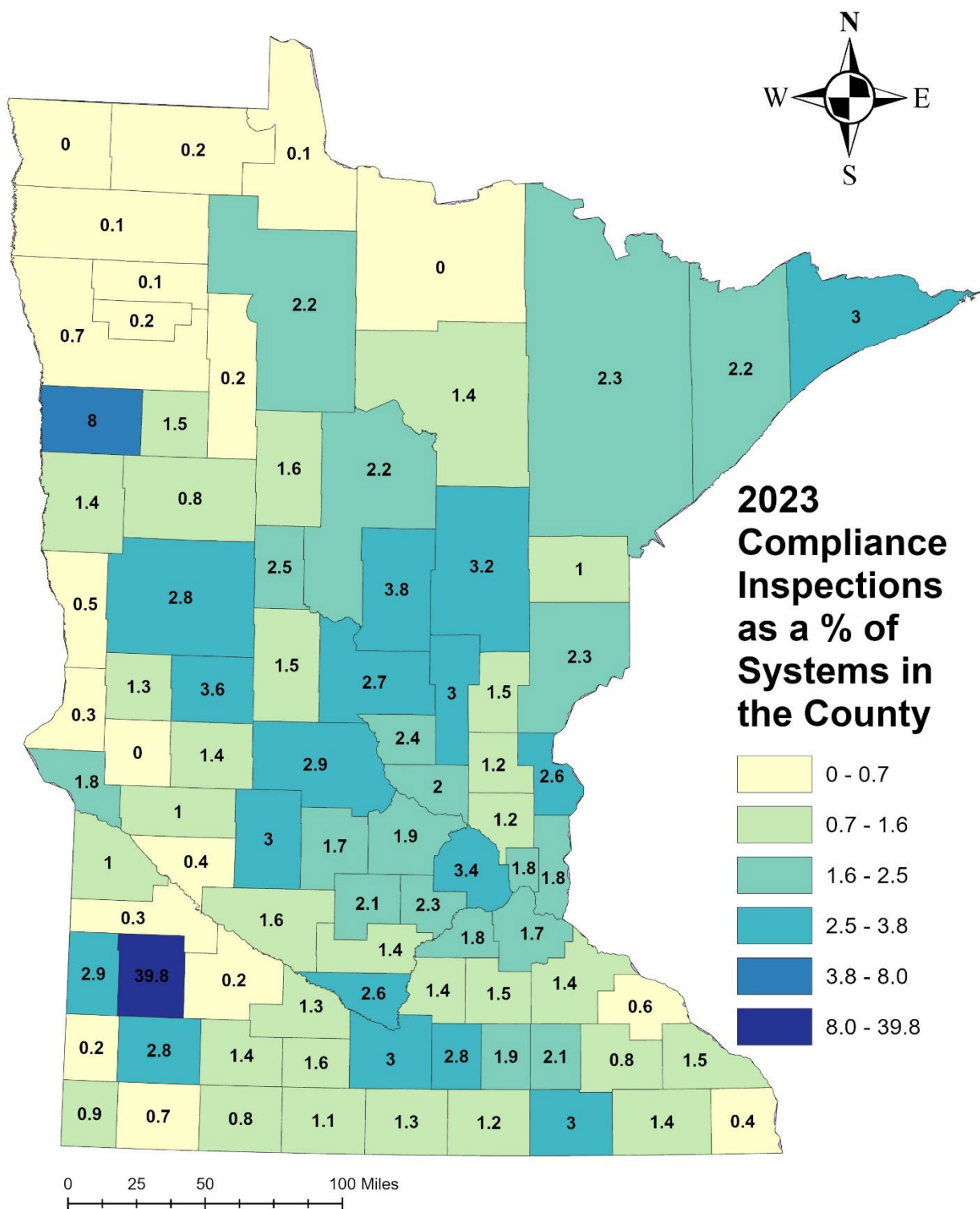


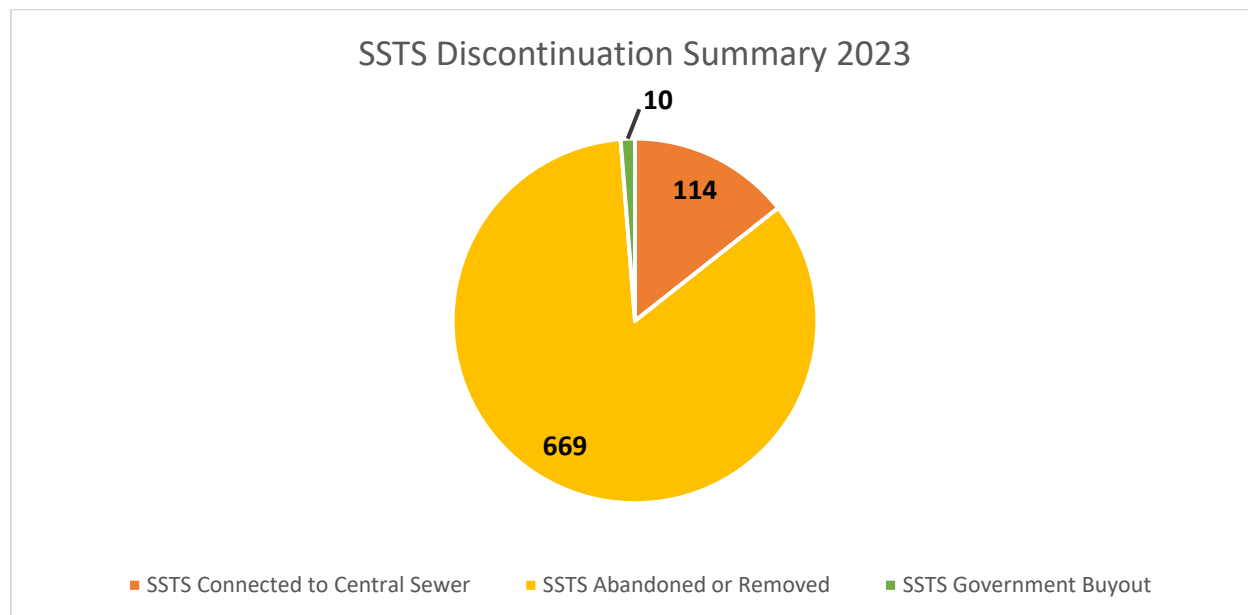
Figure 15. 2023 existing system compliance inspections presented as a percentage of total systems in county



## Noncompliant properties mitigated by centralized sewer connection, abandonment or removal, or government buyout

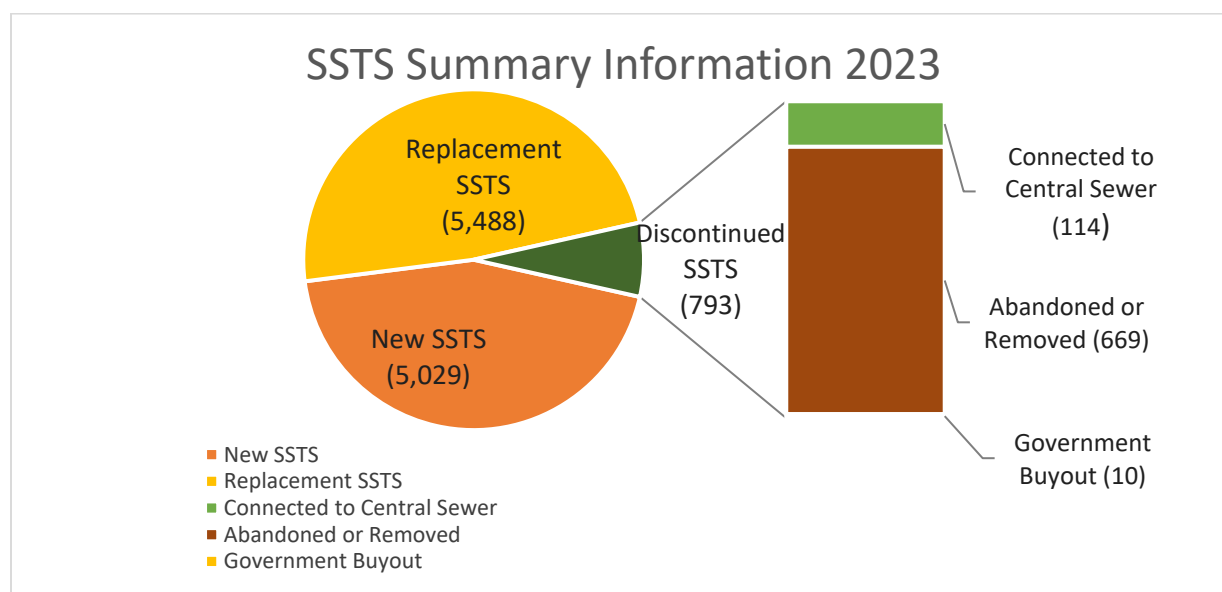
The number of noncompliant properties mitigated in 2023 by 1) connecting to centralized sewer, 2) abandonment or removal, or 3) a government buyout is provided in [Figure 17](#). LGUs reported that 793 noncompliant properties had SSTS discontinued through one of these three mechanisms. Of the noncompliant properties with SSTS discontinued in 2023, 114 were connected to centralized sewer, 669 were abandoned or removed, and 10 were part of a government buyout program.

