Michigan Department of Environment, Great Lakes, and Energy

Drinking Water and Environmental Health Division

Onsite Wastewater Management Unit

MICHIGAN 2023
STATEWIDE FAILED SEWAGE SYSTEM EVALUATION
SUMMARY REPORT

November 2024

525 West Allegan Street

P.O. Box 30817

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Michigan.gov/EGLE

Introduction

Michigan's public health accreditation standards strive to maximize the potential of local public health departments to protect and improve people's health in their communities. Accreditation is a collaborative effort between the Michigan Public Health Institute, the Michigan Department of Agriculture and Rural Development, the Michigan Department of Health and Human Services, and the Michigan Department of Environment, Great Lakes, and Energy (EGLE); along with the Michigan Association for Local Public Health and Michigan's 45 local public health departments (LHD).

The mission of the Accreditation Program (Program) is to assure and enhance the quality of local public health in Michigan. The Program does this by identifying and promoting the implementation of public health standards for health departments as well as, evaluating and accrediting LHDs on their ability to meet these standards. The Program's goals are to:

- Assist in continuous quality improvement
- Assure a uniform set of standards that define public health
- Assure a process by which the state can ensure local level capacity to address core functions
- Provide a mechanism for accountability, and
- Assess the needs of the LHD to successfully administer the programs

Through the Program, essential programs, services, and organizational capacity are evaluated by state department staff. Health Department programs are measured against established Minimum Program Requirements (MPR) and Indicators. Accreditation site visits are completed in three-year cycles with each LHD visited once during that time.

Onsite Wastewater Treatment Management, or onsite wastewater, is one of the many programs covered by the Program. Accreditation activities are completed by the EGLE Onsite Wastewater Management Unit (OWMU) for those 44 LHDs that administer an onsite wastewater program.

For the Onsite Wastewater Treatment Management program, MPR 5 states:

"The local health department (LHD) shall investigate, document, and evaluate the probable cause(s) of system failure."

Indicator 5.1 Approval of permits where the system has failed*, includes retrievable documentation, when available, of the age, design, site conditions, and any other pertinent data allowing for assessment of probable reason(s) for failure, and there is an annual summary of data submitted to EGLE.

*Note: **For the purpose of this guidance, a system consists of a tank or tanks, absorption system, and associated appurtenances. A system is considered to have failed when sewage backs up into the home or structure, discharges to the ground surface, contaminates surface water, or drinking water supplies, any part of the system is bypassed, the system is the source of an illicit discharge, there is an absence of an absorption system, or there is a structural failure of a septic tank or other associated appurtenances.**

This report compiles the onsite wastewater failed system data submitted by LHDs for 2023. The 2023 data is absent annual data submission reports from 4 of the 44 reporting health departments; therefore, data is absent from 17 out of 83 counties in Michigan. The data is reported to EGLE in the form of total count data; thus, the information below is aggregated data.

Residential Data

Tables 1 and 2, along with Figures 1 through 11, were created from the data reported by LHDs for residential (single- or two-family) systems for 2023. Table 2 contains the data reported by 44 LHDs in quarterly reporting. Quarterly reporting is a separate reporting requirement from the annual failure data reporting. However, the quarterly reporting information provides a reference for the total number of permits issued by LHDs in the same calendar year. Note that permit counts in Table 2 include both failure and non-failure related septic permits.

Table 1. Total residential sewage related failures reported by LHDs 2023.*

	2023		
	Single Family	**Two Family**	**Total**
Number of Failed Residential Systems	4,297	35	4,332

* The data from four out of the 44 LHDs, representing 17 of 83 total counties, was not reported for 2023.

Table 2. Total number of residential permits issued as reported by LHDs in quarterly reporting 2023 (January to December).**

	2023
Number of Residential Permits Issued per Calendar Year	14,742

** This data was adjusted from fiscal year to calendar year totals (January to December). This data includes both failure and non-failure related permits counts. Data from one county is missing for the 4th quarter (three months) of fiscal year 2022/2023.

Figure 1.

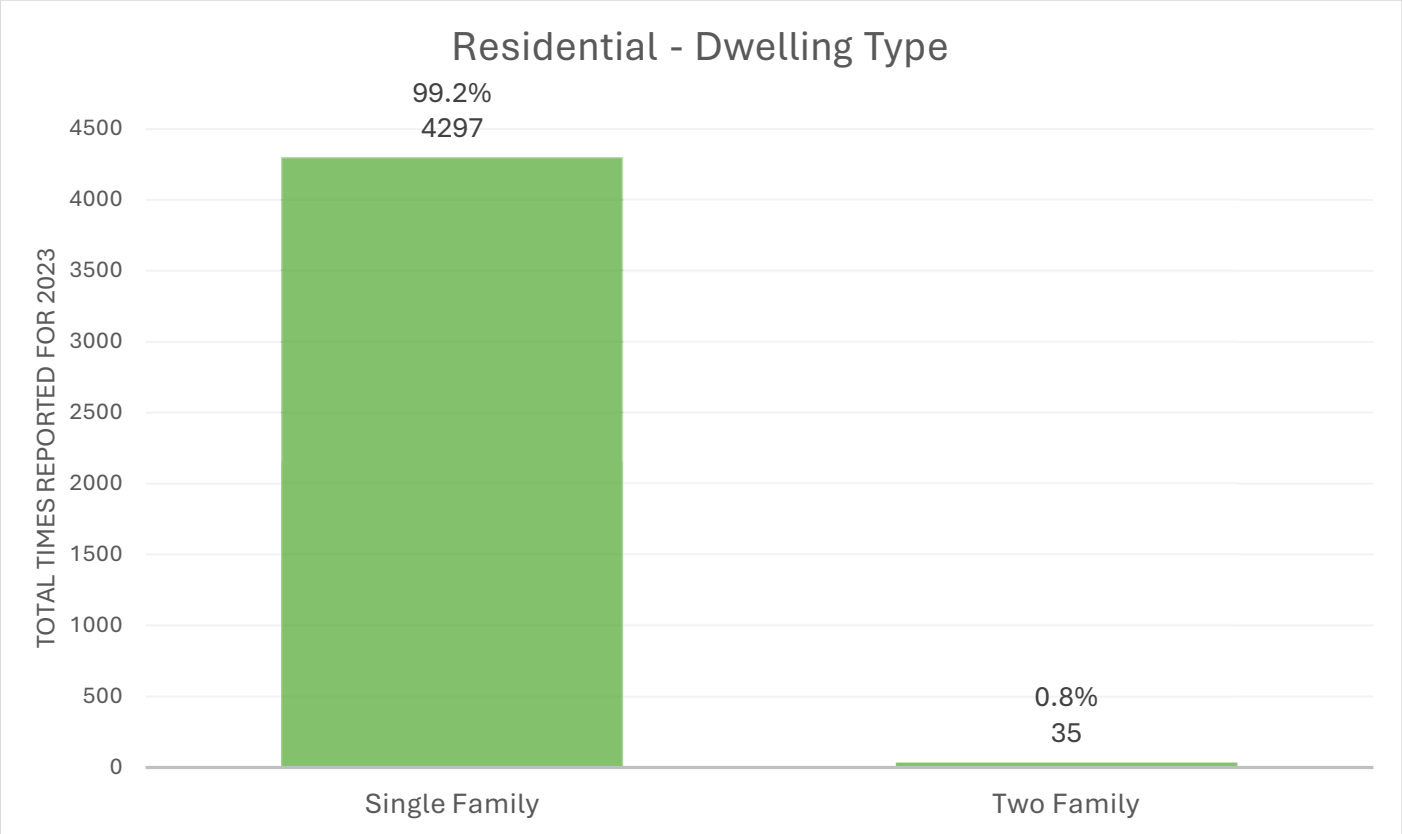


Figure 2.

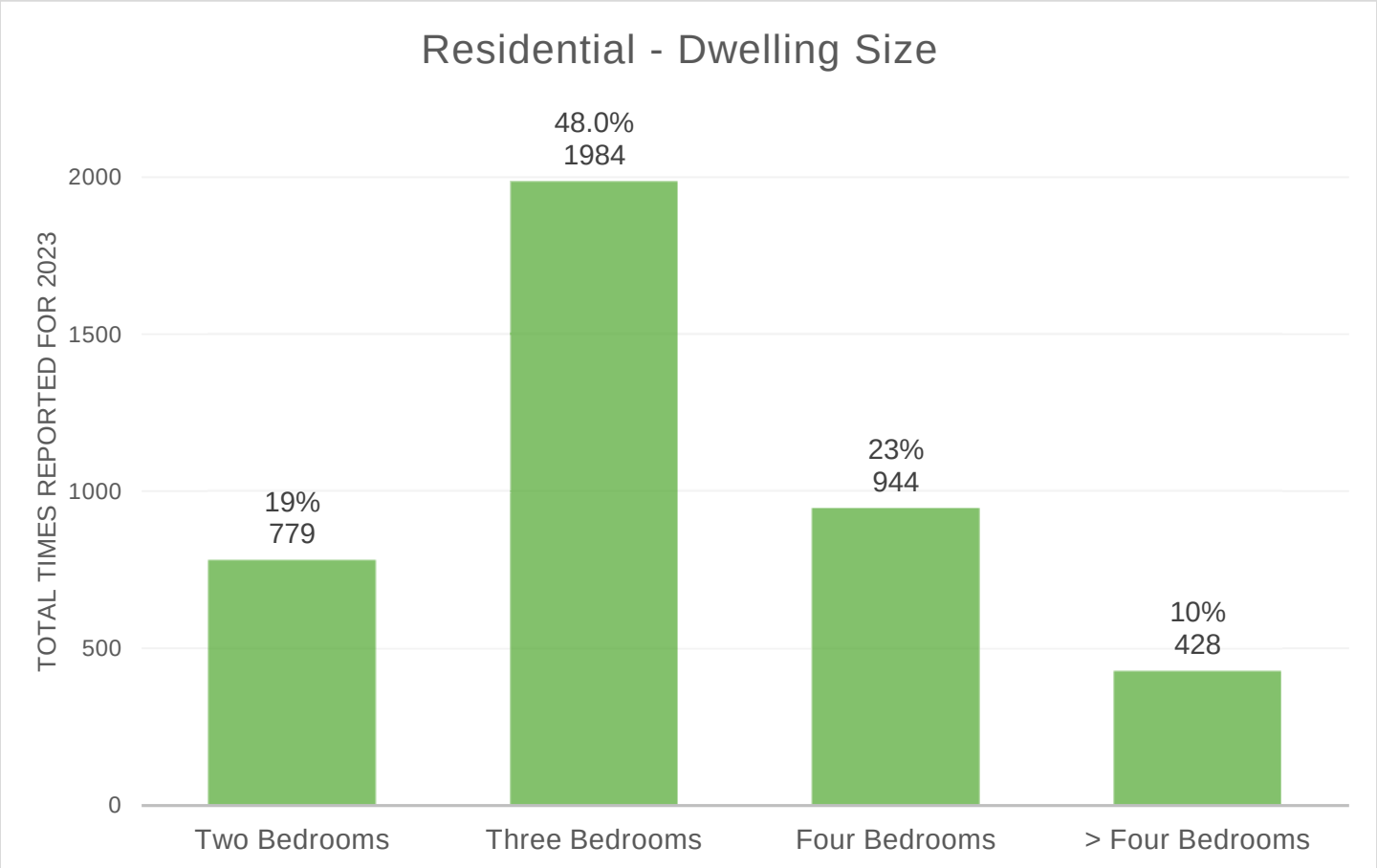


Figure 3.

