

Michigan 2012 Statewide Failed Sewage System Evaluation Summary Report



December 2013



Introduction

Calendar Year (CY) 2012 represented the fourth year of failed system data collection by local health departments (LHD) in Michigan. For CY 2012, the process of data collection and data submission to the Department of Environmental Quality (DEQ) remained unchanged from 2011. During 2012 there were isolated discussions between a few LHDs and the DEQ regarding expanding the definition of “failure;” however, no changes were made to the definition. The DEQ recognizes that there is a need to explore expanding the “failure” definition and anticipates having future discussions with LHD representatives toward this effort.

For CY 2012, LHD accreditation reviews determined that there were no instances where LHDs did not meet the essential elements of data collection and submission under Indicator 5.1 of Section VI – On-Site Wastewater Treatment Management of the Michigan Local Public Health Accreditation Program. This is a recognized improvement over the 2011 LHD accreditation reviews, in which a few LHDs were designated “Not Met” due to an inability to meet the essential elements. Improved communications between LHDs and the DEQ, as well as within the agencies themselves, is likely the reason for the improvement statewide. However, it was recently learned that a breakdown in communication between one LHD and the DEQ resulted in the incorrect data collection forms being used by the LHD dating back to 2011.

Data Summary

During the analysis of the 2012 failed system data submitted to the DEQ by the LHDs, a review of the 2011 failed system data was conducted to determine if there were any changes or trends worth noting and reporting. During this review process it was discovered that miscalculations had occurred in the residential category for the “Probable Cause(s) of Failure.” Although not discussed in the 2011 report, “Root Intrusion” was identified to be attributed to 60 percent of the reported failures. After recalculating the 2011 data (Table 1 on page 3 of this document), “Dirty Stone” (15.8 percent) and “Soil Clogging” (15.7 percent) were found to be the highest attributors to the causes for failure. Additionally, after recalculation of the 2011 data, “Root Intrusion” was determined to have attributed to less than 1 percent of the causes for failure. By comparison, the 2012 data revealed that the “Root Intrusion” increased to 13 percent of the “Probable Cause(s) of Failure,” which is a substantial increase. “Soil Clogging” (19.5 percent) was found to be the greatest attributor to the “Probable Causes of Failure” for 2012 (See page 11).

As with the 2011 data, the 2012 data have been summarized in a similar manner. First, the total number of residential failures reported to the DEQ by each LHD in 2012 is shown in Table 2. Secondly, the data for both residential and non-residential failures are summarized in a graphical representation composed of histogram graphs reported in percentages. Aside from the discussion above concerning the “Probable Cause(s) of Failure,” the residential data contained in this report, as compared to the 2011 data, continue to show similarity.

The analysis of the 2012 non-residential data identified similarities to the 2011 non-residential data. More specifically, for both years nearly 40 percent of reported failures for “Facility Type” were nonspecific and identified as “Other”. For 2011, the second highest percentages of failures were reported for “Multi-Family” and “Office/Retail,” both at 12.6 percent. The “Office/Retail” category had the second highest percentage of reported failures at 14.1 percent for 2012. The “Estimated Flows” and “Septic Tank Type” categories also showed similarities for 2011 and 2012. For both years, greater than 70 percent of the reported failures were for systems with flows of less than 1000 gallons per day and greater than 50 percent were served with a single septic tank.

Relative to “System Age,” the analysis of the 2012 non-residential data determined that the percentage of failures reported for systems 20 years old or less increased slightly over the 2011 data. For 2012, nearly 38 percent of the non-residential failures reported were for systems 20 years old or less. This compares to 12.5 percent for the same timeframe for residential failures. High waste strength and possibly high flows leading to hydraulic overload are suspected to be contributing to the non-residential failures. Lastly, for 2012 the highest percentages for “Probable Cause(s) of Failure” for non-residentials were attributed to “Soil Clogging” (16.3 percent) and “Hydraulic Overload” (14.7 percent).