**Figure 16. Noncompliant properties with discontinued SSTS in 2023**



[Figure 18](#) presents a summary of SSTS activity for 2023, including new SSTS permitted, replacement SSTS permitted, and noncompliant properties with SSTS discontinued through centralized sewer connection, abandonment or removal, or a government buyout. The total number reported for these SSTS activities in 2023 was 10,856.

**Figure 17. Summary of new SSTS, replacement SSTS, noncompliant properties with discontinued SSTS in 2023**



## SSTS compliance trends

Each LGU was asked to provide their **best estimate** of SSTS compliance in their jurisdiction. This included the following information:

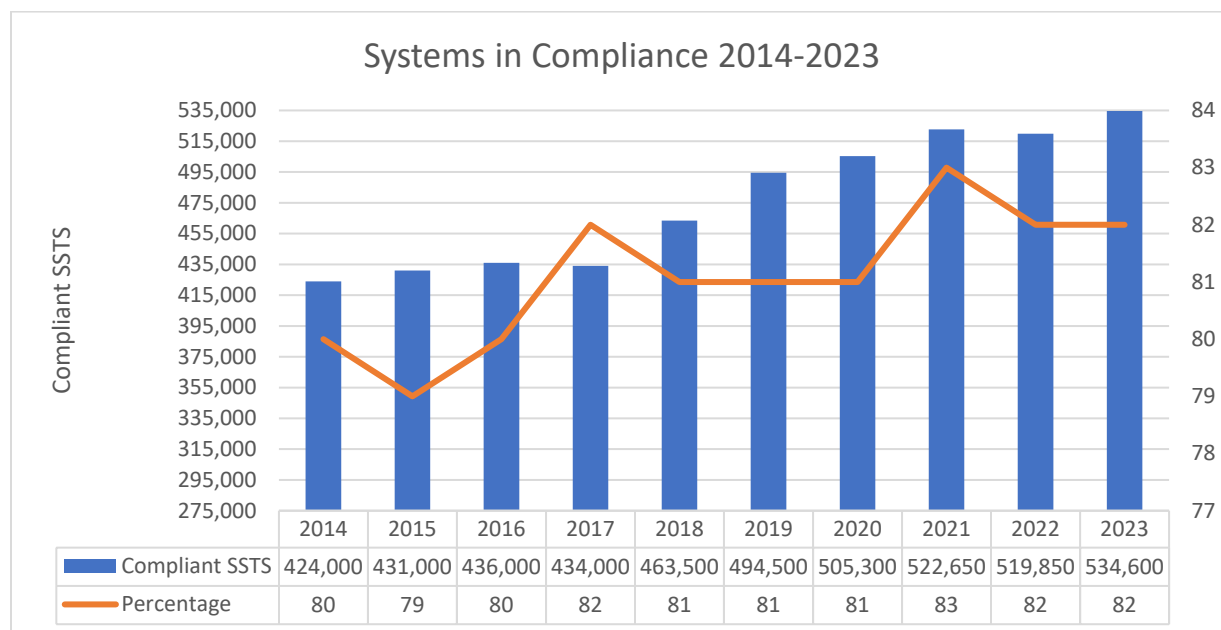
- Total number of SSTS in jurisdiction;
- Number of SSTS estimated to be compliant;
- Number of SSTS estimated to be an ITPHS; and
- Number of SSTS estimated to be FTPGW.

Figures [19](#), [20](#), and [21](#) present annual estimates of SSTS compliance status from 2014 to 2023.

Overall, SSTS in Minnesota are becoming increasingly compliant year to year. Negative trends in some years can conflict with overall compliance trends. Many LGUs are involved with developing databases, reviewing old files, completing inventories, and other processes that facilitate more accurate data.

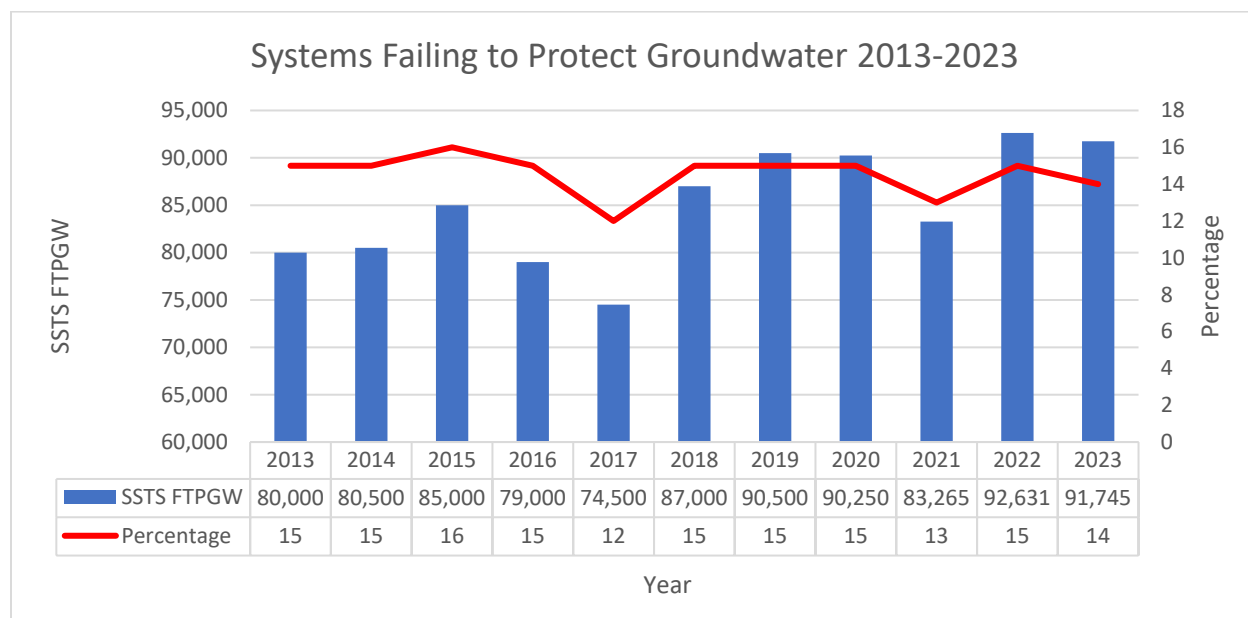
The number of estimated compliant SSTS has increased over the last ten years, from approximately 424,000 in 2014 to 525,600 systems in 2023. Additionally, the estimated percentage of compliant SSTS out of total SSTS increased from 80% in 2014 to 82% in 2023. [Figure 19](#) displays the number and percentage of SSTS with compliant status estimated by LGUs over the last ten years.

**Figure 18. Estimated SSTS with compliant status 2014-2023**



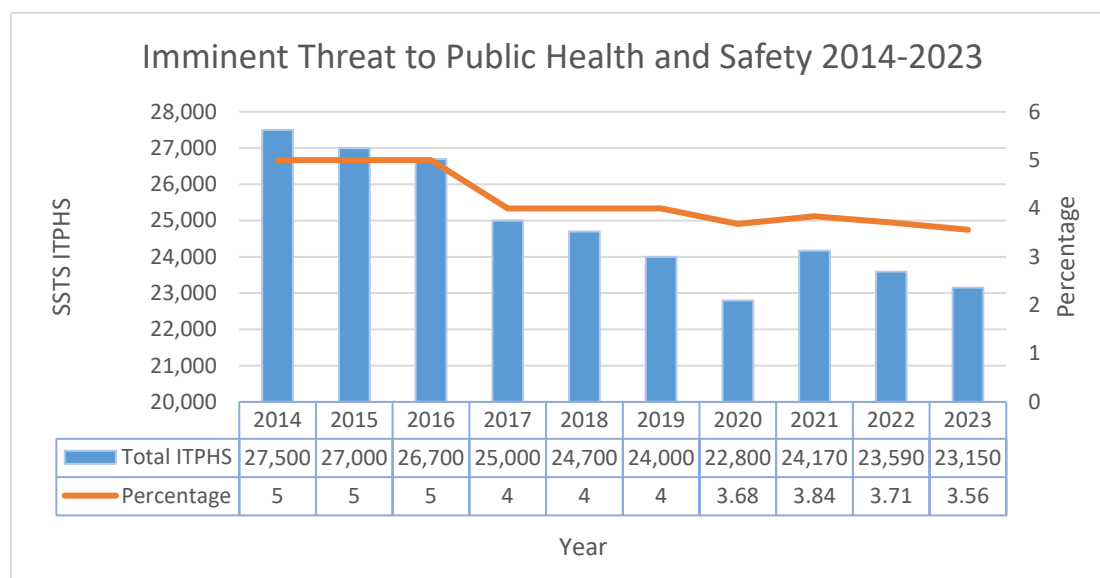
The estimated number of SSTS FTPGW has on average stayed about the same over the last eleven years, from approximately 80,000 systems in 2013 (15%), to 91,745 systems in 2023 (14%). Some of the significant changes in percentage from this time frame can be attributed to changes in how LGUs report these data. [Figure 20](#) displays the number and percentage of SSTS with FTPGW status estimated by LGUs over the last ten years.