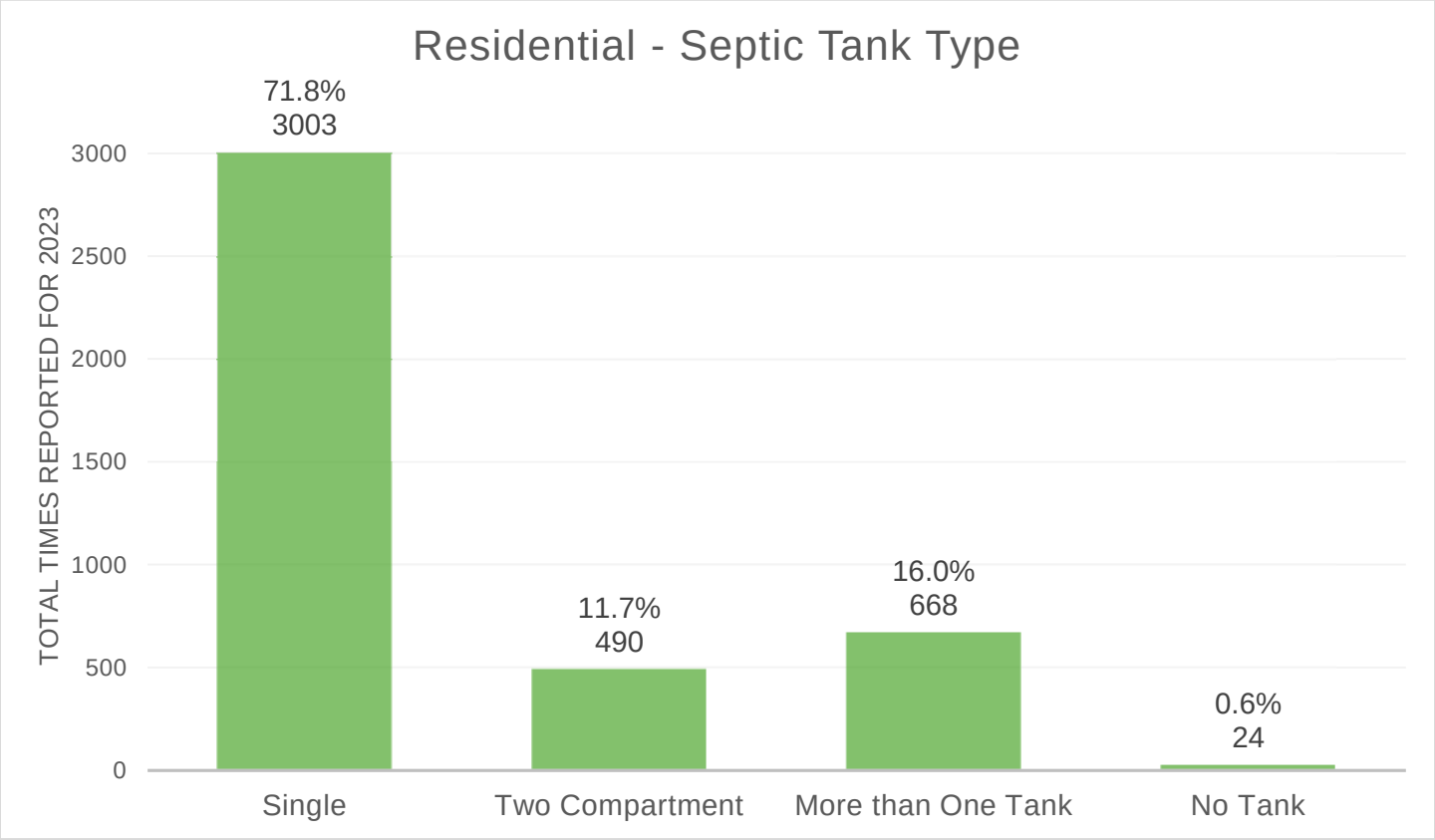
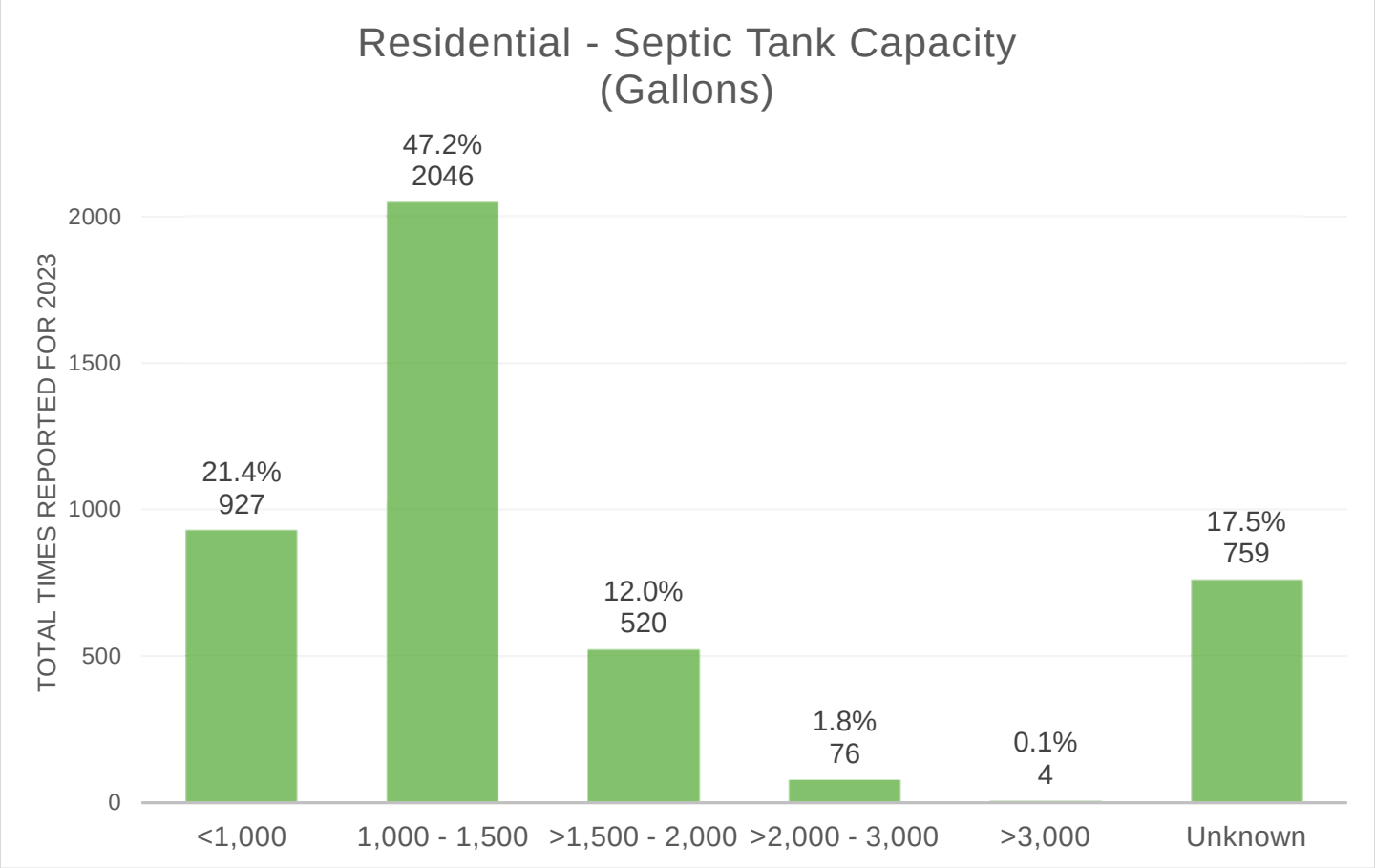


Figure 4.



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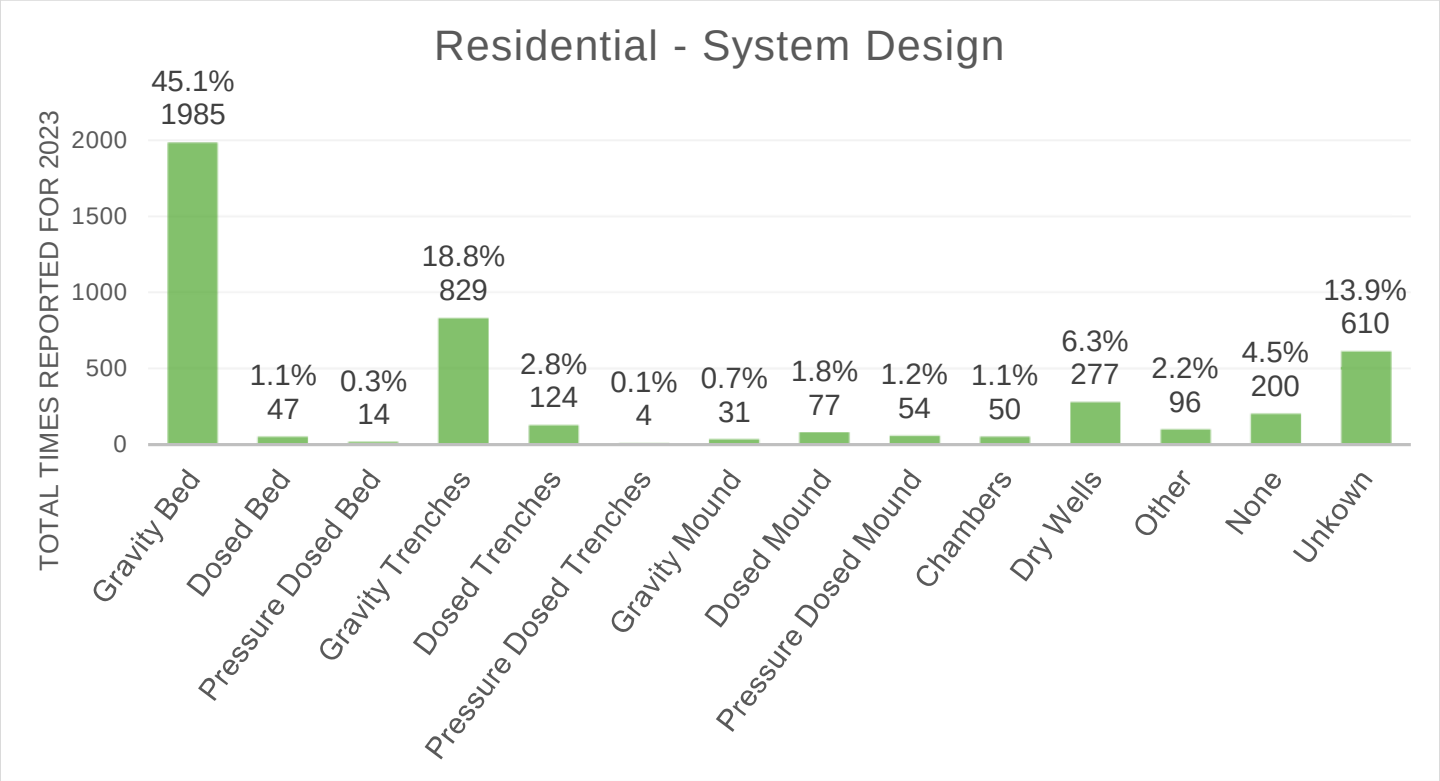