Table 1

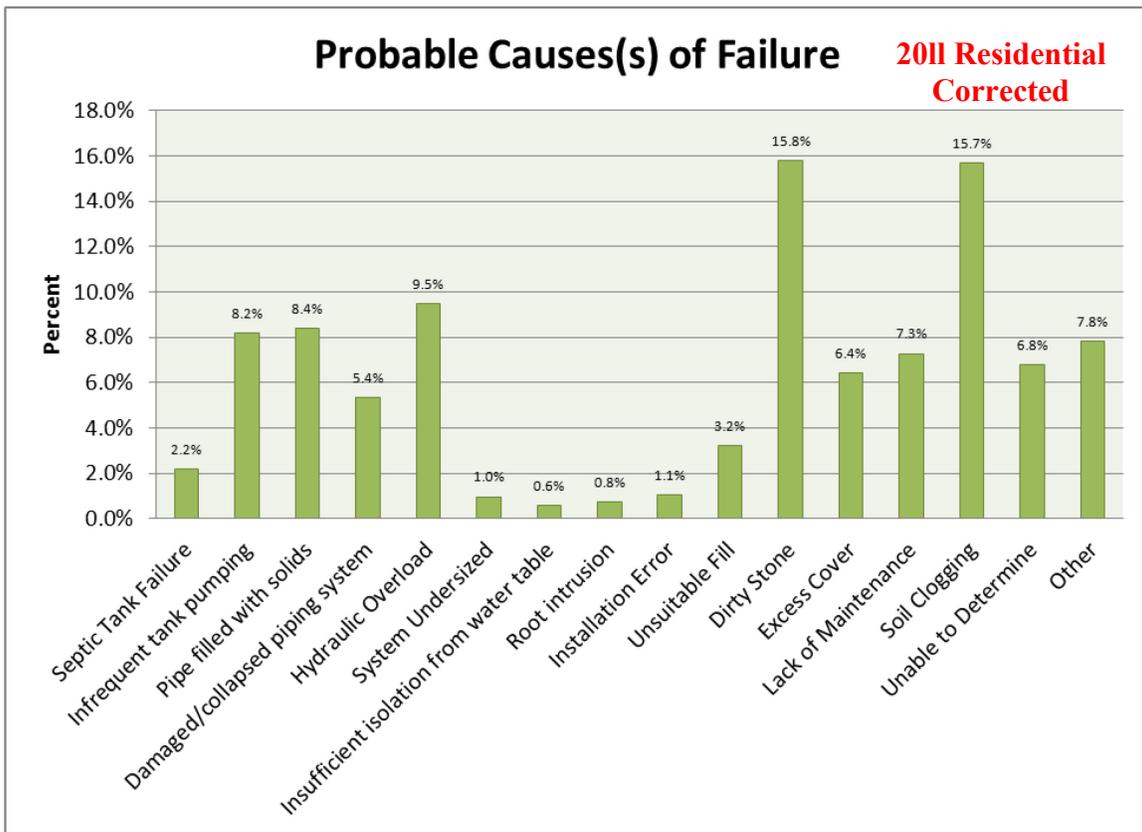
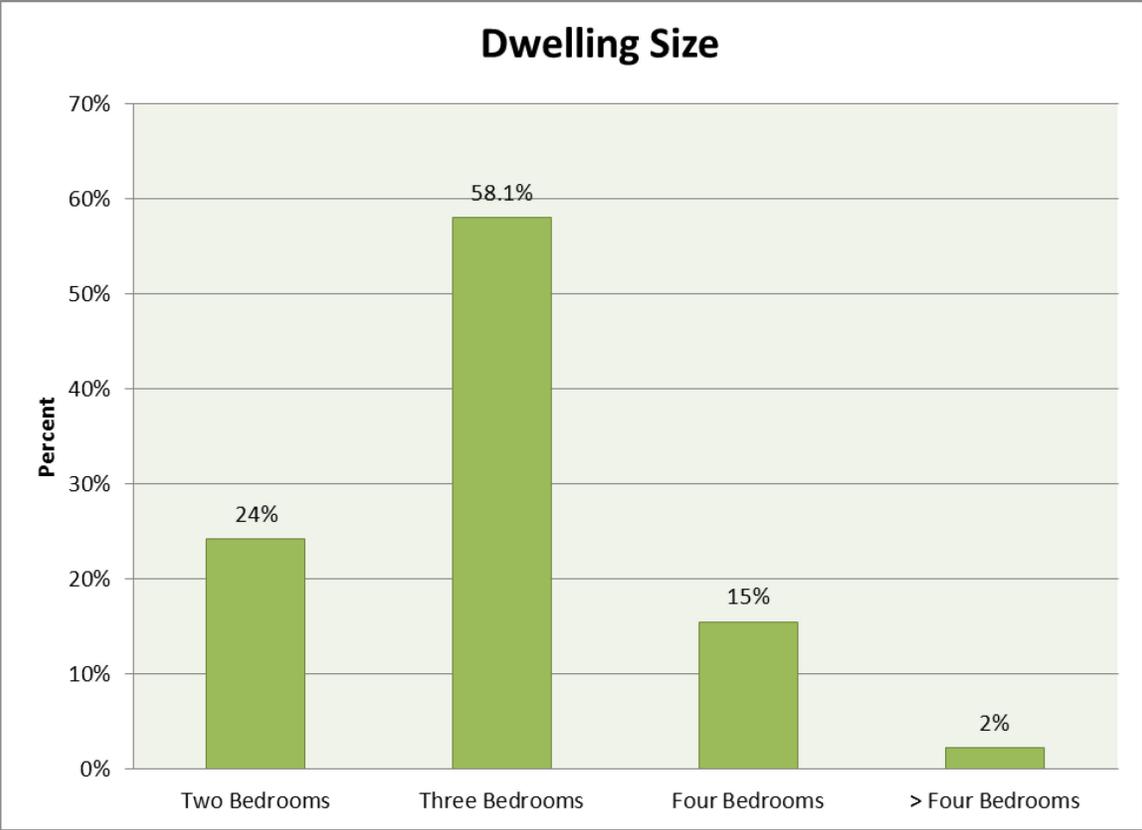
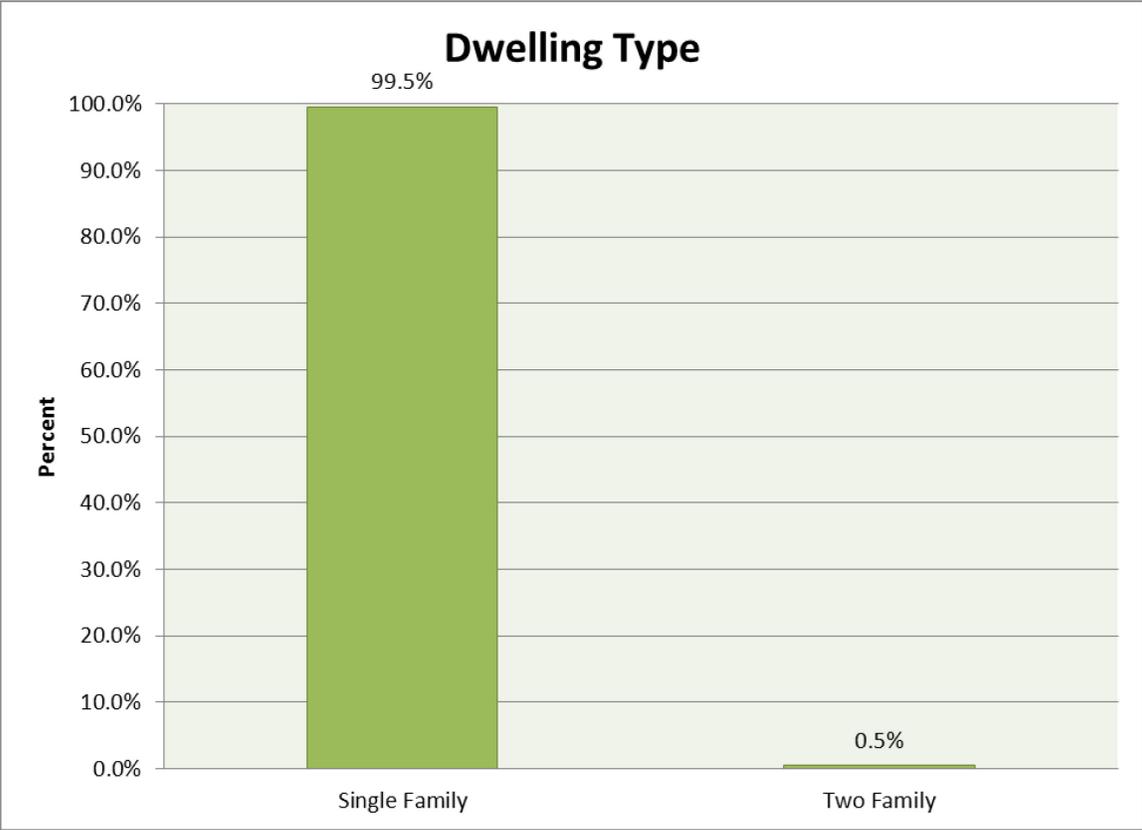