**Figure 19. Estimated SSTS with FTPGW status 2013-2023**



The estimated number of SSTS with an ITPHS status has decreased over the last ten years, from approximately 27,500 (5%) systems in 2014 to 23,150 (3.5%) systems in 2023. [Figure 21](#) displays the number and percentage of SSTS with ITPHS status estimated by LGUs over the last ten years. Systems that have been identified as an ITPHS may include when there is sewage backup into the dwelling or other establishment, sewage discharge to the ground surface or surface waters, and unsecured or damaged maintenance hole covers (see [Figure 22](#)). Per state statute, systems identified as an ITPHS must be upgraded, replaced, repaired, or discontinued within ten months of receipt of a notice of noncompliance or within a shorter period if required by local ordinance.

**Figure 21. Estimated SSTS with ITPHS status 2014-2023**



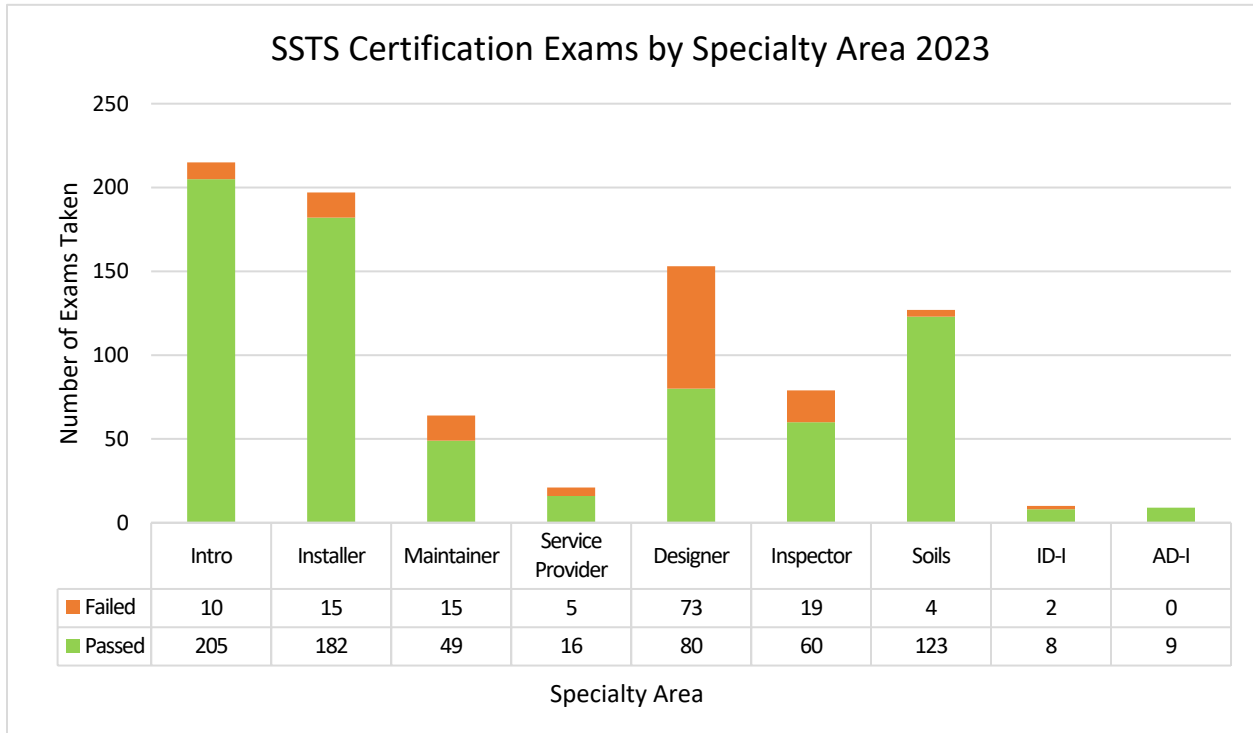
## SSTS certification and licensing

In 1978, the MPCA Citizens' Board adopted standards for Individual Sewage Treatment Systems. In cooperation with the University of Minnesota, they began hosting voluntary Onsite Sewage Treatment System workshops. In 1994, the Minnesota Legislature made it mandatory for SSTS professionals to be certified and licensed.

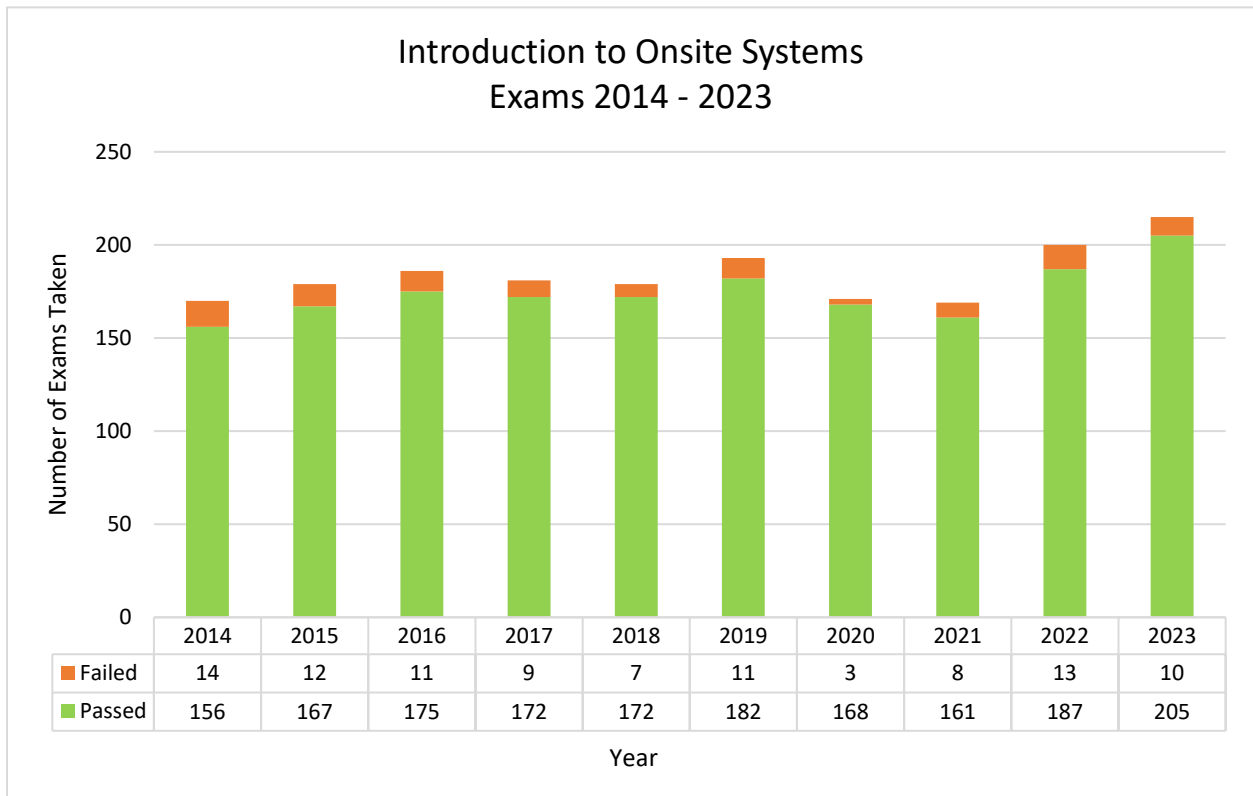
Since then, just under 1,400 workshops have taken place throughout Minnesota, with almost 61,000 participants. More than 29,000 certification exams have been taken, resulting in over 1,200 business licenses and just under 3,300 individual certifications being awarded by the MPCA to SSTS designers, installers, maintainers, service providers, and inspectors.

[Figure 22](#) presents 2023 data for all SSTS certification exam types. [Figure 23](#), [24](#), [25](#), [26](#), [27](#), [28](#), [29](#), [30](#), [31](#), and [32](#) present data on individual certification exam types over the last ten years.