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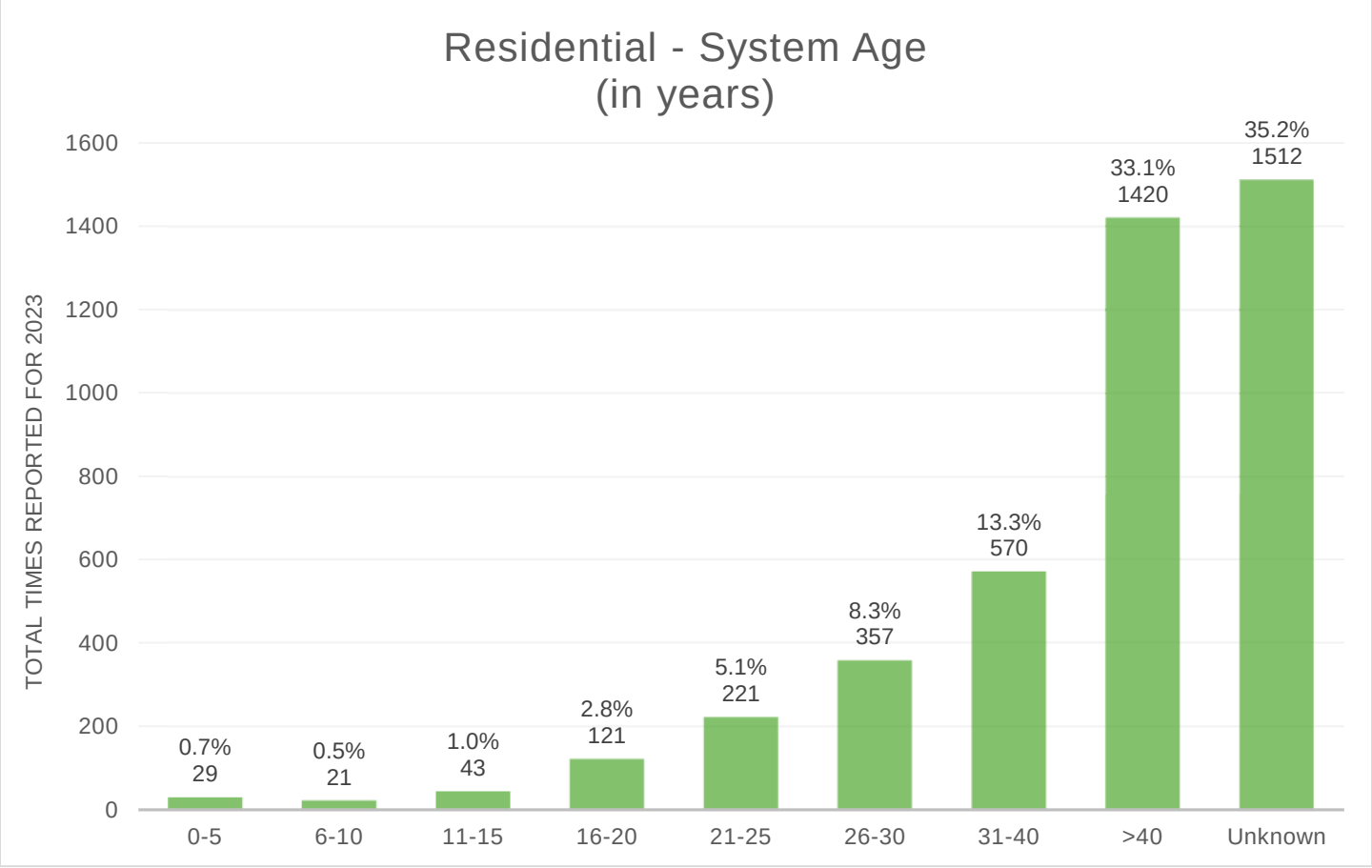

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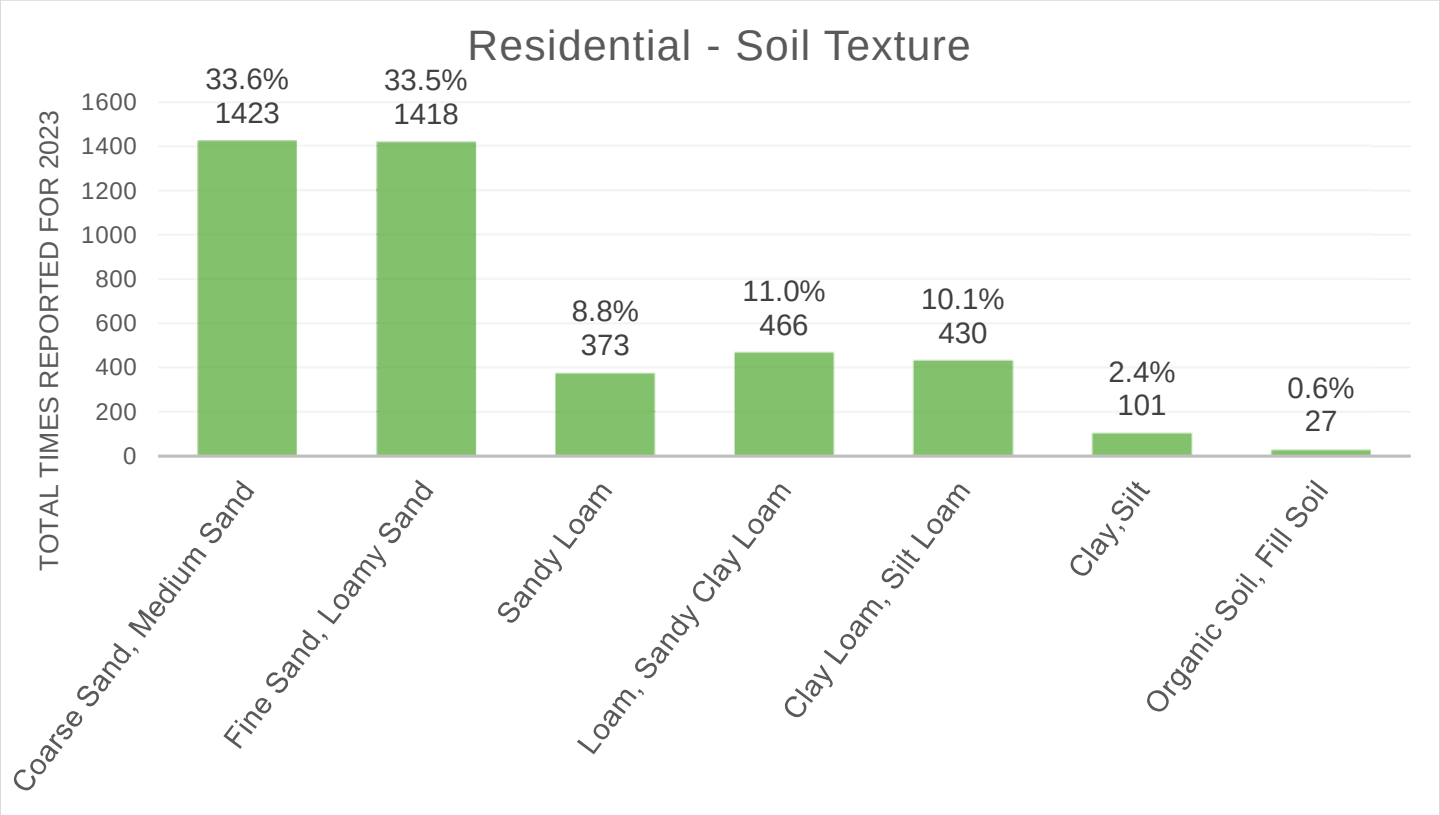

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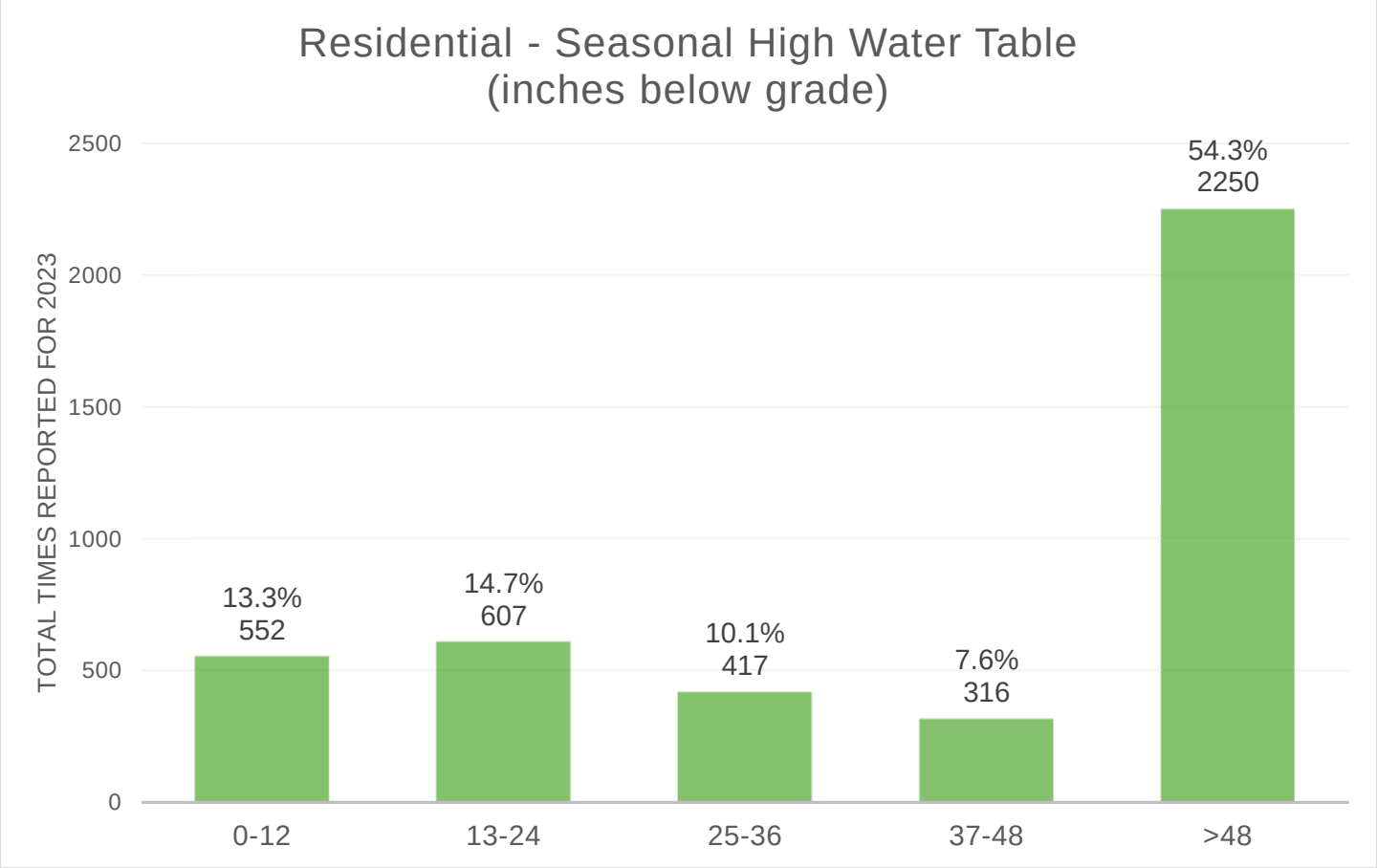