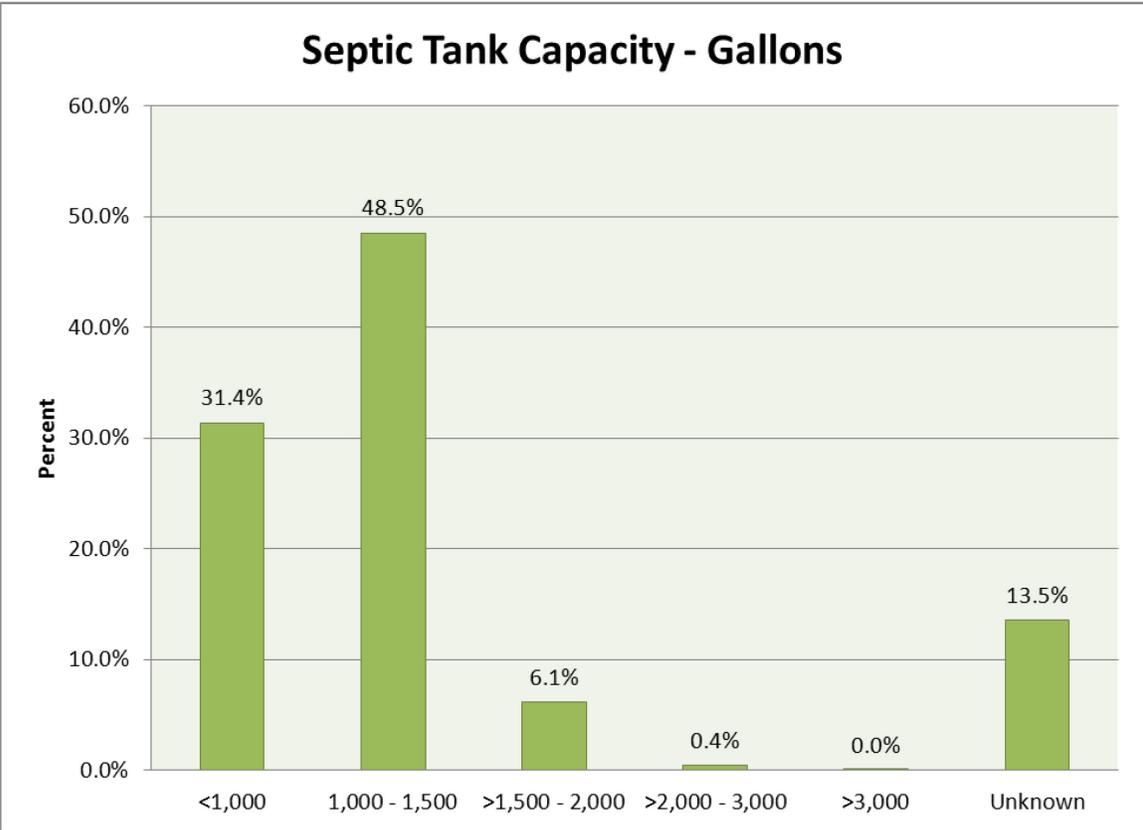
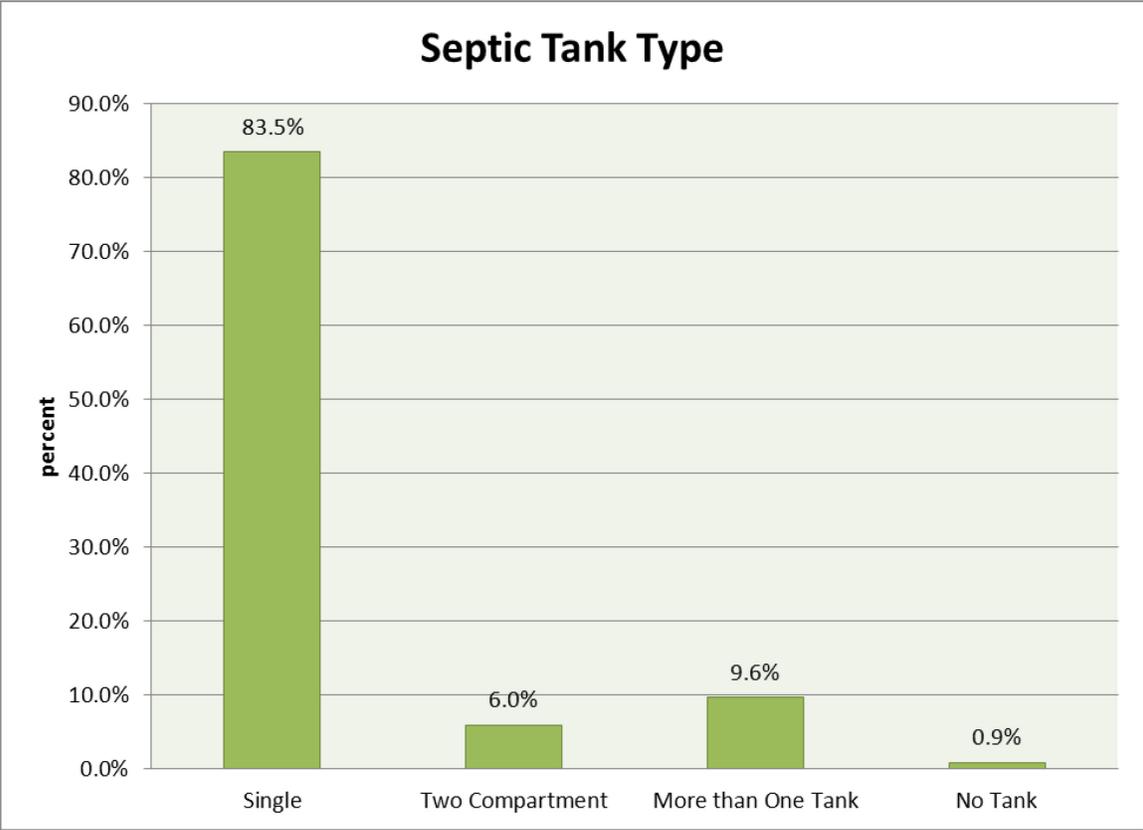
Table 2