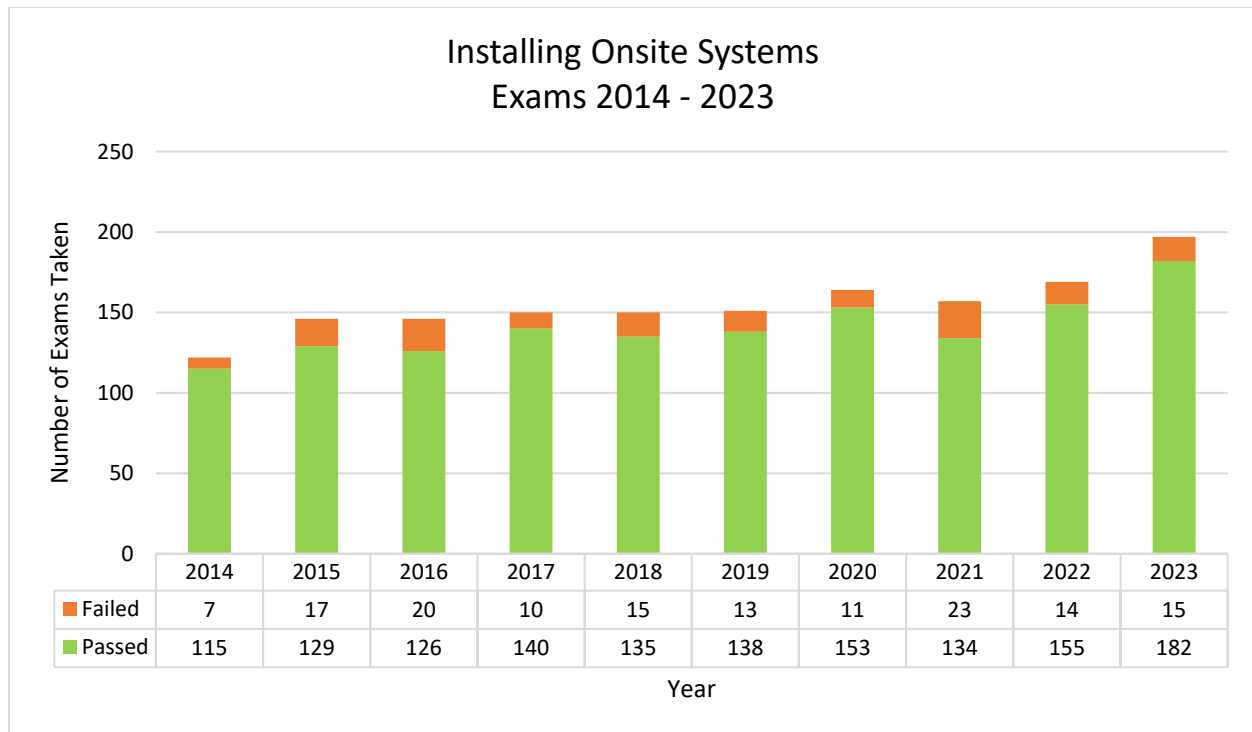
**Figure 20. 2023 SSTS certification exams by specialty area**



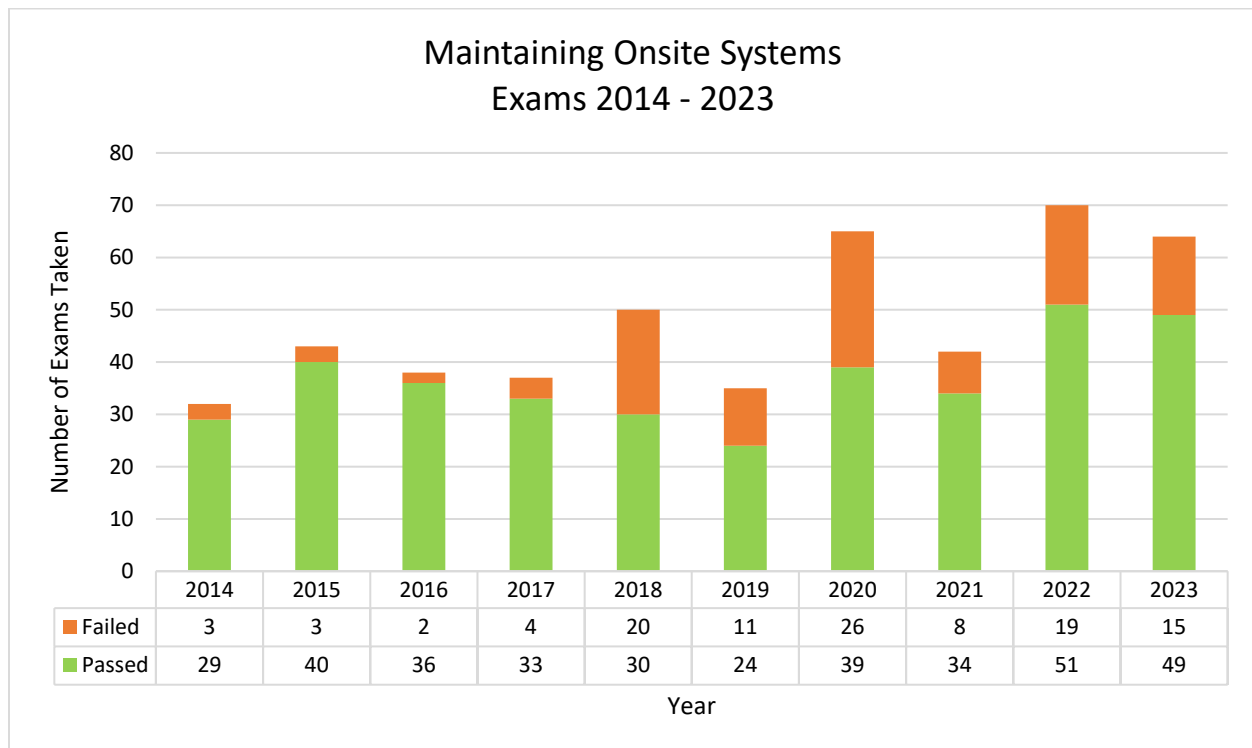
**Figure 21. Introduction to Onsite Systems certification exams 2014-2023**



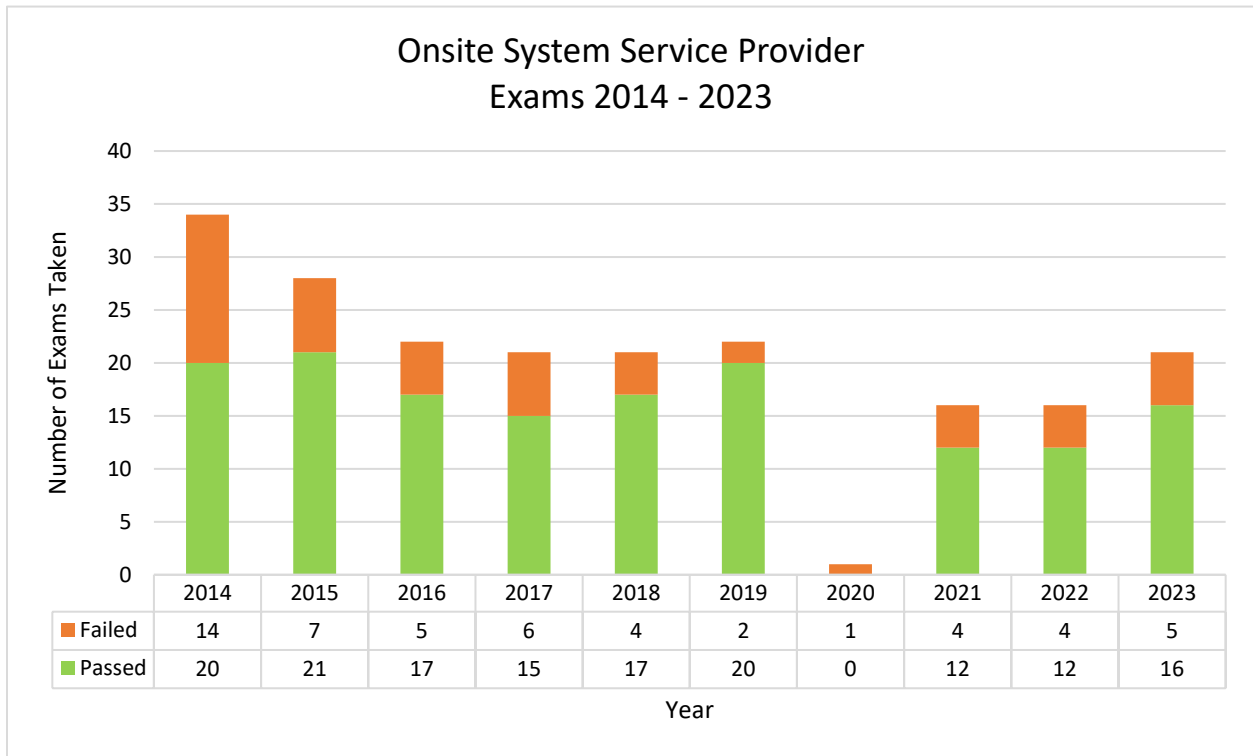
**Figure 22. Installing Onsite Systems certification exams 2014-2023**