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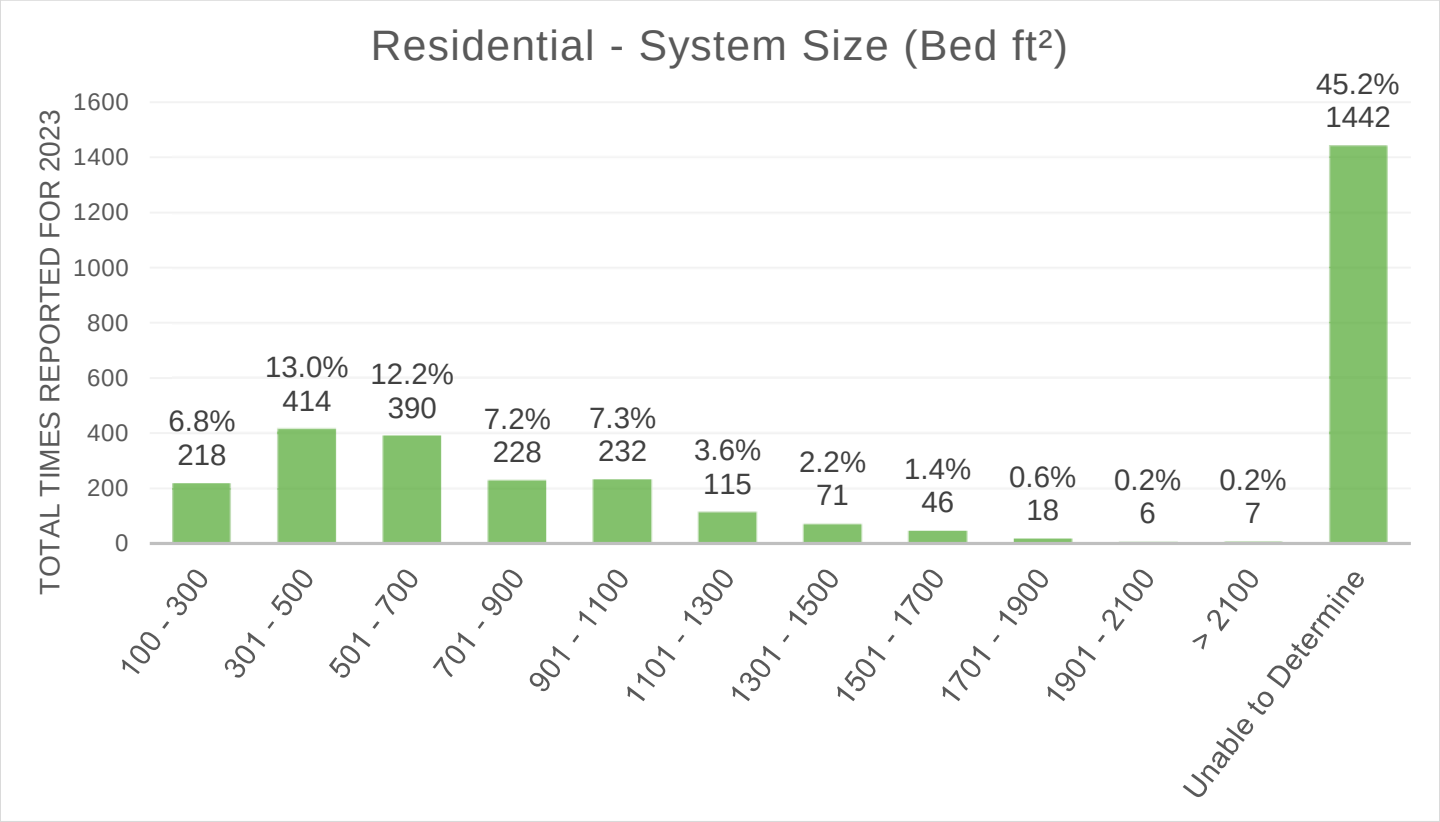


Figure 10.

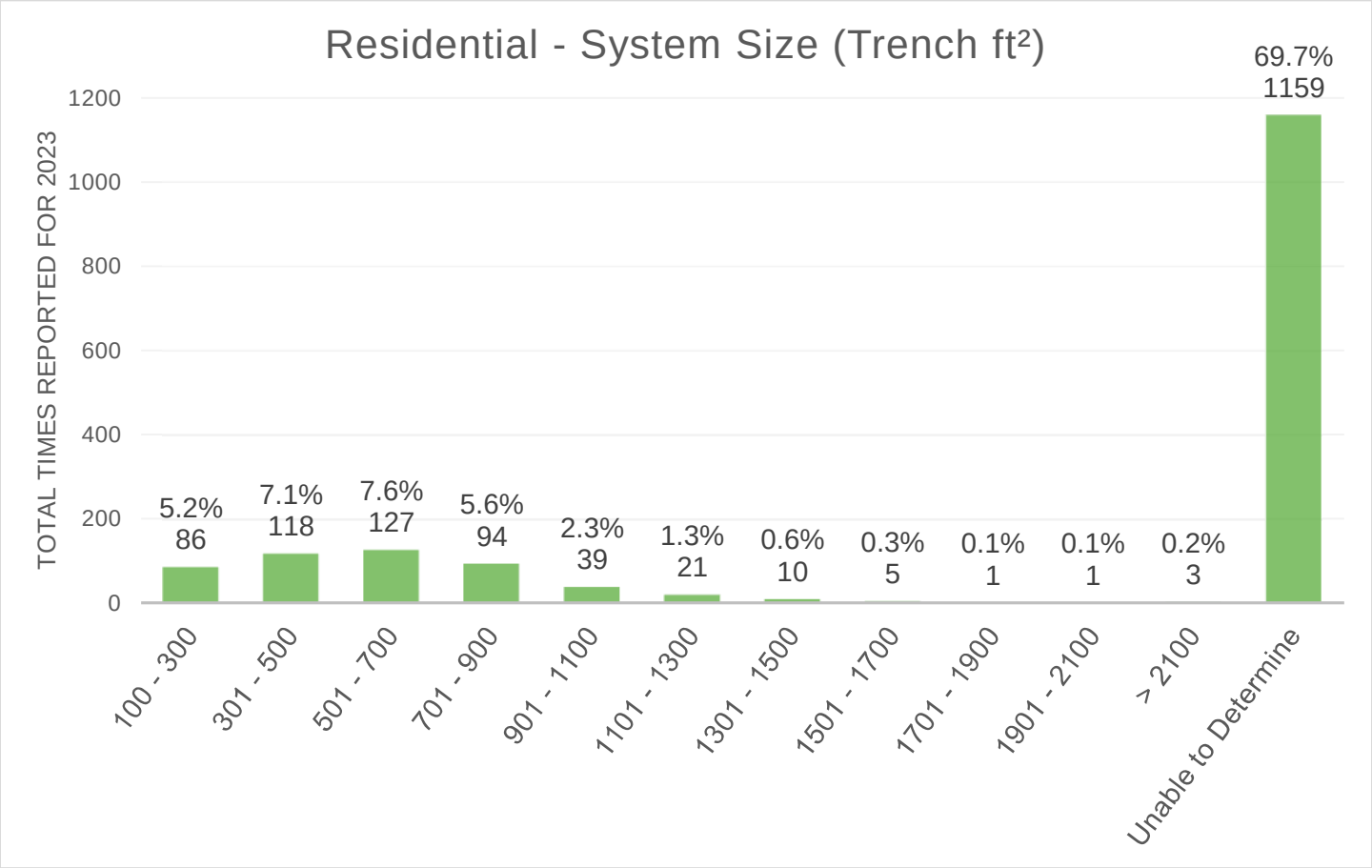
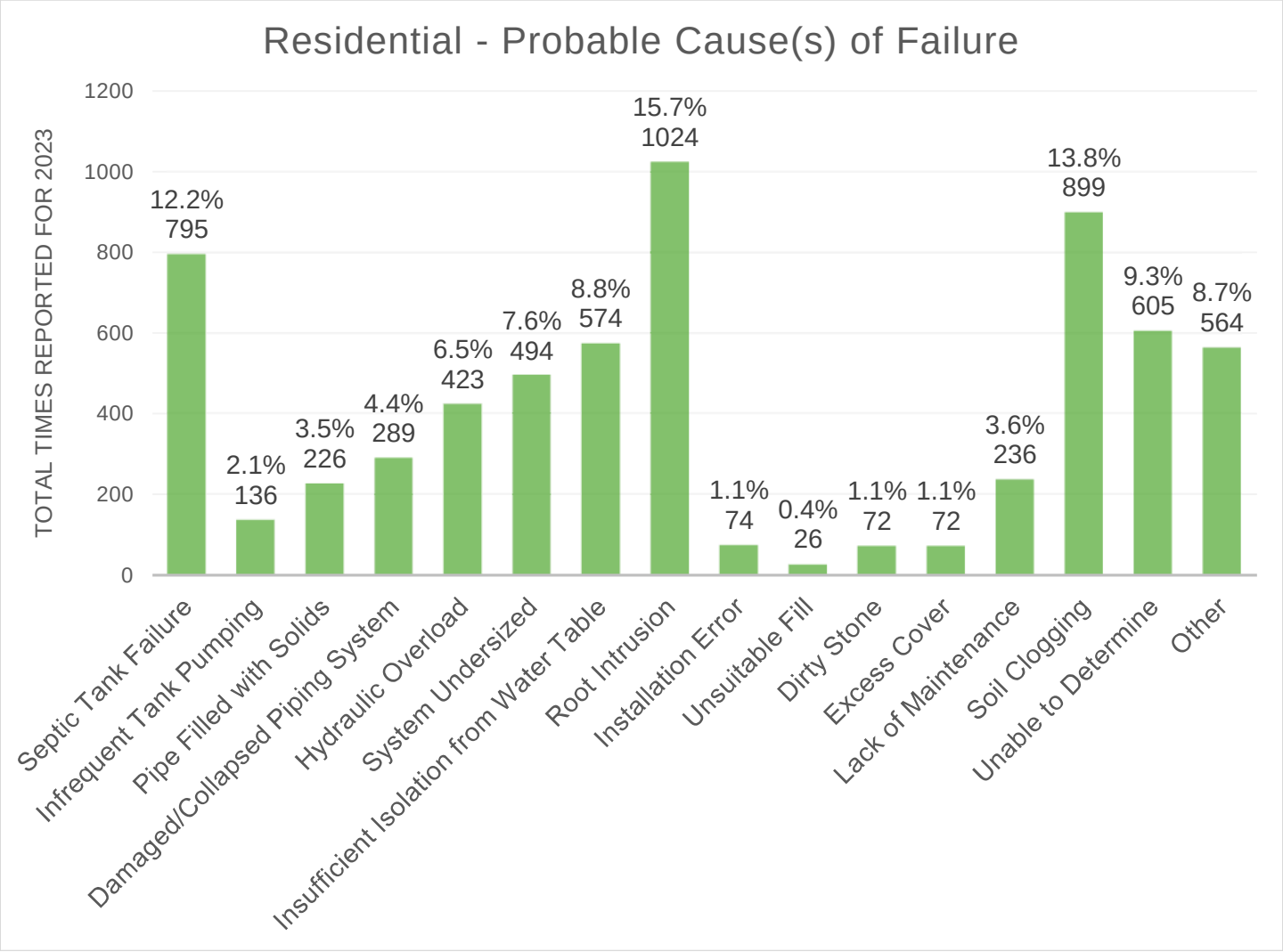


Figure 11. ***



*** Figure 11 “Residential – Probable Cause(s) of Failure” allows for multiple responses for causes of failure for each individual septic system, therefore there may be a higher total number of causes reported than the total number of failures.