Total Residential Failures Reported by Health Departments in 2012

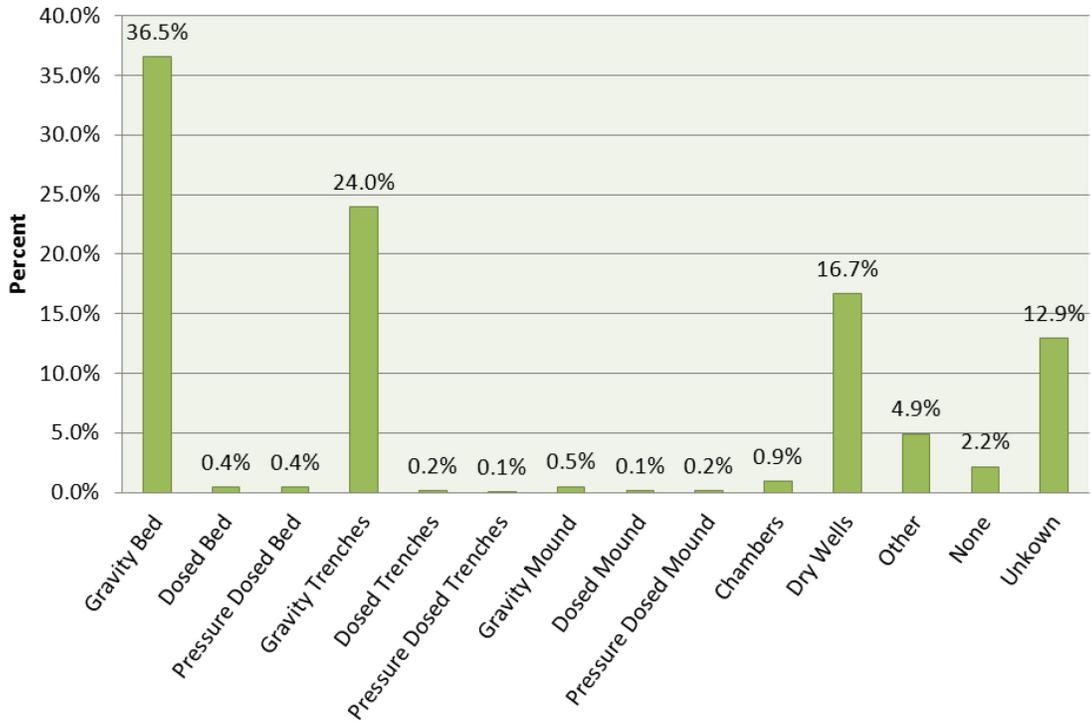
	Single Family	Two-Family
Allegan	14	0
Barry-Eaton	94	1
Bay	11	0
Benzie-Leelanau	42	0
Berrien	117	3
Branch-Hillsdale-S	126	0
Calhoun	87	0
Central Mich.	340	2
Chippewa	25	0
Delta-Menominee	12	0
Dickinson-Iron	27	0
District # 2	39	0
District # 4	7	0
District #10	304	0
Genesee	49	1
Grand Traverse	72	1
Huron	23	0
Ingham	47	0
Ionia	44	0
Jackson	59	0
Kalamazoo	161	0
Kent	288	1
Lapeer	44	0
Lenawee	13	0
Livingston	81	1
LMAS	51	0
Macomb	120	1
Marquette	30	0
Mid - Michigan	168	1
Midland	101	0
Monroe	45	1
Muskegon	127	2
Northwest Mich	214	2
Oakland	409	1
Ottawa	227	0
Saginaw	79	0
Sanilac	23	0
Shiawassee	82	0
St. Clair	87	1
Tuscola	33	0
VanBuren-Cass	122	0
Washtenaw	19	0
Wayne	8	0
Western UP	40	0
Totals	4111	19