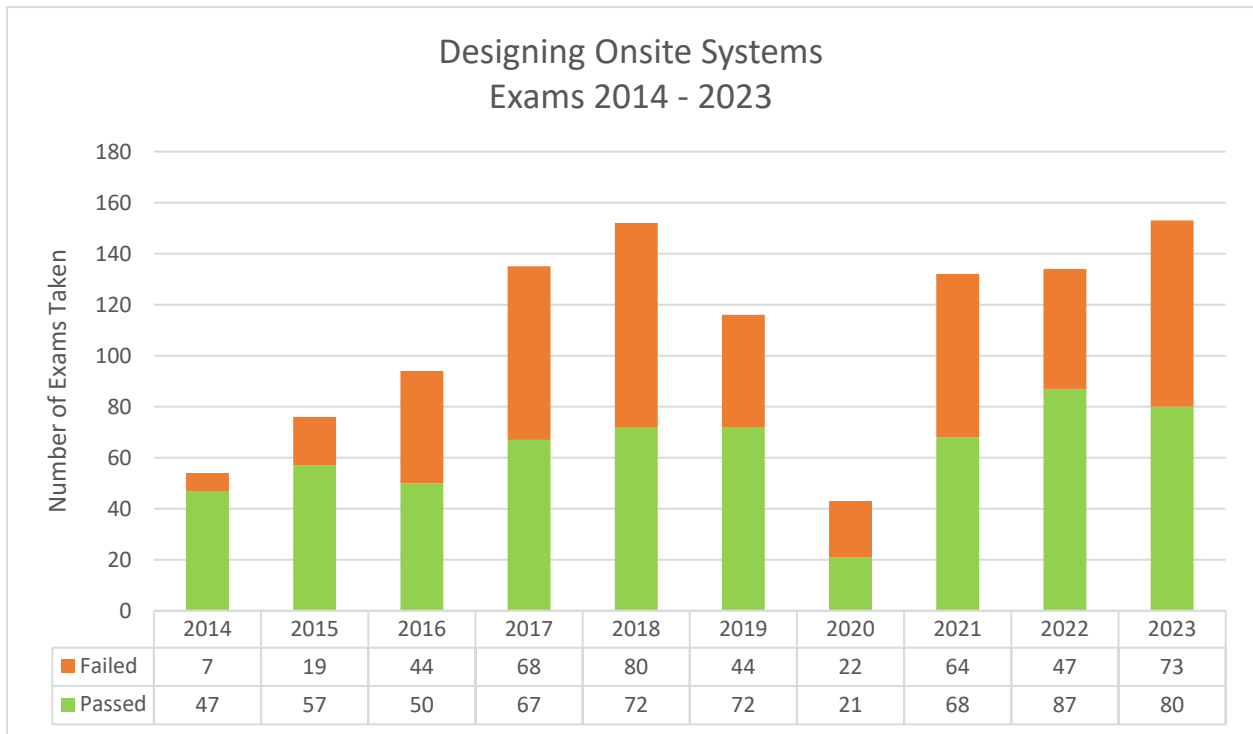
**Figure 23. Maintaining Onsite Systems certification exams 2014-2023**



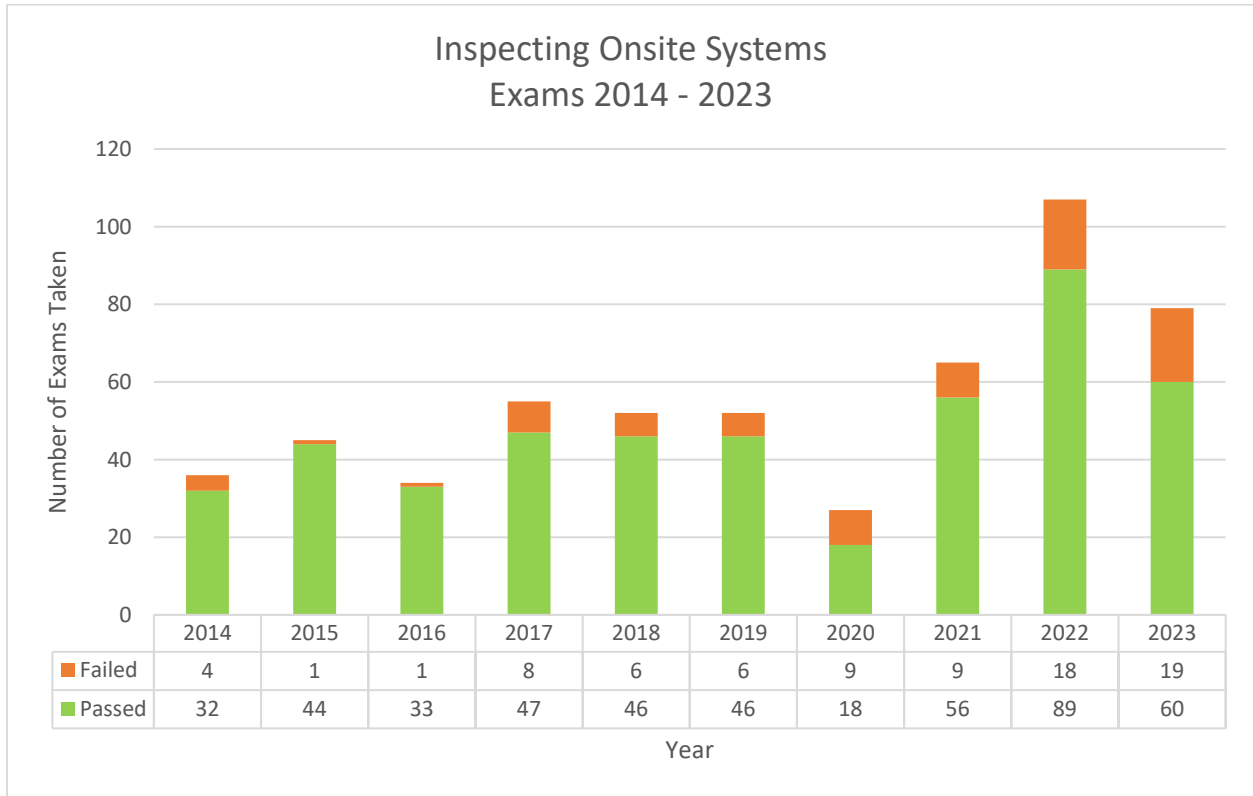
**Figure 24. Service Provider for Onsite Systems certification exams 2014-2023**



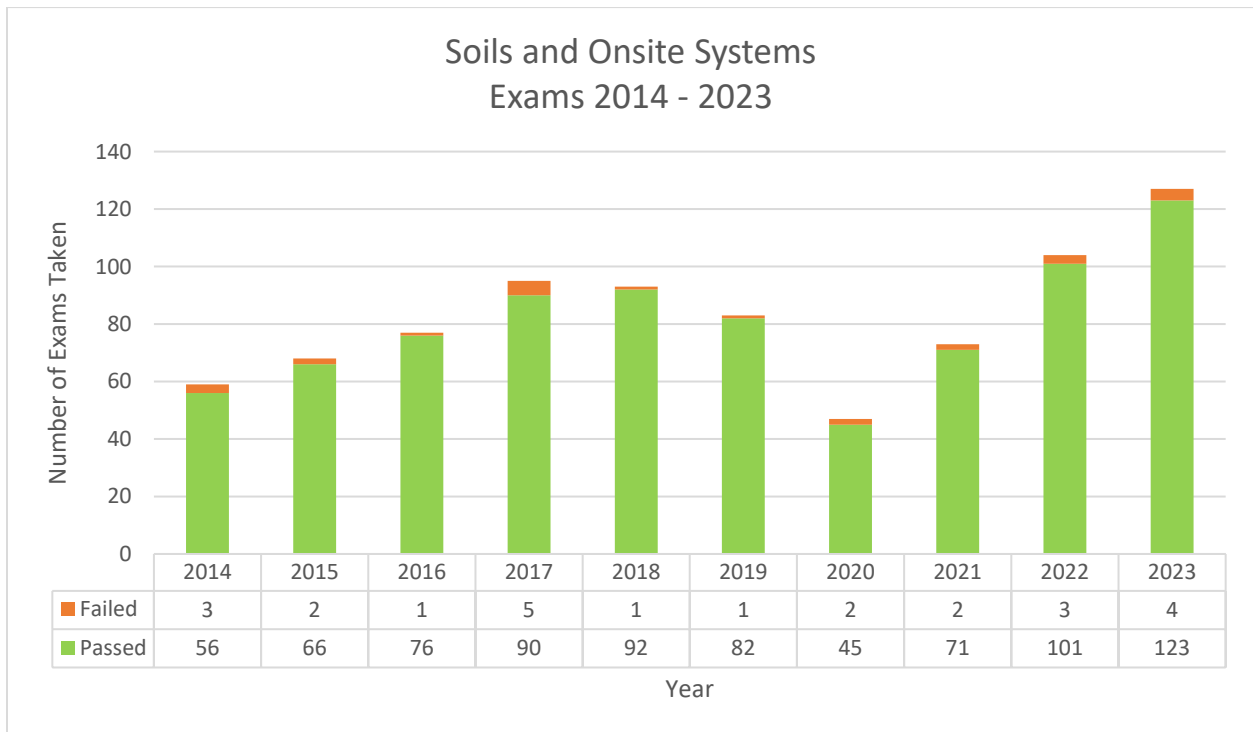
**Figure 25. Designing Onsite Systems certification exams 2014-2023**