Non-Residential Data

Tables 3 and 4, along with Figures 12 through 22, were created from the data reported by LHDs for non-residential (other than single- or two-family) systems for 2023. Table 4 contains the data reported by LHDs in quarterly reporting. Quarterly reporting is a separate reporting requirement from the annual failure data reporting. However, the quarterly reporting information provides a reference for the total number of non-residential permits issued by LHDs in the same calendar year. Note that the permit counts in Table 4 include both failure and non-failure related septic permits.

Table 3. Total Non-Residential Failures Reported by LHDs 2023*

	2023
Number of Failed Non-Residential Systems	118

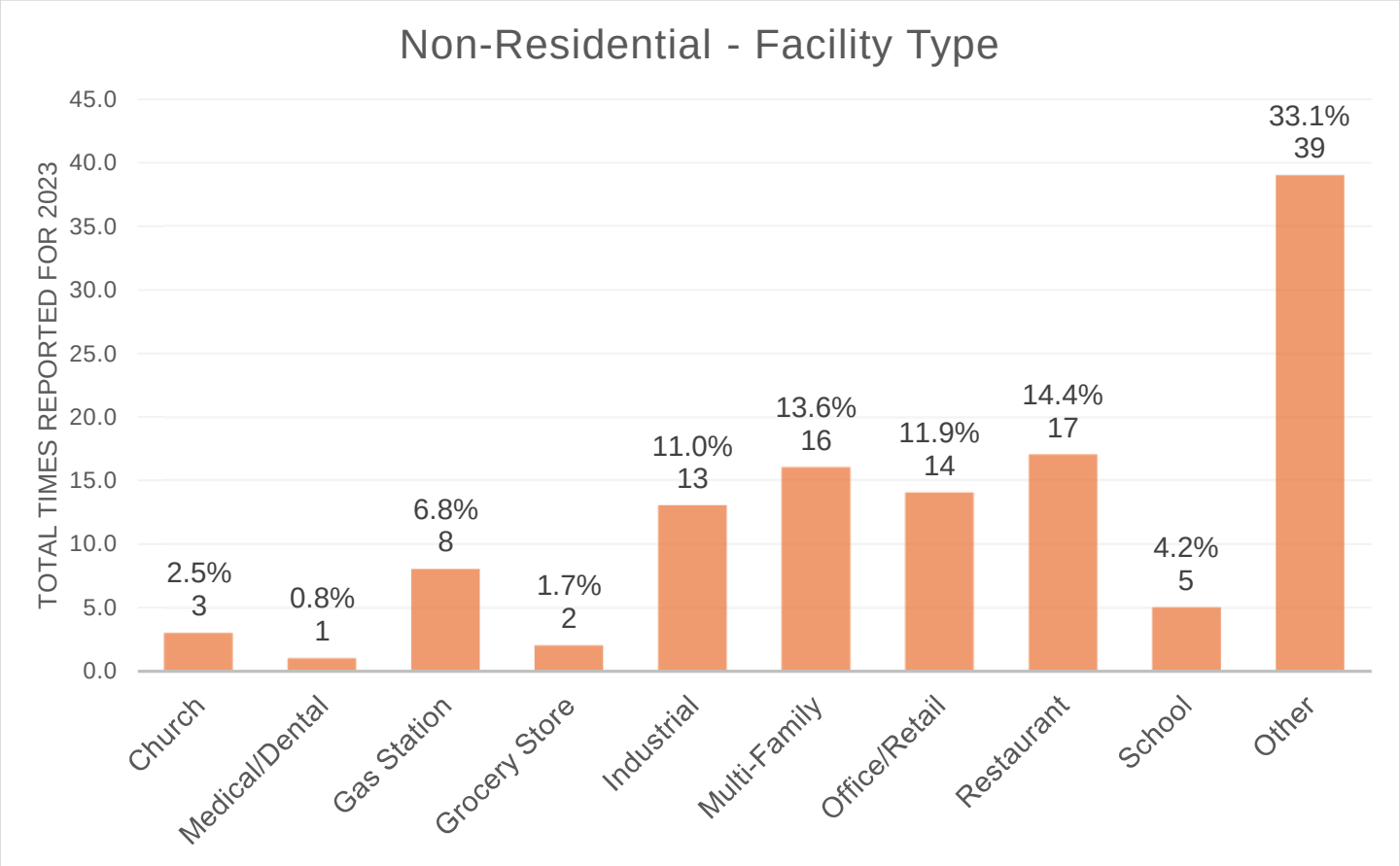
* The data from four out of the 44 LHDs, representing 17 of 83 total counties, was not available for 2023.

Table 4. Total Non-Residential Permits Issued reported by LHDs 2023 (January to December).**

	2023
Number of Non-Residential Permits Issued per Calendar Year	643

** This data was adjusted from fiscal year to calendar year totals (January to December). This data includes both failure and non-failure related permits counts. Data from one county is missing for the 4th quarter (three months) of fiscal year 2022/2023.

Figure 12.



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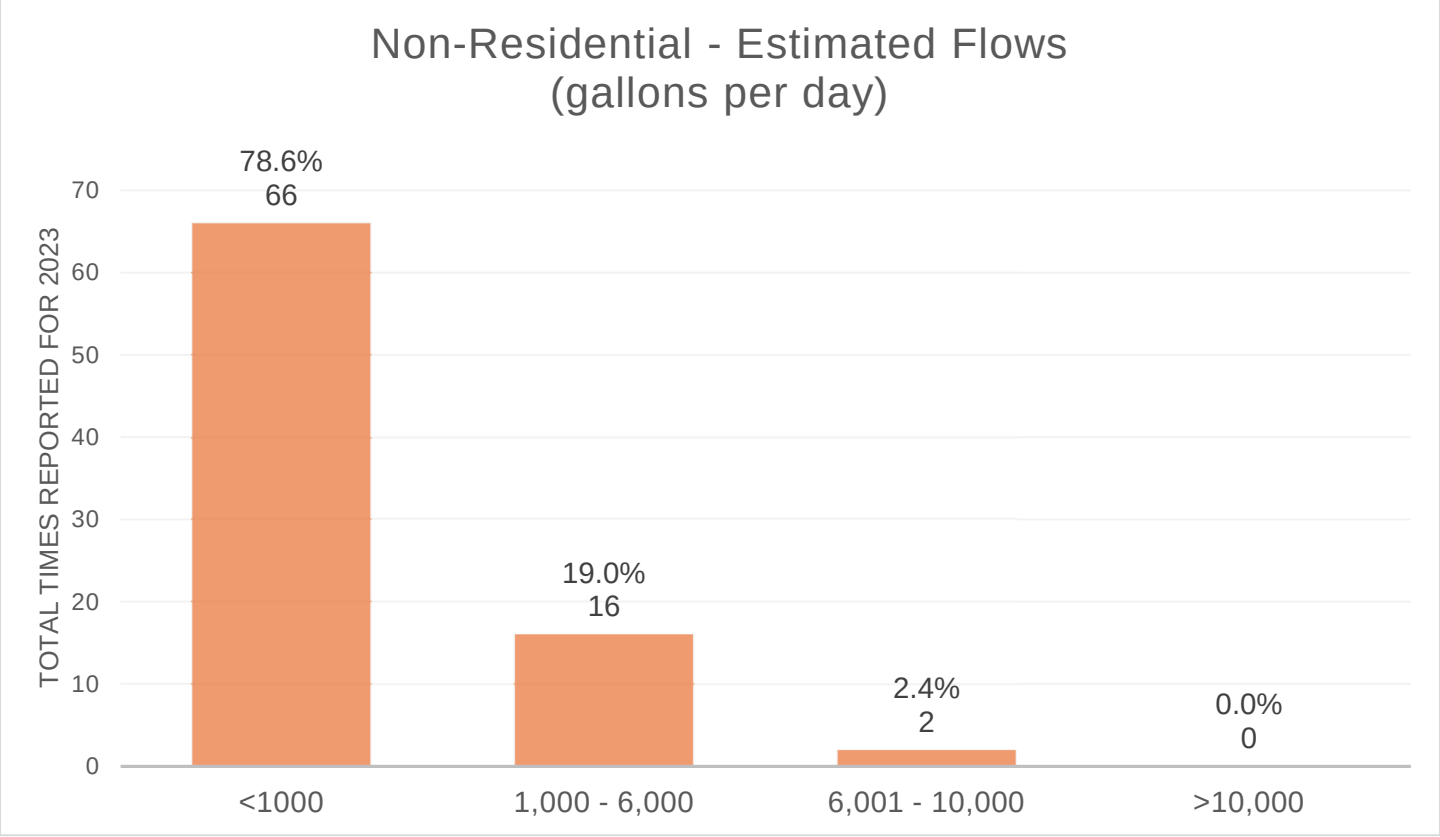

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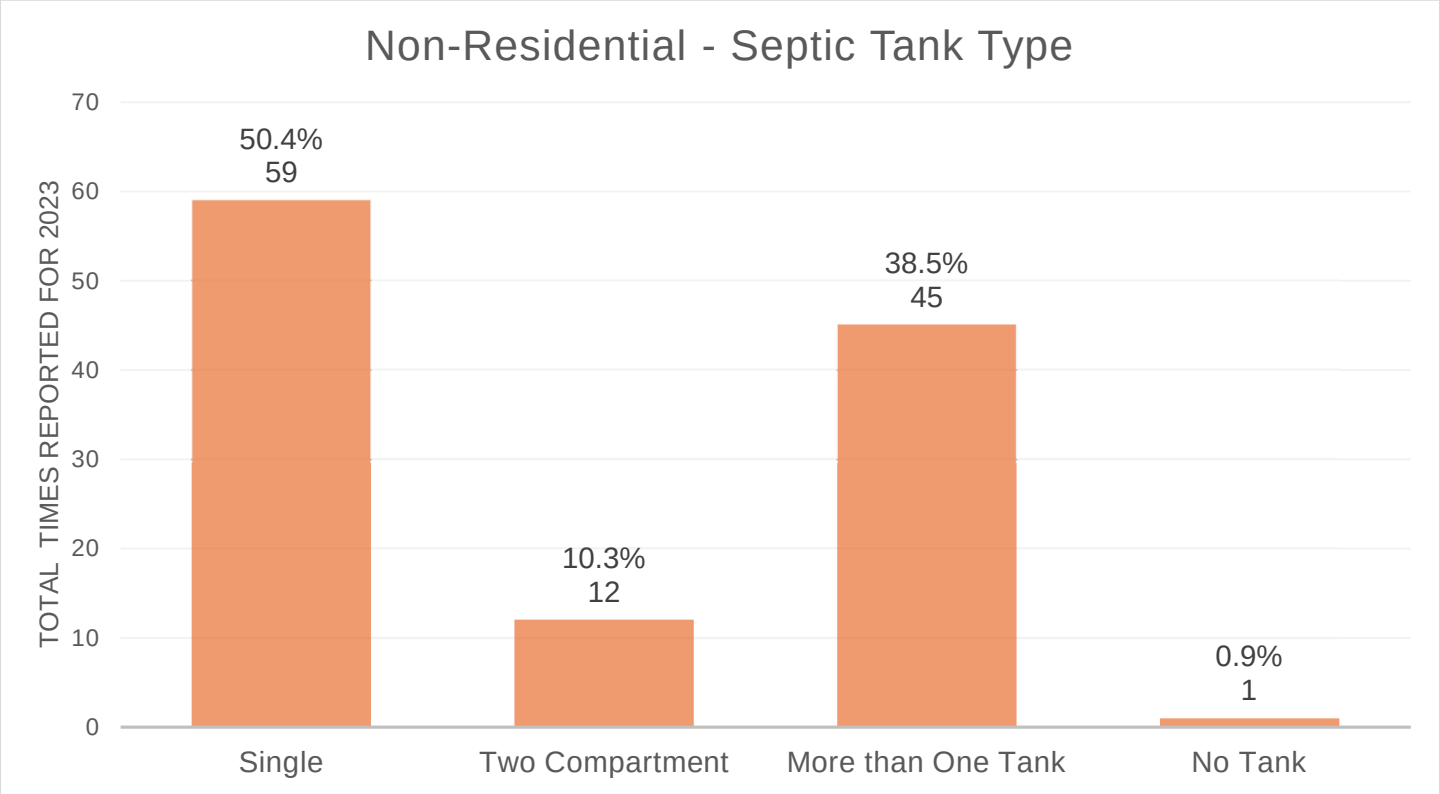