Residential Data Summary

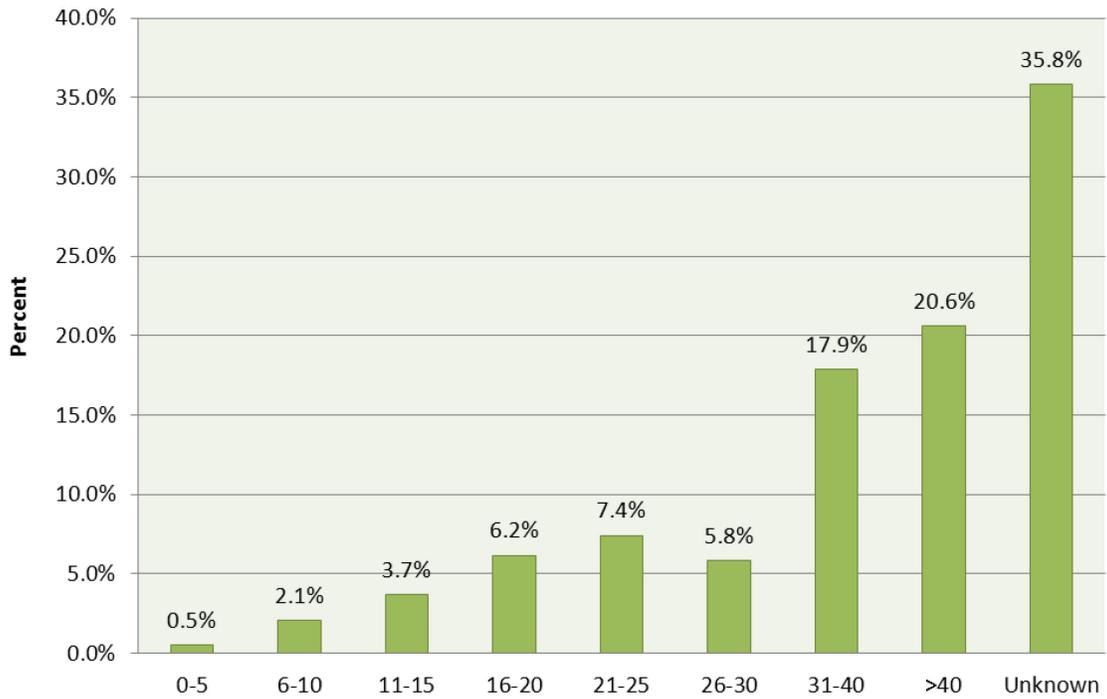


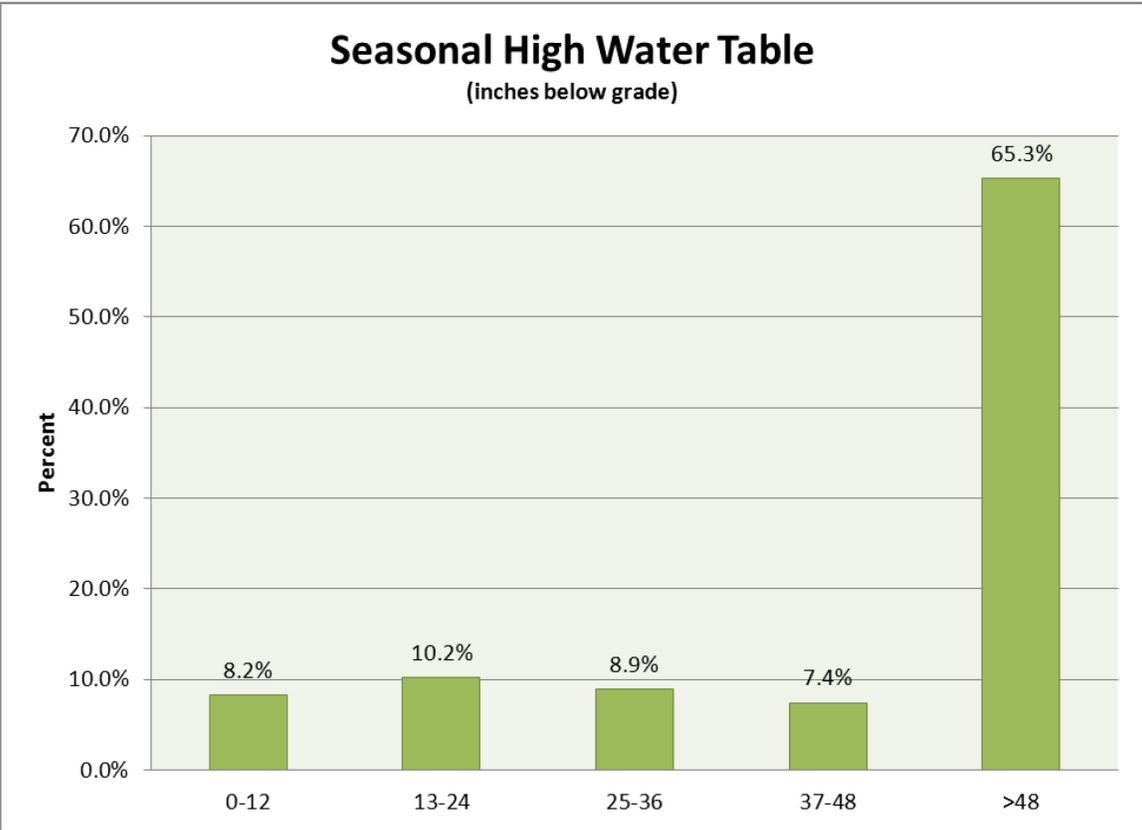
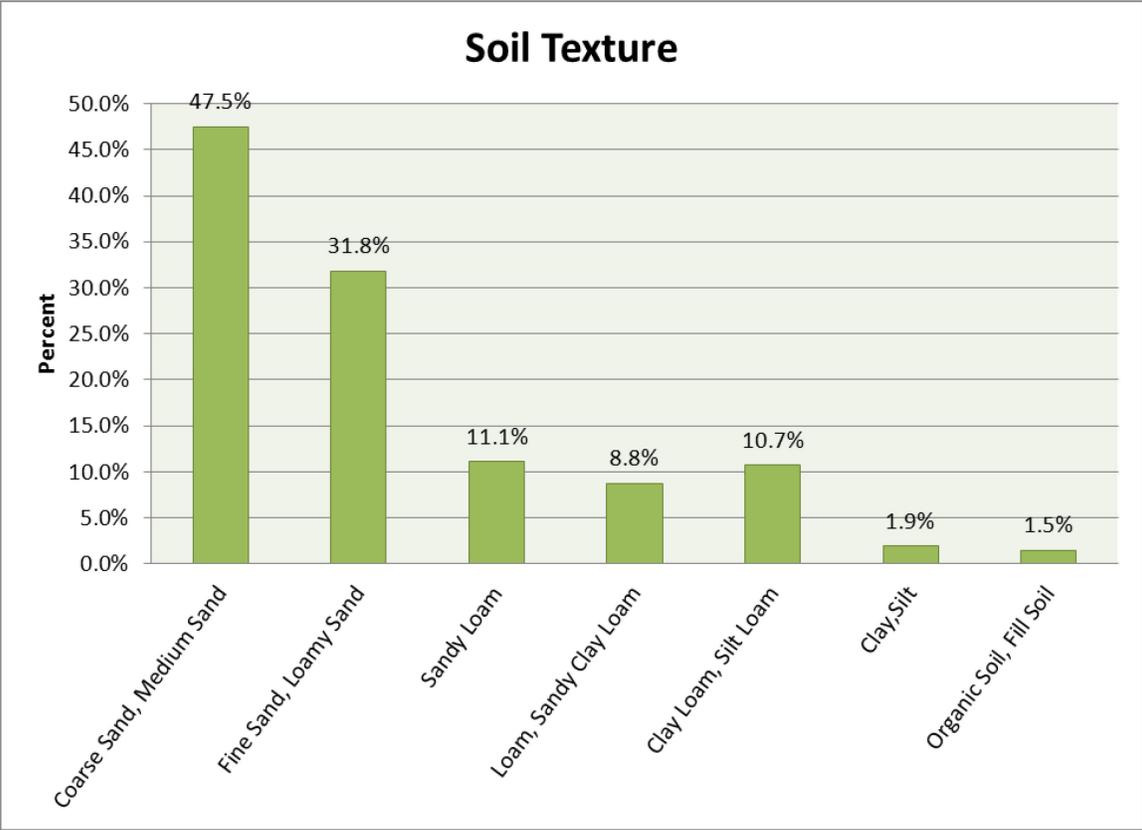


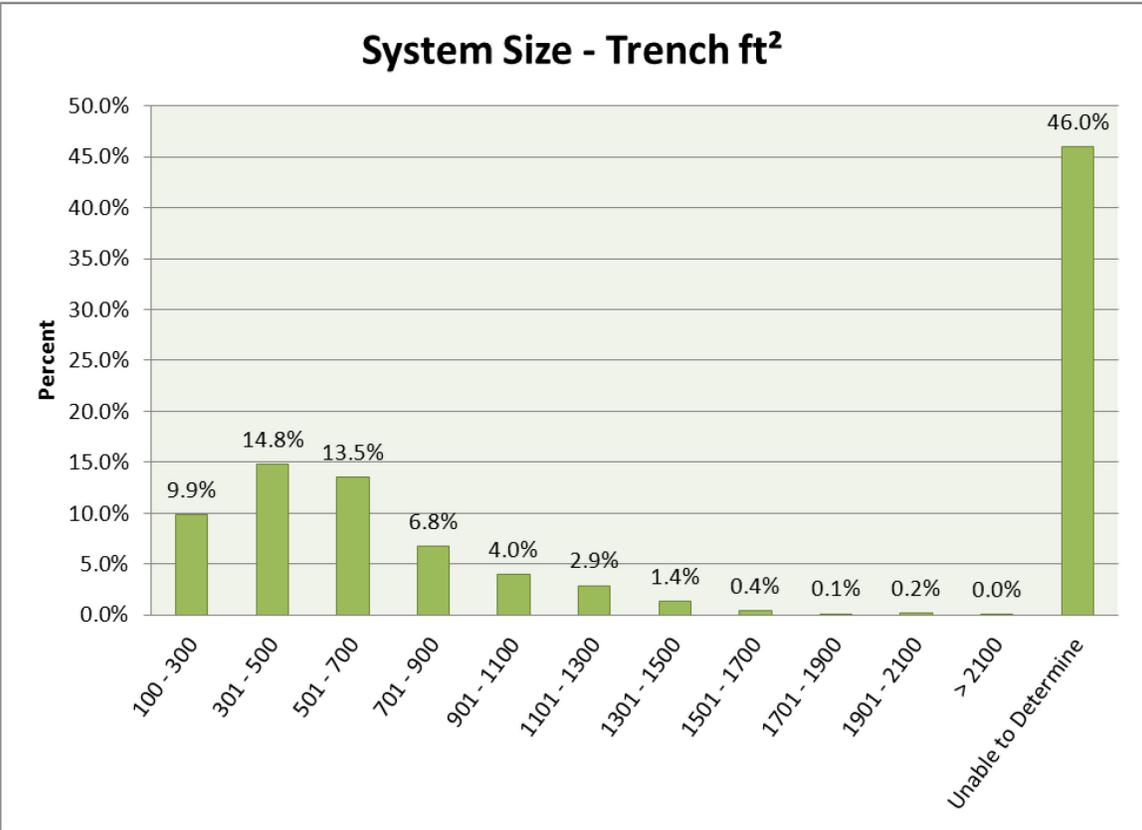
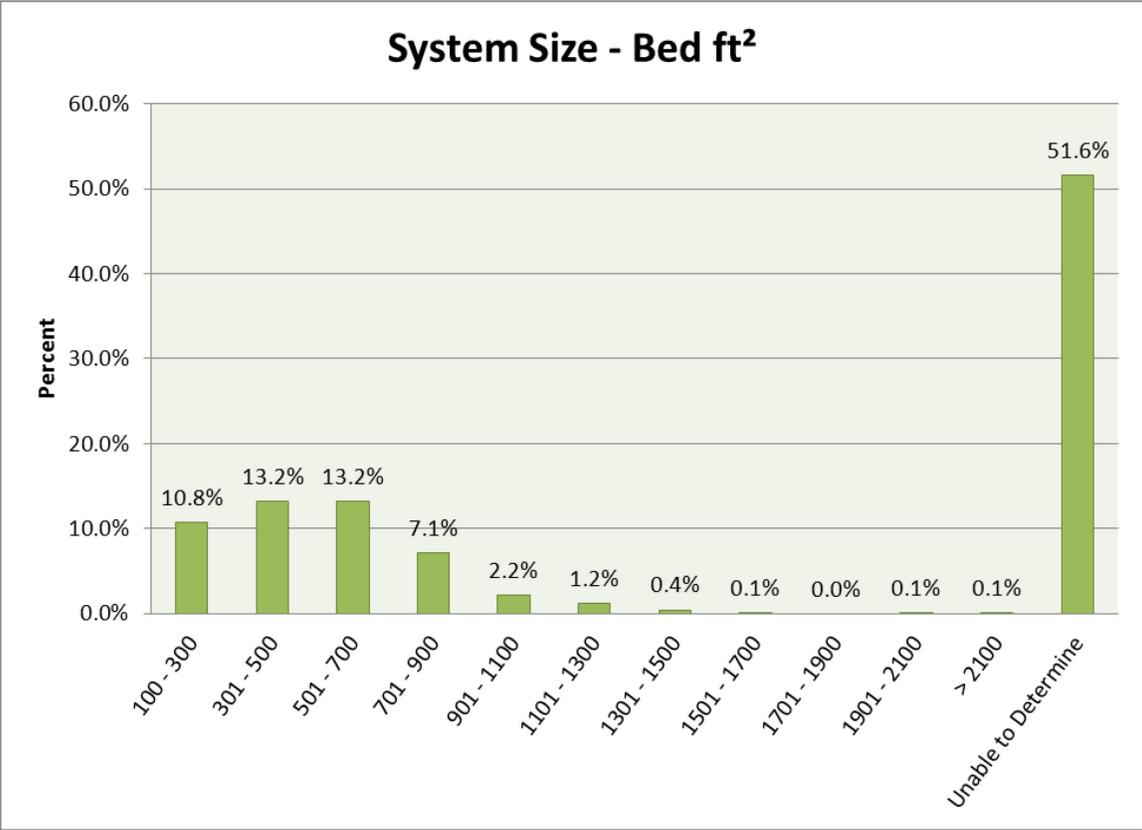
System Design