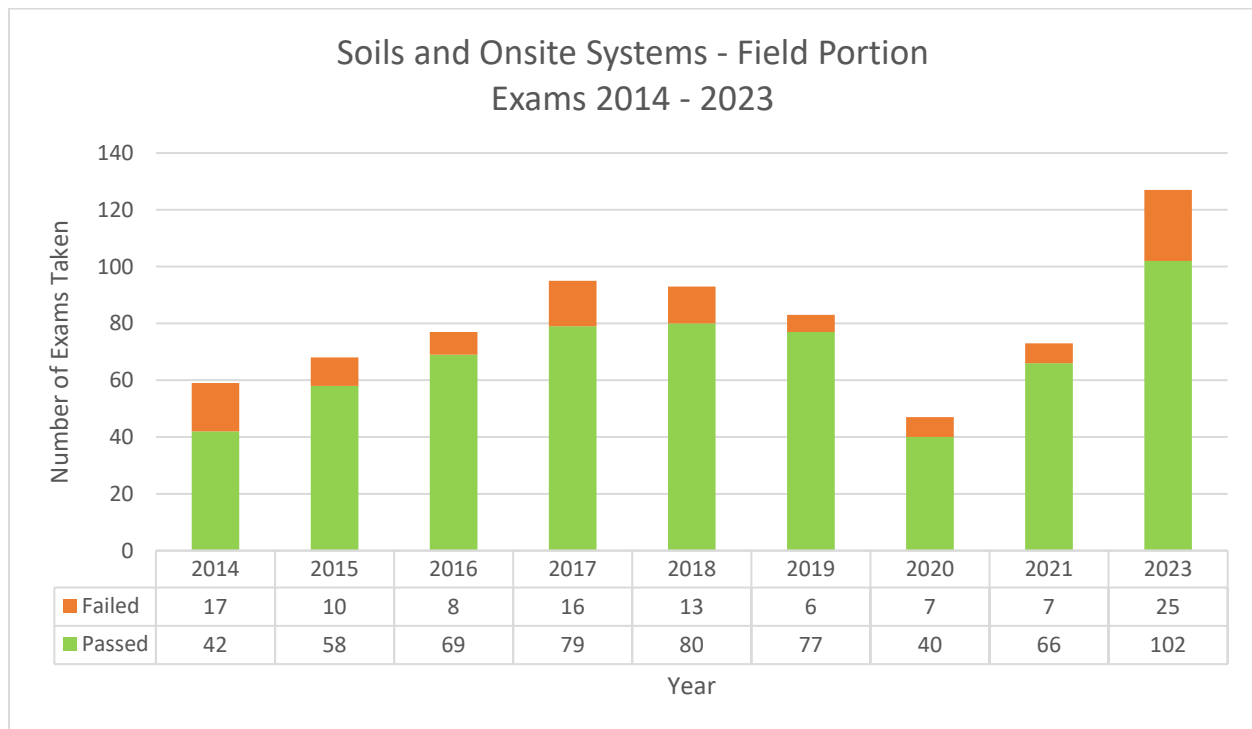
**Figure 26. Inspecting Onsite Systems certification exams 2014-2023**



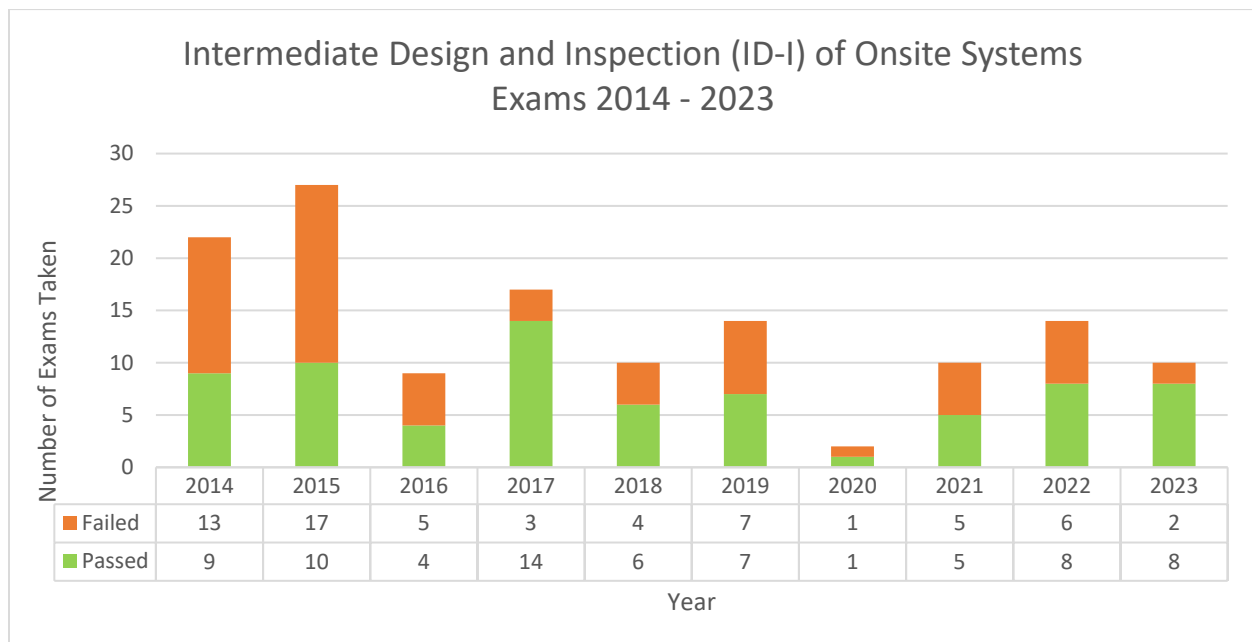
**Figure 27. Soils and Onsite Systems certification exams 2014-2023**



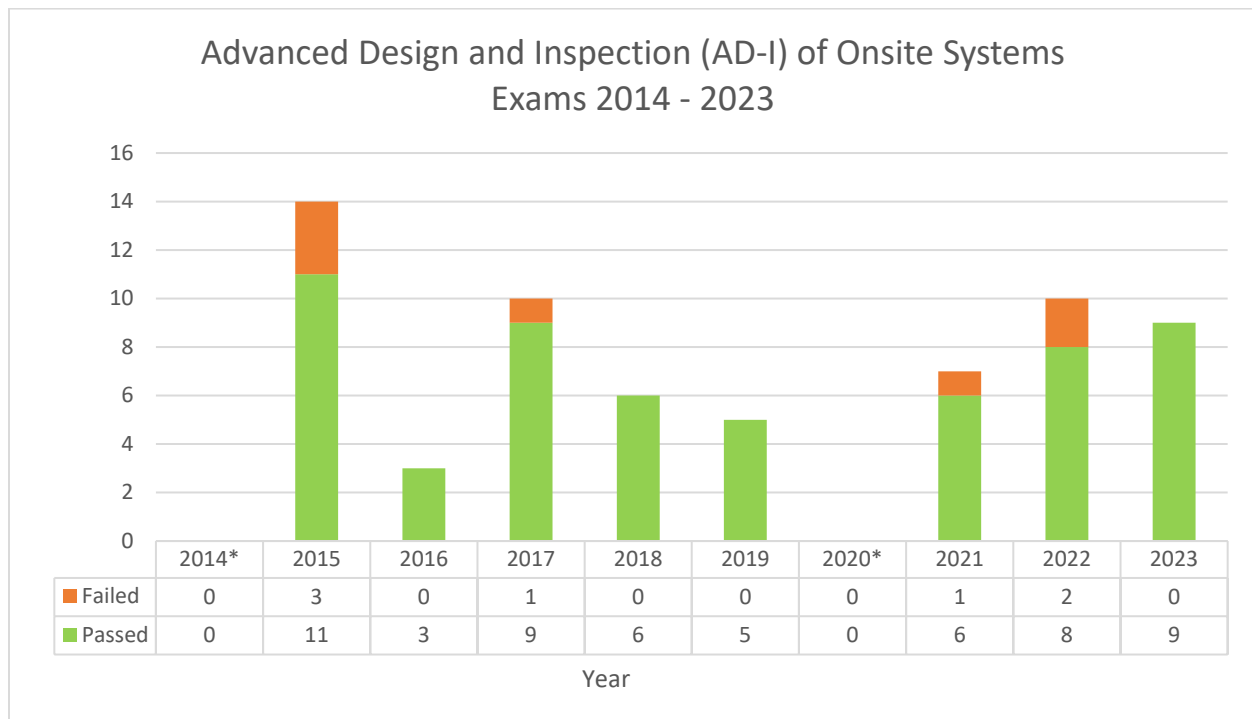
**Figure 28. Soils (Field Portion) and Onsite Systems certification exams 2014-2023**



**Figure 29. Intermediate Design and Inspection (ID-I) of Onsite Systems certification exams 2014-2023**



**Figure 30. Advanced Design and Inspection (AD-I) of Onsite Systems certification exams 2014-2023**



\*Advanced Design and Inspection (AD-I) of Onsite Systems was not offered in the years 2014 & 2020.