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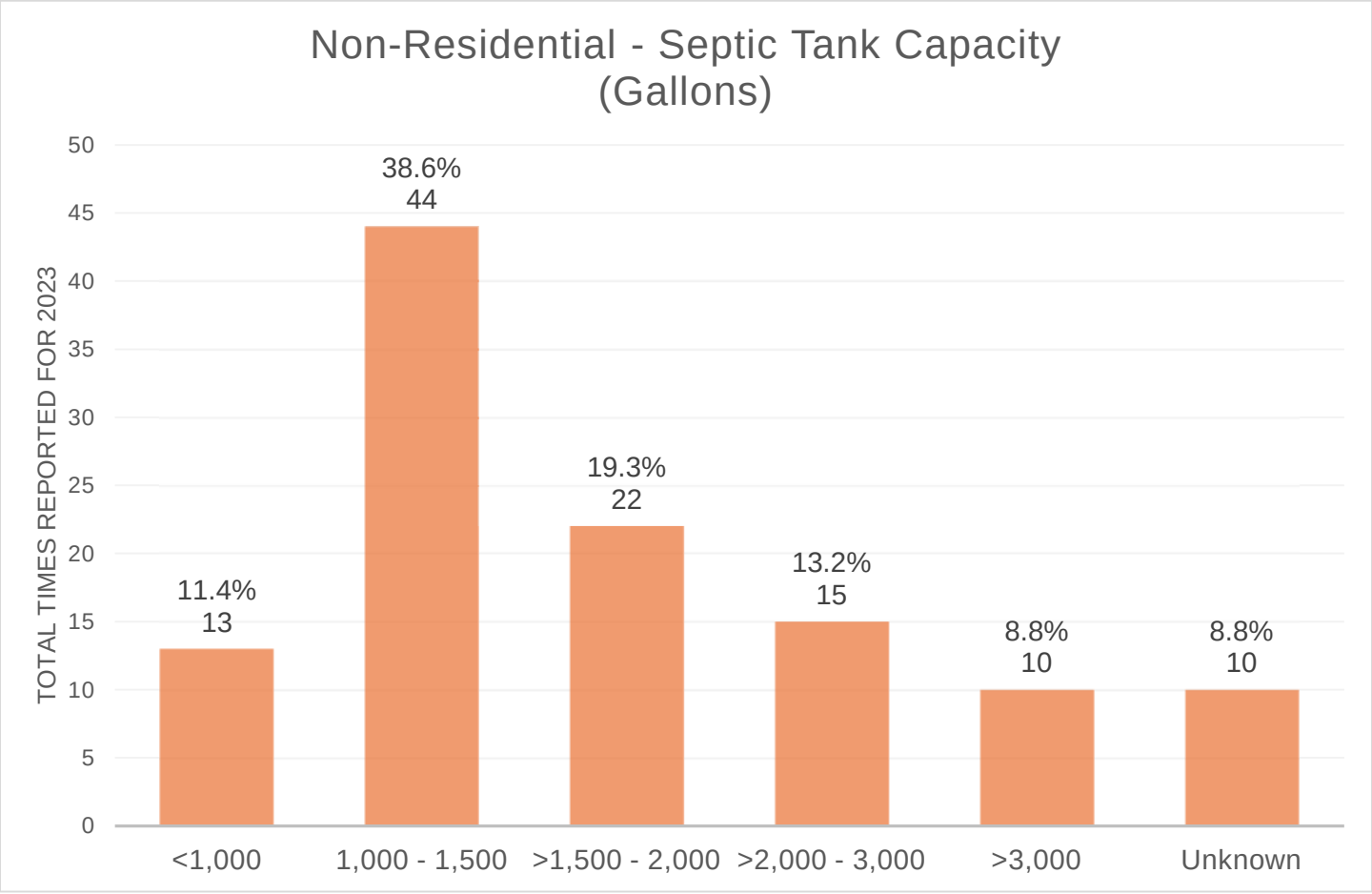

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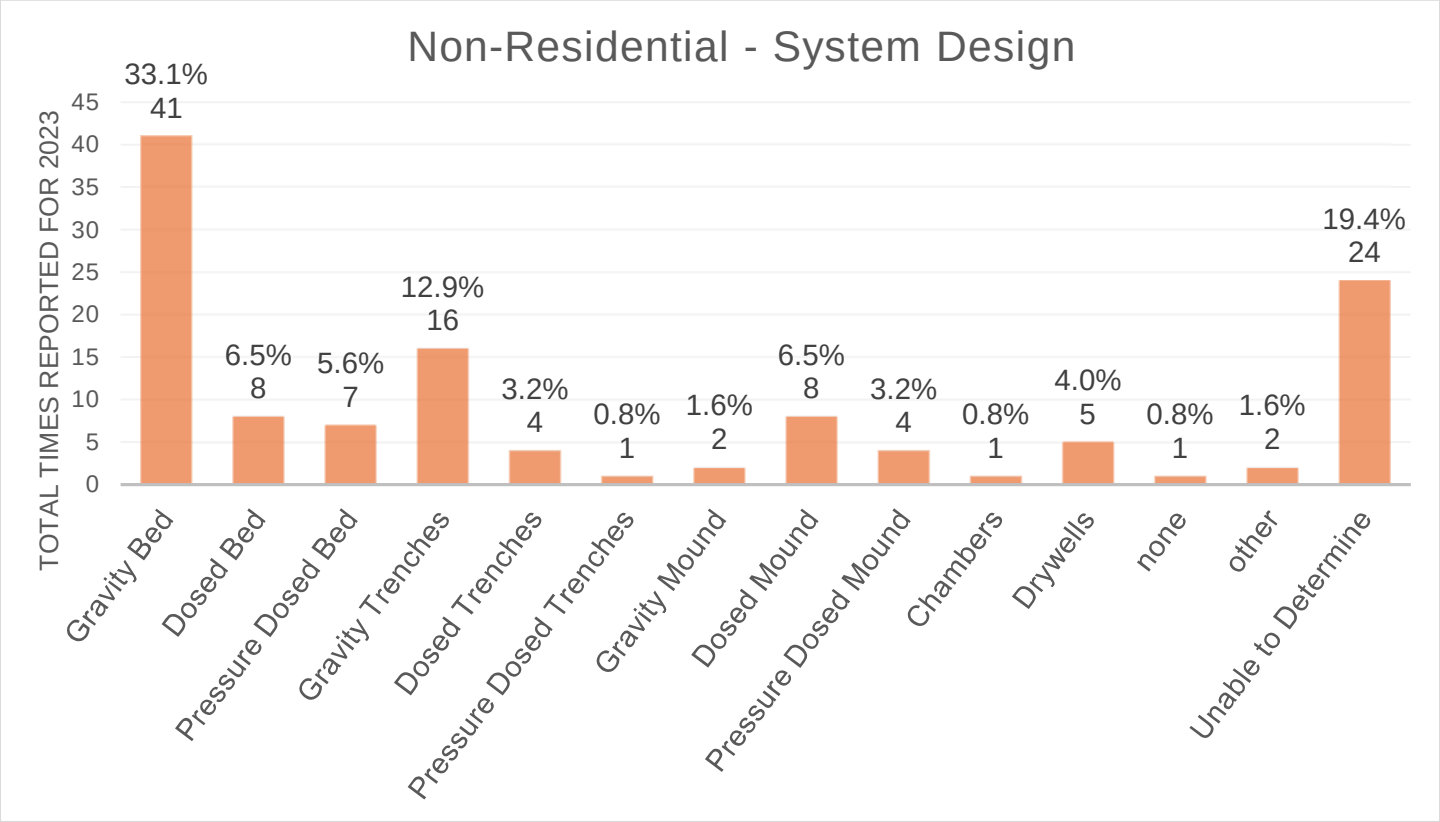

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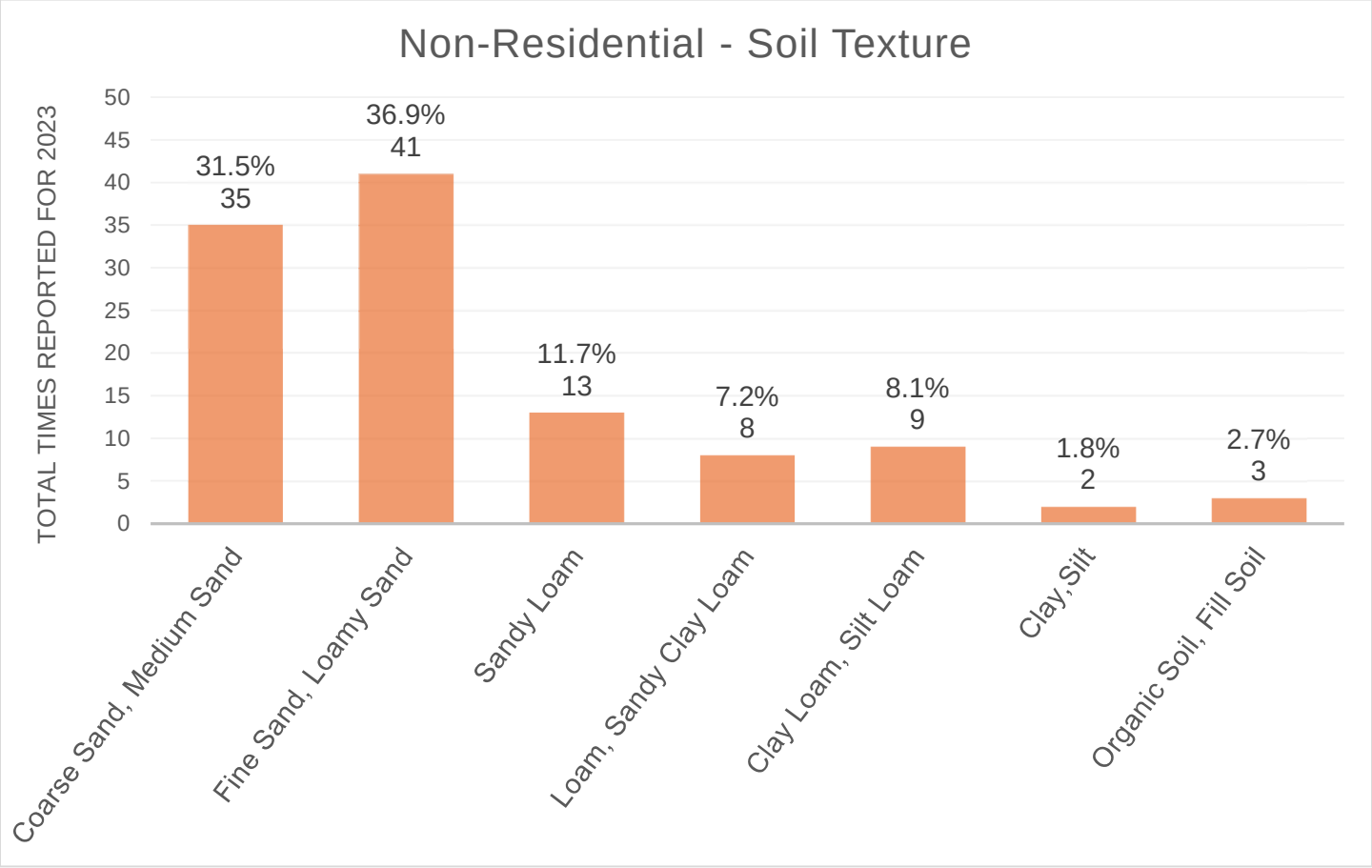