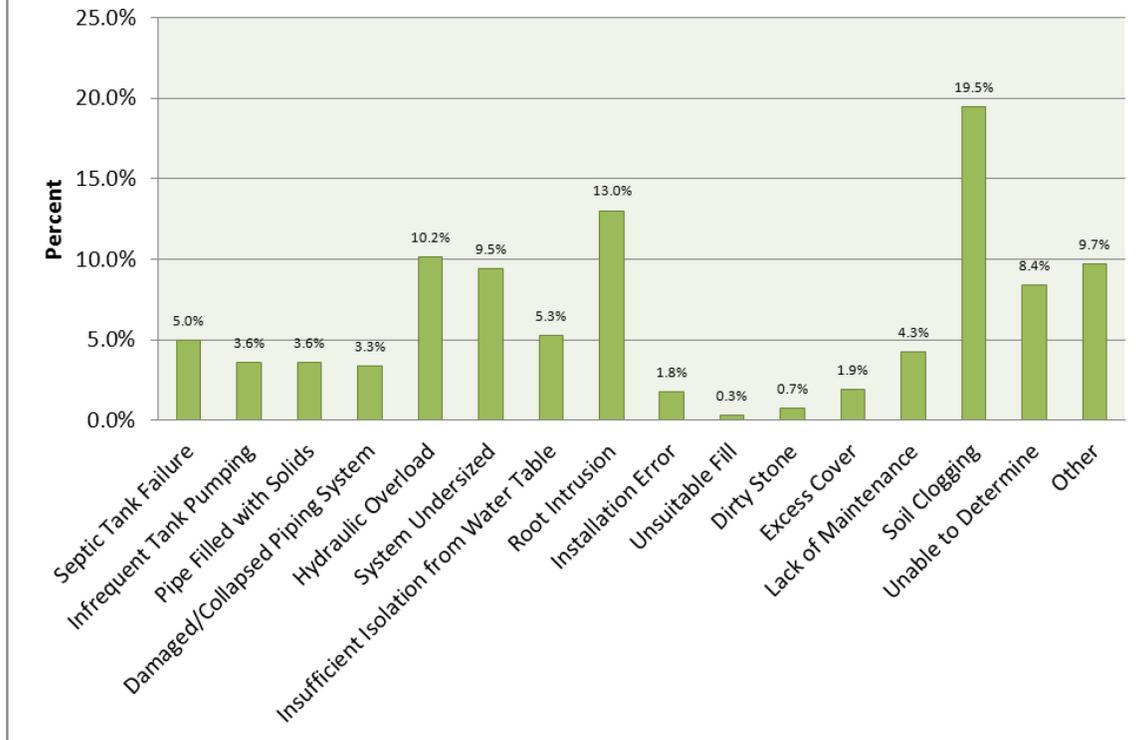
System Age (in years)