# Summary and conclusions

Minn. R. 7082.0040 requires local SSTS programs to submit annual reports to the MPCA by February 1 documenting their SSTS activities for the previous calendar year. In December 2023, the MPCA sent out a web-based annual report survey to LGUs with known SSTS programs. The annual report survey collected data from each local SSTS program so that relevant information could be summarized into the statewide 2023 SSTS Annual Report.

There were 194 LGUs (86 counties, 72 cities, 32 townships, and 4 other special purpose units of government with permitting authority), who administered SSTS programs in 2023, 192 of those LGU's submitted annual report data.

A total of 649,493 SSTS were reported across Minnesota, representing an estimated 44.4 billion gallons of wastewater treated by SSTS in 2023 (assuming 2.5 person/permit; 75 gallons/person; 365 days/year).

LGUs issued 10,856 SSTS construction permits in 2023 for 5,029 new systems and, 5,488 replacement systems. Additionally, there were 399 permits issued for system repairs. Of the 10,856 SSTS permitted in 2023, approximately 94% serve residential dwellings and 6% serve other establishments.

Approximately 71% of the SSTS permitted in 2023 were Type I systems, including, 4,610 Type I mounds and 2,651 in ground systems. There were 1537 Type II systems, 1420 Type III systems, 80 Type IV systems, and 9 Type V systems permitted in 2023.

The majority of SSTS construction permits issued in 2023 were for systems with a flow volume between 1-2,499 gpd; however, there were 31 systems permitted with a flow volume between 2,500-4,999 gpd and 5 systems permitted with a flow volume between 5,000-10,000 gpd.

LGUs reported that 13,998 sewage tanks were installed in 2023.

There were 14,111 existing system compliance inspections conducted in 2023. LGUs reported that 793 noncompliant properties were mitigated by centralized sewer connection, abandonment or removal, or a government buyout in 2023.

Of the 194 LGUs with SSTS programs in 2023, 97% approve SSTS designs before issuing construction permits, over 97% verify soils at some point during the review process 33% track SSTS maintenance activities, and approximately 77% have property transfer compliance inspection requirements.

Over 107,000 SSTS construction permits have been issued within the last ten years, indicating that over 16% of Minnesota's 649,493 SSTS have been constructed within the last ten years or contain components that are less than ten years old.

The number of estimated compliant SSTS has increased over the last ten years, from an estimated 424,000 systems in 2014 to approximately 534,595 systems in 2023. An increase of over 110,000 systems.

Trends observed from the 2023 SSTS Annual Report suggest continued improvements in subsurface wastewater treatment across the state.

# Appendix A

## Countywide statistics

County	Total SSTS reported in 2023	Construction permits reported in 2023	Total construction permits issued 2002-2023	Number of compliance inspections of existing SSTS conducted countywide (private inspector and LGU)	Percent of total existing SSTS inspected in 2023 out of total SSTS	Counties with compliance inspections for property transfer
Aitkin	14835	225	5791	485	3.3%	Yes
Anoka*	30154	439	10269	376	1.2%	No
Becker	18313	259	7326	150	0.8%	No
Beltrami*	13977	255	4888	315	2.3%	Yes
Benton	4508	88	2277	111	2.5%	Yes
Big Stone	1771	27	622	33	1.9%	Yes
Blue Earth	5632	81	3055	172	3.1%	Yes
Brown	2377	50	1232	31	1.3%	Yes
Carlton	9586	131	3114	102	1.1%	No
Carver*	5220	89	2278	122	2.3%	Yes
Cass*	24560	467	10499	564	2.3%	Yes
Chippewa	2176	31	704	10	0.5%	No
Chisago*	11426	174	4542	303	2.7%	Yes
Clay	3922	52	1821	58	1.5%	Yes
Clearwater	3662	44	874	9	0.2%	No
Cook	6887	132	3032	213	3.1%	No
Cottonwood	1626	27	773	24	1.5%	Yes
Crow Wing*	35403	549	11254	1380	3.9%	Yes
Dakota*	9321	124	3544	159	1.7%	Yes
Dodge	3272	78	1649	69	2.1%	Yes
Douglas*	6892	252	4460	255	3.7%	Yes
Faribault	2285	22	1443	31	1.4%	Yes
Fillmore	4730	111	2150	68	1.4%	Yes
Freeborn	3978	58	2130	50	1.3%	Yes
Goodhue	6258	123	2583	90	1.4%	Yes
Grant	1327	28	708	18	1.4%	Yes
Hennepin*	9268	103	3019	324	3.5%	No
Houston	2412	35	1219	10	0.4%	No
Hubbard*	14235	296	6145	239	1.7%	No
Isanti*	13490	148	3961	163	1.2%	Yes
Itasca*	17887	245	7185	259	1.4%	Yes

County	Total SSTS reported in 2023	Construction permits reported in 2023	Total construction permits issued 2002-2023	Number of compliance inspections of existing SSTS conducted countywide (private inspector and LGU)	Percent of total existing SSTS inspected in 2023 out of total SSTS	Counties with compliance inspections for property transfer
Jackson	1960	33	970	16	0.8%	Yes
Kanabec	6964	115	2050	106	1.5%	No
Kandiyohi*	7393	122	3839	225	3.0%	Yes
Kittson	1012	6	210	0	0.0%	No
Koochiching	2220	26	838	2	0.1%	No
Lac qui Parle	1854	28	663	19	1.0%	Yes
Lake	4360	83	1939	96	2.2%	Yes
Lake of the Woods*	3137	55	2947	4	0.1%	No
Le Sueur	9353	106	2913	135	1.4%	Yes
Lincoln	1817	17	764	54	3.0%	Yes
Lyon	2510	44	1061	1000	39.8%	Yes
Mahnomen	2012	14	357	32	1.6%	No
Marshall	2100	17	351	3	0.1%	No
Martin	2690	64	1251	32	1.2%	Yes
McLeod	4427	67	2239	97	2.2%	Yes
Meeker	8932	125	2963	152	1.7%	Yes
Mille Lacs	7020	175	4051	217	3.1%	Yes
Morrison	9917	286	5924	272	2.7%	Yes
Mower	3518	94	1938	109	3.1%	Yes
Murray	1209	37	875	35	2.9%	Yes
Nicollet	2904	63	1409	76	2.6%	Yes
Nobles	2521	54	822	19	0.8%	Yes
Norman	2913	8	276	235	8.1%	No
Olmsted*	15521	188	3000	126	0.8%	Yes
Otter Tail*	26262	737	11577	739	2.8%	Yes
Pennington	1845	21	436	3	0.2%	No
Pine*	13176	267	4669	307	2.3%	Yes
Pipestone	1237	24	595	3	0.2%	Yes
Polk	6496	101	1957	49	0.8%	No
Pope*	4386	74	1787	65	1.5%	Yes
Ramsey*	1653	10	407	30	1.8%	N/A
Red Lake	893	11	252	2	0.2%	Yes
Redwood	2596	39	1063	7	0.3%	No

County	Total SSTS reported in 2023	Construction permits reported in 2023	Total construction permits issued 2002-2023	Number of compliance inspections of existing SSTS conducted countywide (private inspector and LGU)	Percent of total existing SSTS inspected in 2023 out of total SSTS	Counties with compliance inspections for property transfer
Renville	2603	57	1439	44	1.7%	Yes
Rice*	7135	104	3194	114	1.6%	Yes
Rock	1449	19	519	14	1.0%	No
Roseau	3877	27	375	10	0.3%	No
Scott	8897	132	3228	165	1.9%	No
Sherburne*	21641	277	11389	452	2.1%	Yes
Sibley	2693	37	1338	40	1.5%	Yes
St. Louis	40549	801	15216	940	2.3%	Yes
Stearns	18572	310	9181	554	3.0%	Yes
Steele	2925	47	1365	56	1.9%	Yes
Stevens	2048	13	503	2	0.1%	No
Swift	1475	33	609	15	1.0%	Yes
Todd*	10831	163	3978	166	1.5%	Yes
Traverse	620	15	316	2	0.3%	Yes
Wabasha	12336	70	1621	82	0.7%	No
Wadena	3695	104	2102	94	2.5%	Yes
Waseca	2457	52	1232	70	2.8%	Yes
Washington*	19984	262	5918	361	1.8%	Yes
Watonwan	1314	36	652	22	1.7%	Yes
Wilkin*	1055	19	606	6	0.6%	Yes
Winona	5130	92	2031	77	1.5%	Yes
Wright*	18171	304	6792	359	2.0%	Yes
Yellow Medicine	1748	28	696	6	0.3%	No
<b>Total</b>	<b>649,403</b>	<b>10,856</b>	<b>255,240</b>	<b>14,111</b>	<b>2.17%</b>	<b>(61) Yes</b>

\*County, City, Township, and other special purpose units of government data were added to their respective counties to tabulate this information.