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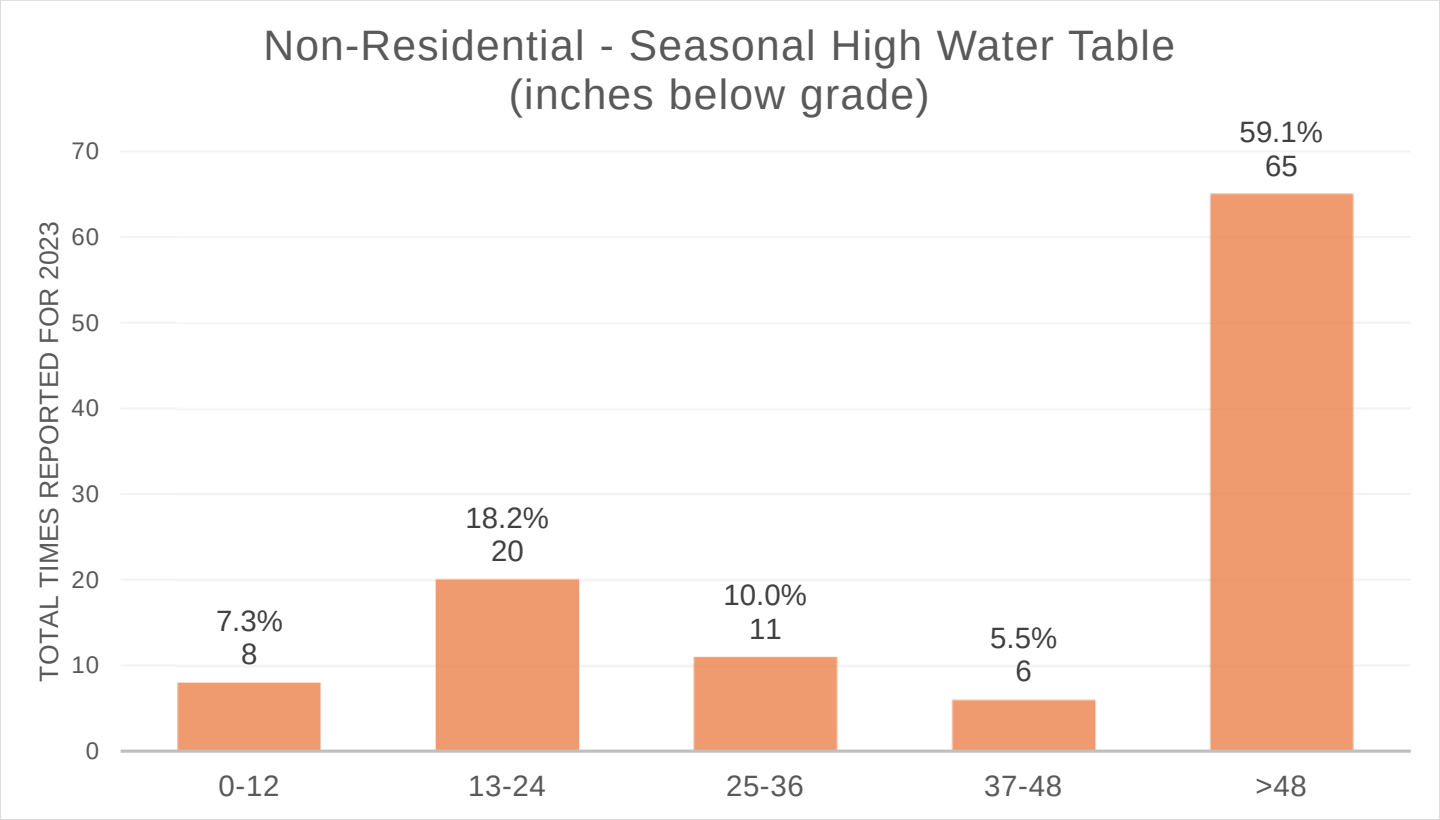

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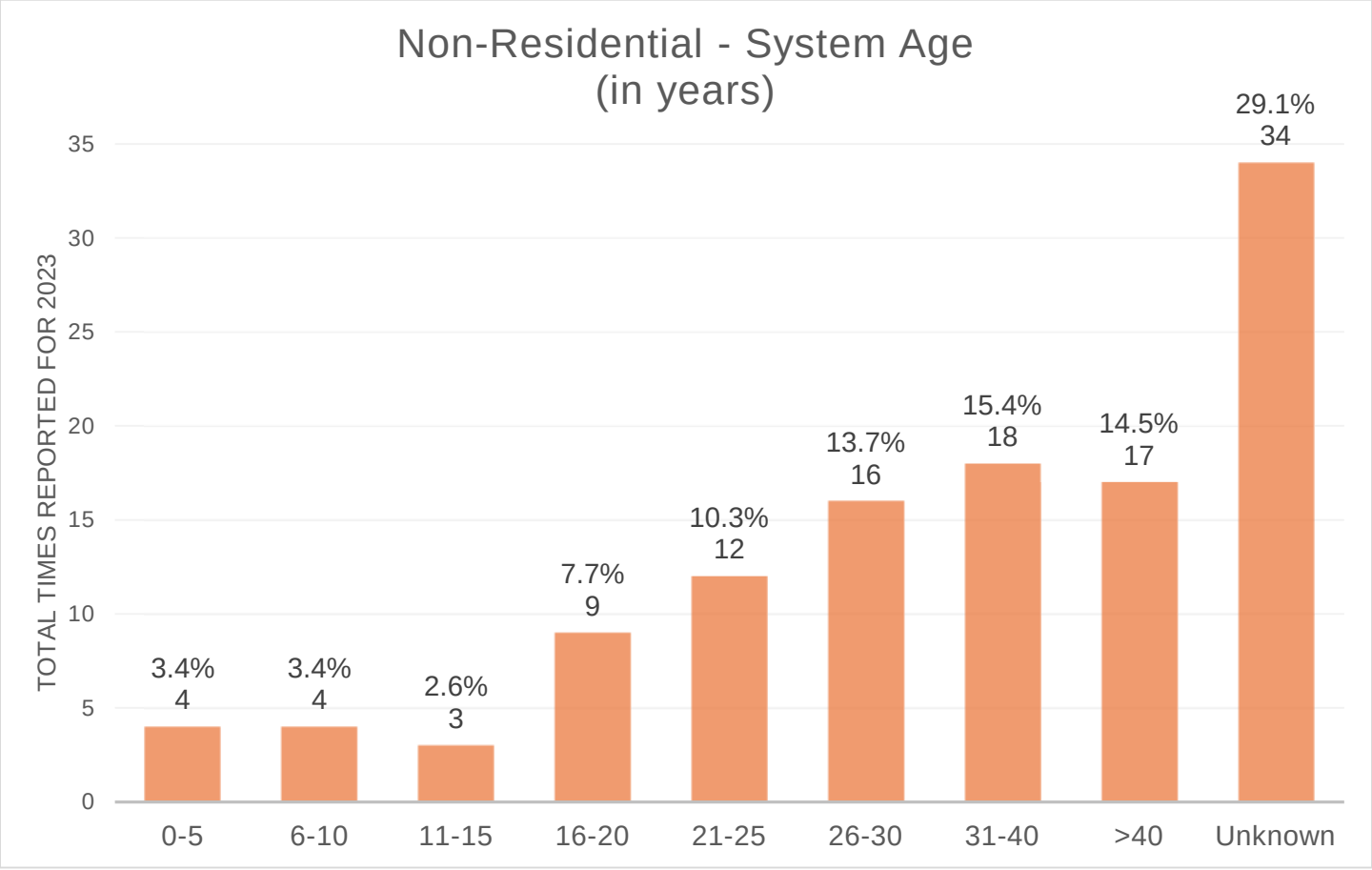

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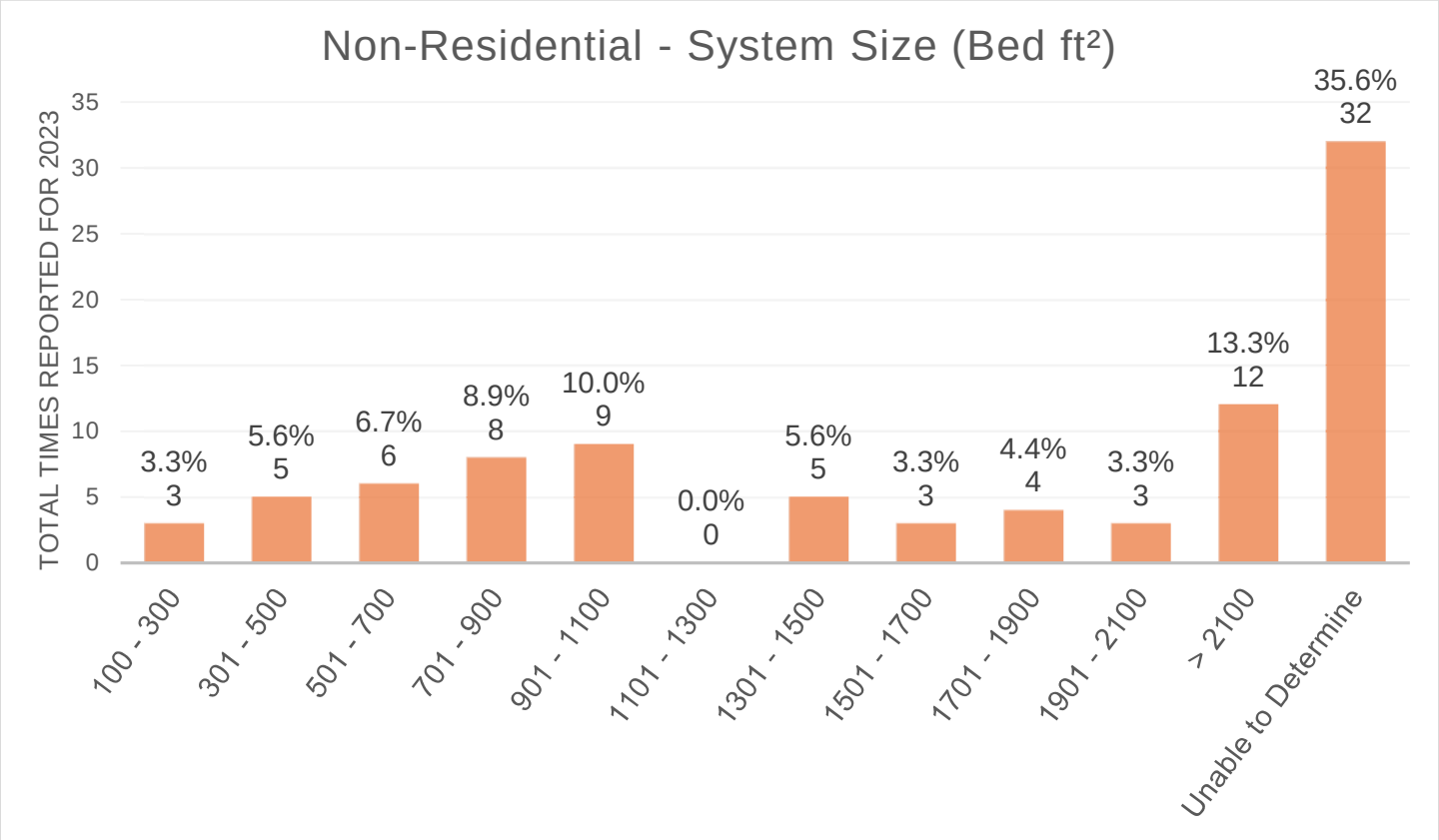