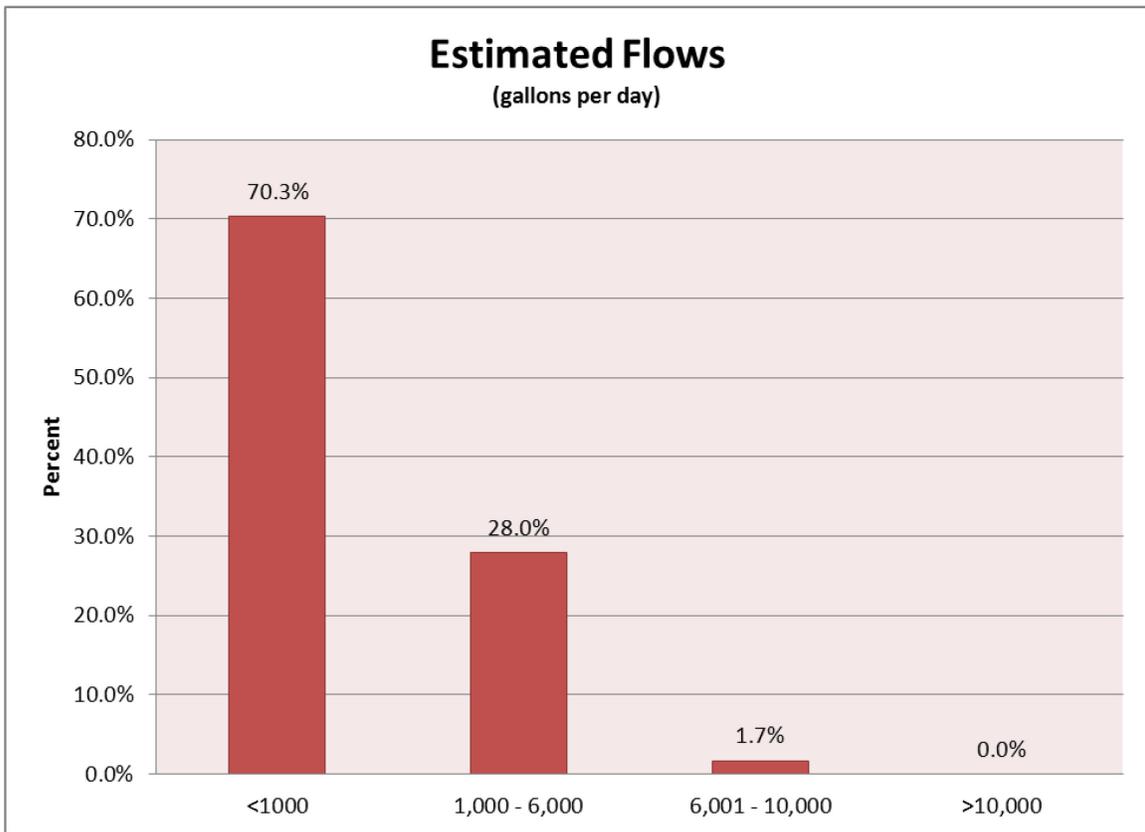
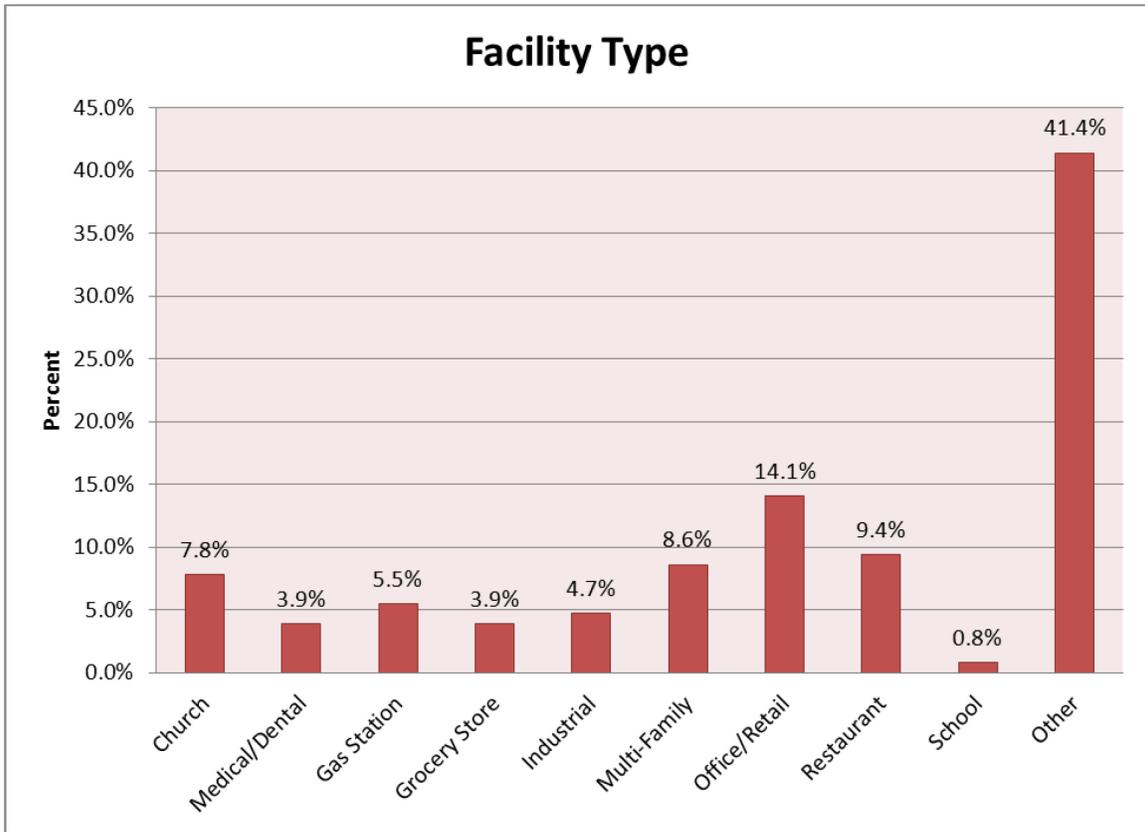