# Appendix B

## Appendix B1

### City programs

County name Number of cities with SSTs programs	City Submitted annual report	City No annual report submitted
Anoka County (12)	Andover City	
	Anoka City	
	Blaine City	
	Columbus City	
	Coon Rapids City	
	East Bethel City	
	Ham Lake City	
	Lino Lakes City	
	Nowthen City	
	Oak Grove City	
	Ramsey City	
	Saint Francis City	
Beltrami (1)	Wilton City	
Carver County (1)	Chanhassan City	
Cass County (1)	Lake Shore City	
Chisago County (2)	North Branch City	
	Wyoming City	
Crow Wing County (13)	Baxter City	
	Crosby City	
	Crosslake City	
	Cuyuna City	
	Deerwood City	
	Emily City	
	Fifty Lakes City	
	Garrison City	
	Jenkins City	
	Manhattan Beach City	
	Nisswa City	
	Pequot Lakes City	
	Trommald City	
Dakota County (17)	Apple Valley City	
	Burnsville City	
	Coates City	

	Eagan City	
	Farmington City	
	Hampton City	
	Hastings City	
	Inver Grove Heights City	
	Lakeville City	
	Lilydale City	
	Mendota Heights City	
	Miesville City	
	Rosemount City	
	South Saint Paul City	
	Sunfish Lake City	
	Vermillion City	
	West Saint Paul City	
Douglas County (1)	Alexandria City	
Hennepin County (5)	Dayton City	
	Independence City	
	Medina City	
	Orono City	
		Woodland City
Hubbard County (1)	Park Rapids City	
Lake of the Woods (1)	Baudette City	
Pine County (2)	Rock Creek City	
	Pine City	
Pope County (1)	Glenwood City	
Ramsey County (7)	Gem Lake City	
	Little Canada City	
	Maplewood City	
	North Oaks City	
	Saint Paul City	
	Shoreview City	
	White Bear Lake City	
Rice County (1)	Northfield City	
Sherburne County (3)	Becker City	
	Elk River City	
	Zimmerman City	
Wilkin County (1)	Doran City	
Wright County (1)	Otsego City	

## Appendix B2

### Township programs

County name Number of townships with SSTs programs	Township Submitted annual report	Township No annual report submitted
Anoka County (1)	Linwood Township	
Crow Wing County (2)	Crow Wing Township	
	Irondale Township	
Dakota County (11)	Castle Rock Township	
	Douglas Township	
	Empire Township	
	Eureka Township	
	Greenvale Township	
	Hampton Township	
	Marshan Township	
	Nininger Township	
	Ravenna Township	
	Scotia Township	
	Vermillion Township	
Douglas County (1)	Alexandria Township	
Isanti County (1)	Athens Township	
Kandiyohi County (1)	Saint Johns Township	
Mille Lacs County (1)	Greenbush Township	
Pine County (6)	Arna Township	
	Bremen Township	
	Munch Township	
	Pine City Township	
		Pokegema Township
	Royalton Township	
Ramsey County (1)	White Bear Township	
Rice County (1)	Bridgewater Township	
Sherburne County (2)	Baldwin Township	
	Becker Township	
Todd County (2)	Bertha Township	
	Bruce Township	
Wright County (1)	Middleville Township	

## Appendix B3

### Other special purpose units of government programs

County name	Other
Number of townships with SSTS programs	Submitted annual report
Beltrami County (1)	Bemidji Joint Powers Board
Olmsted County (1)	TCPA
Otter Tail County (1)	Otter Tail Water Management District
Other (1)	University of Minnesota

# Appendix C

## List of 2023 SSTS Annual Report questions

### 1. General program information – Yes or No answer.

- a. Alternative Local Standards (ALS) for existing systems?
  - i. ALS are standards that are less restrictive than Minn. R. chs. 7080-7083, do not confuse them with the old system category of 'Alternative Systems' (floodplains, holding tanks, privies).
- b. ALS new or replacement SSTS using a minimum of two foot of separation in allowable areas of the LGU?
- c. ALS new or replacement SSTS using 2006 Rules?
- d. Do you track SSTS maintenance/pumping?
- e. Do you have jurisdiction-wide compliance inspections for property transfer?
- f. Do you approve SSTS design before issuing permit?
- g. When in your permitting process do you verify soils?

### 2. Residential SSTS by system type – Write number of permits issued for each category.

- a. # permits issued for Type I/Rock Trenches.
- b. # permits issued for Type I/EZflow.
- c. # permits issued for Type I/Chamber Trenches.
- d. # permits issued for Type I/Seepage or Pressure Beds.
- e. # permits issued for Type I/Mounds.
- f. # permits issued for Type I/At-Grades.
- g. # permits issued for Type II/Privies, Holding Tanks, and Floodplain Areas.
  - i. # Holding tank operating permits issued.
    - a) The number of holding tank operating permits should be the same as the number of holding tanks entered in Type II/ Privies, Holding Tanks, and Floodplain Areas above if the LGU issues operating permits for holding tanks.
- h. # permits issued for Type III.
- i. # permits issued for Type IV/Registered Product Systems.
- j. # Type IV Operating Permits issued.
- k. # permits issued for Type V.
- l. # Type V Operating Permits issued.

**Note** – If you have 'tank only' installations (ex: drainfield is compliant but tank needed replacement) please enter this in the 'Repair' column and note as such on the spreadsheet.

### 3. Residential SSTS by flow volume – Write number of permits issued for each category.

- a. New systems 1-2,499 gpd.
- b. New systems 2,500-4,999 gpd.
- c. New systems 5,000-10,000 gpd.
- d. Replacement systems 1-2,499 gpd.
- e. Replacement systems 2,500-4,999 gpd.
- f. Replacement systems 5,000-10,000 gpd.

**4. Other establishment SSTS by system type – Write number of permits issued for each category.**

- a. # permits issued for Type I/Rock Trenches.
- b. # permits issued for Type I/EZflow.
- c. # permits issued for Type I/Chamber Trenches.
- d. # permits issued for Type I/Seepage or Pressure Beds.
- e. # permits issued for Type I/Mounds.
- f. # permits issued for Type I/At-grades.
- g. # permits issued for Type II/Privies, Holding Tanks, and Floodplain Areas.
- h. # Holding tank operating permits issued.
  - b) The number of holding tank operating permits should be the same as the number of holding tanks entered in Type II/ Privies, Holding Tanks, and Floodplain Areas above if the LGU issues operating permits for holding tanks.
- i. # permits issued for Type III.
- j. # permits issued for Type IV/Registered Product Systems.
- k. # Type IV Operating Permits issued.
- l. # permits issued for Type V.
  - i. # Type V Operating Permits issued.

**Note** – If you have ‘tank only’ installations (ex: drainfield is compliant but tank needed replacement) please enter this in the ‘Repair’ column and note as such on the spreadsheet.

**5. Other establishment SSTS by flow volume – Write number of permits issued for each category.**

- a. New systems 1-2,499 gpd.
- b. New systems 2,500-4,999 gpd.
- c. New systems 5,000-10,000 gpd.
- d. Replacement systems 1-2,499 gpd.
- e. Replacement systems 2,500-4,999 gpd.
- f. Replacement systems 5,000-10,000 gpd.

**1. Permits issued for SSTS repairs – Write number of permits issued for each category.**

Complete this part only if you issue repair permits or if you have ‘tank only’ installations.

- a. Residential SSTS repairs.
- b. Other establishment SSTS repairs.

**2. Jurisdiction-wide SSTS questions – Write number for each category.**

- a. # Fulltime dwellings with SSTS.
- b. # Seasonal dwellings with SSTS.
- c. # Cluster SSTS.
  - i. # Dwellings served by Cluster SSTS.
- d. # other establishments with SSTS.

**3. SSTS compliance – Write whole numbers only, do not use a decimal or use the percent sign.**

**For example, if your answer is <1%, enter 1.**

- a. Percentage of failing systems within jurisdiction.
- b. Percentage of imminent systems within jurisdiction.

- c. Percentage of compliant SSTS within jurisdiction.
- d. Total percentage SSTS – You do not enter anything here, the spreadsheet will calculate this answer.
  - i. This should total 100, if it does not check your answers to a, c, and/or e and adjust accordingly.
- 4. The number of compliance inspections of existing SSTS conducted in their jurisdiction.**
- 5. The number of noncompliant properties connected to centralized sewer.**
- 6. The number of noncompliant properties mitigated by abandonment or removal of a dwelling.**
- 7. The number of noncompliant properties mitigated through government buyout.**
- 8. Inspector information.**
  - a. Name of department head.
  - b. Name of Trained Administrator.
  - c. Name and email address of SSTS contact.
  - d. Inspector(s) name(s) and;
    - i. License numbers if inspections are contracted out to a licensed SSTS inspection business.
    - ii. Certification numbers if inspections are done in-house by LGU staff certified as SSTS inspectors.
- 9. Tank Installation Report.**
  - a. Installer name.
  - b. Installer license number.
  - c. Number of septic tanks installed.
    - i. This includes pump/lift tanks and holding tanks.
  - d. Number of Performance/Type V systems installed.
    - i. Minn. Stat. § 115.551 limits the number of septic tanks for Performance/Type V systems to one per household.
  - e. Number of tanks installed by homeowners (if allowed in your jurisdiction).
    - i. Name of homeowner.
    - ii. Address.