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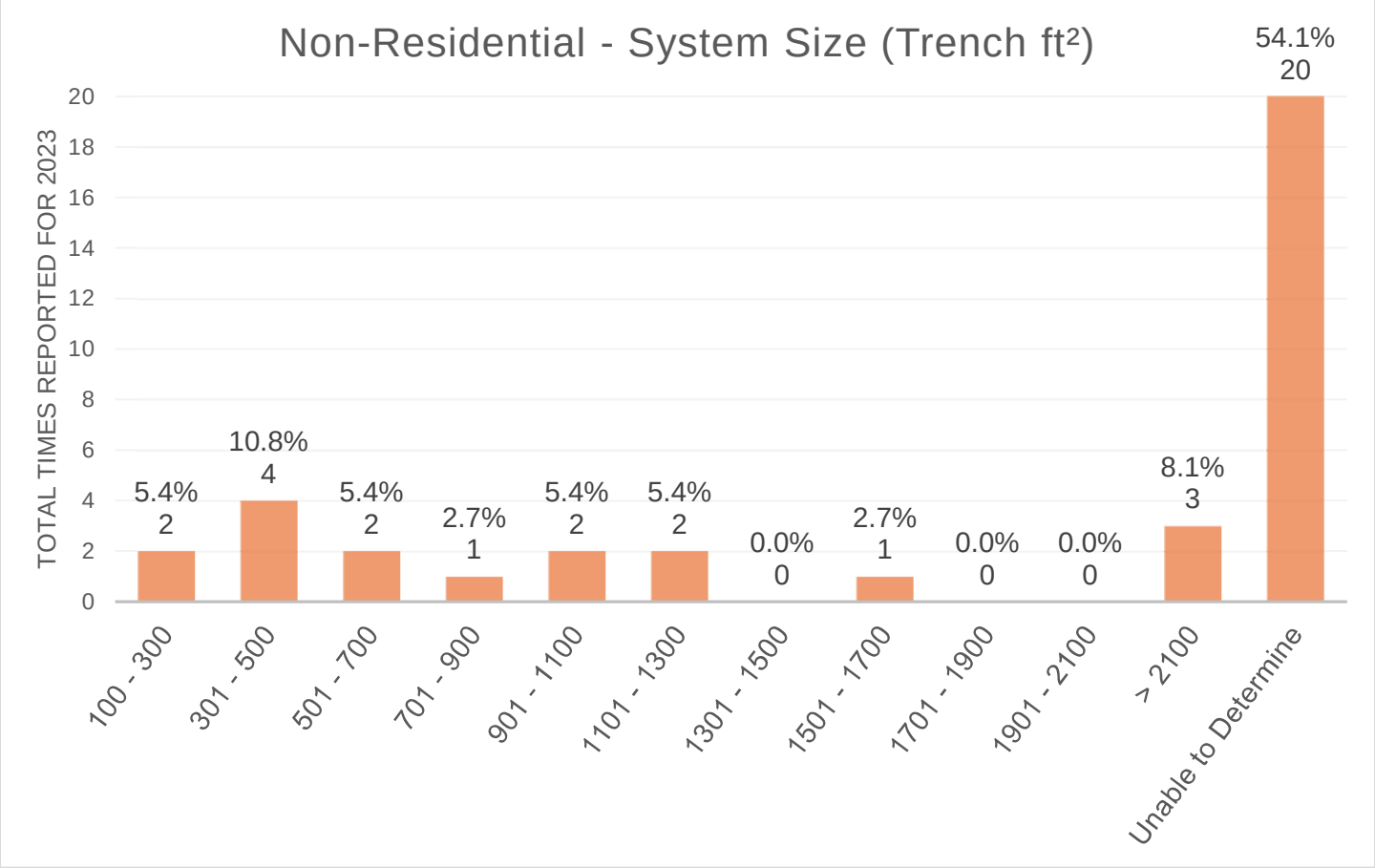

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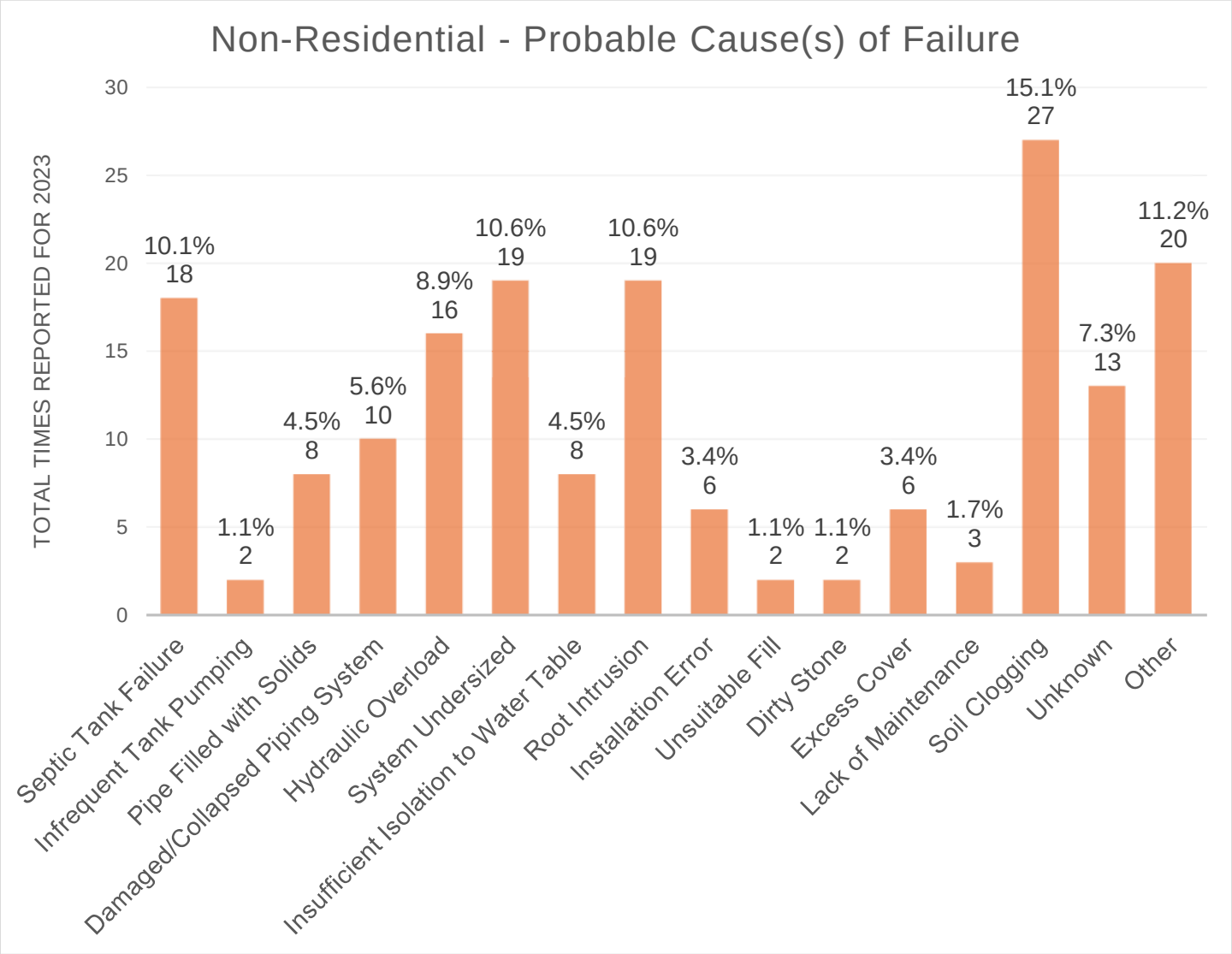

***Figure 22 “Non-Residential – Probable Cause(s) of Failure” allows for multiple responses for causes of failure for each individual septic system, therefore there may be a higher total number of causes reported than number of failures.

Summary

This Michigan 2023 Statewide Failed Sewage System Evaluation Summary Report is the result of data collection and reporting as required in Michigan's Local Health Department Accreditation Program.

LHD activities include consideration of the causes, prevention, and control of environmental health hazards, nuisances, or sources of illness. Evaluating onsite wastewater systems is a key element of onsite wastewater programs. Evaluations of failed systems before repair or replacement allows understanding of the potential causes or reasons for the failure. Information such as the failed system's age, if known, system type, soil and water table conditions, and the probable reasons for failure when identified at the time of the site evaluation, can then inform construction permit design, system use, site characteristics, and important system maintenance.

The Accreditation Program identifies that failed system data is reported annually by each LHD to EGLE and in the form of total count data. The information from all reporting LHDs is then totaled by EGLE as included in this report. Aggregated data provides limited ability for analysis; however, insightful information can be highlighted.

Most of the reported residential systems with failures were more than 40 years old (Figure 6) or the age of the system was unknown (indicating no LHD construction permit on file). Of the non-residential system failures, most systems were over 30 years old, or the age of the system was unknown (Figure 19), indicating that there was no original construction permit on record and the owner was not aware of the age of the system.

The three most reported probable reasons for failure (Figure 11) in the 4,332 residential evaluations were:

- Root intrusion
- Soil clogging - indicating that the failed system is no longer accepting wastewater, and the failure is reflective of a system that has functioned as designed during its "normal life expectancy" and has now exceeded that life expectancy
- Septic tank failure - a structural failure of the septic tank or the tank is below its normal operating level indicating a leaking tank

Of the 118 non-residential system evaluations, the three most reported probable reasons for failure (Figure 22) were:

- Soil clogging
- Other
- A tie between root intrusion and system undersized - the size of the failed system was based on site limitations such as insufficient space based on soils and/or other limitations

In the coming months, EGLE OWMU will be available to discuss the specific findings with LHDs. As a pilot project aimed at improving data collection, reporting, and analysis, EGLE developed an alternative tool, which LHDs may optionally use. Eight of the 44 LHDs participated in the pilot and reported both total count data and tables with site-specific information. EGLE will be evaluating this data separately and reporting the findings using that information.