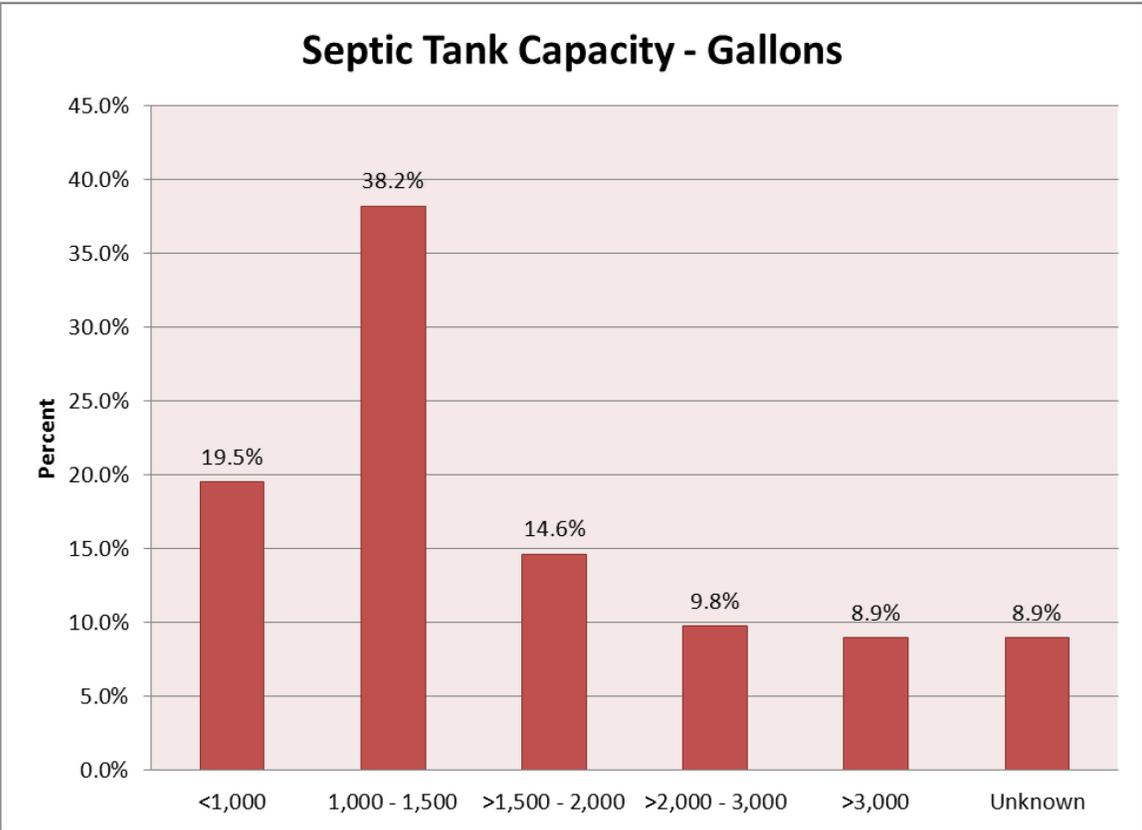
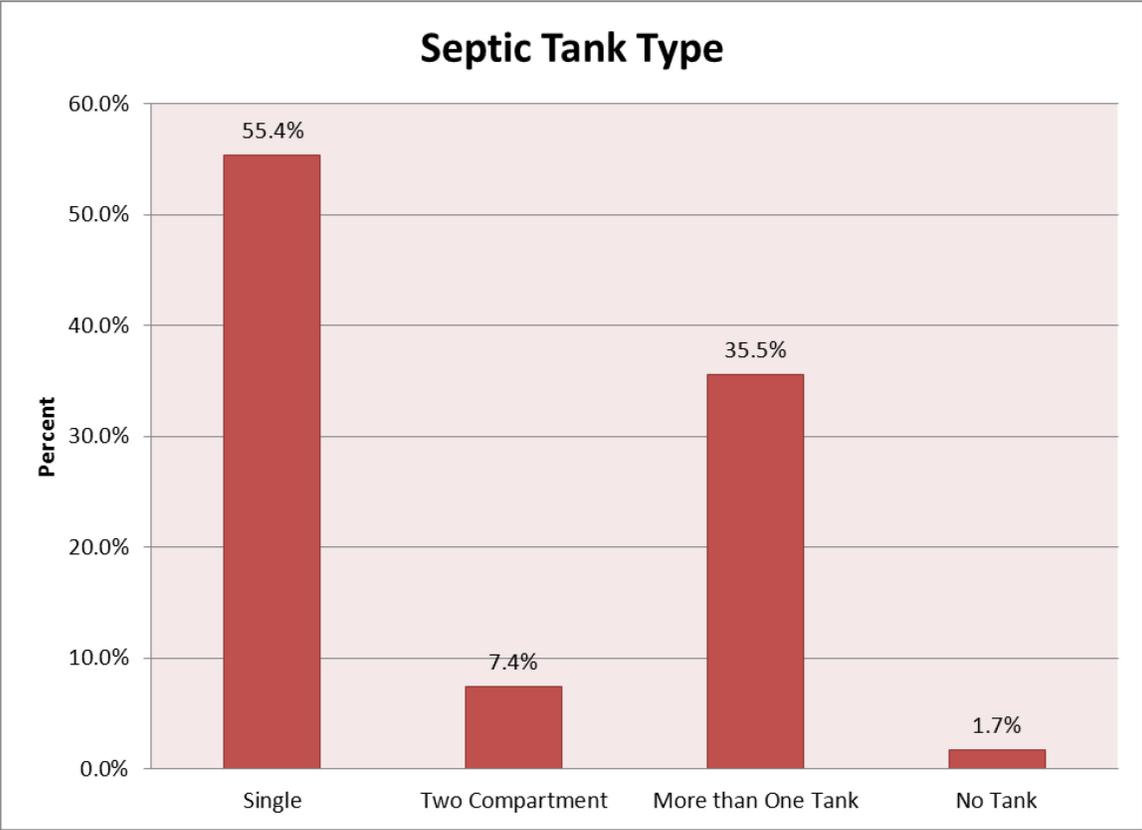


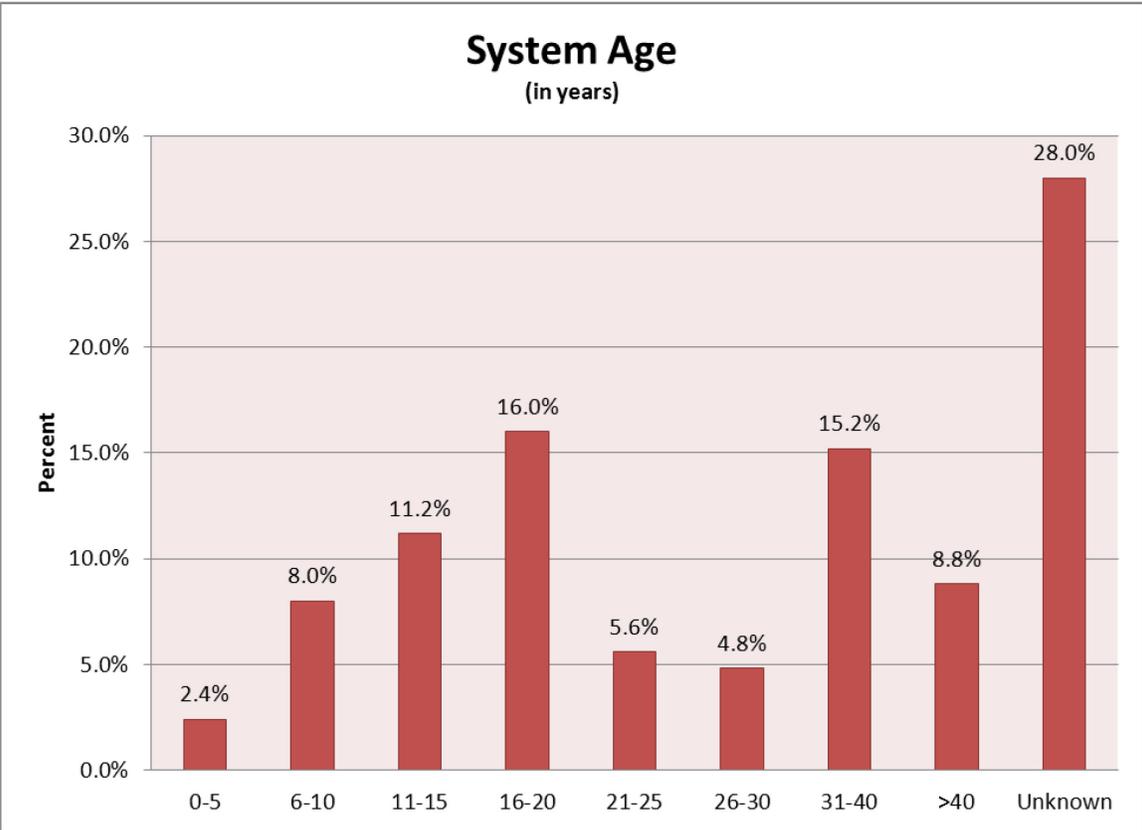
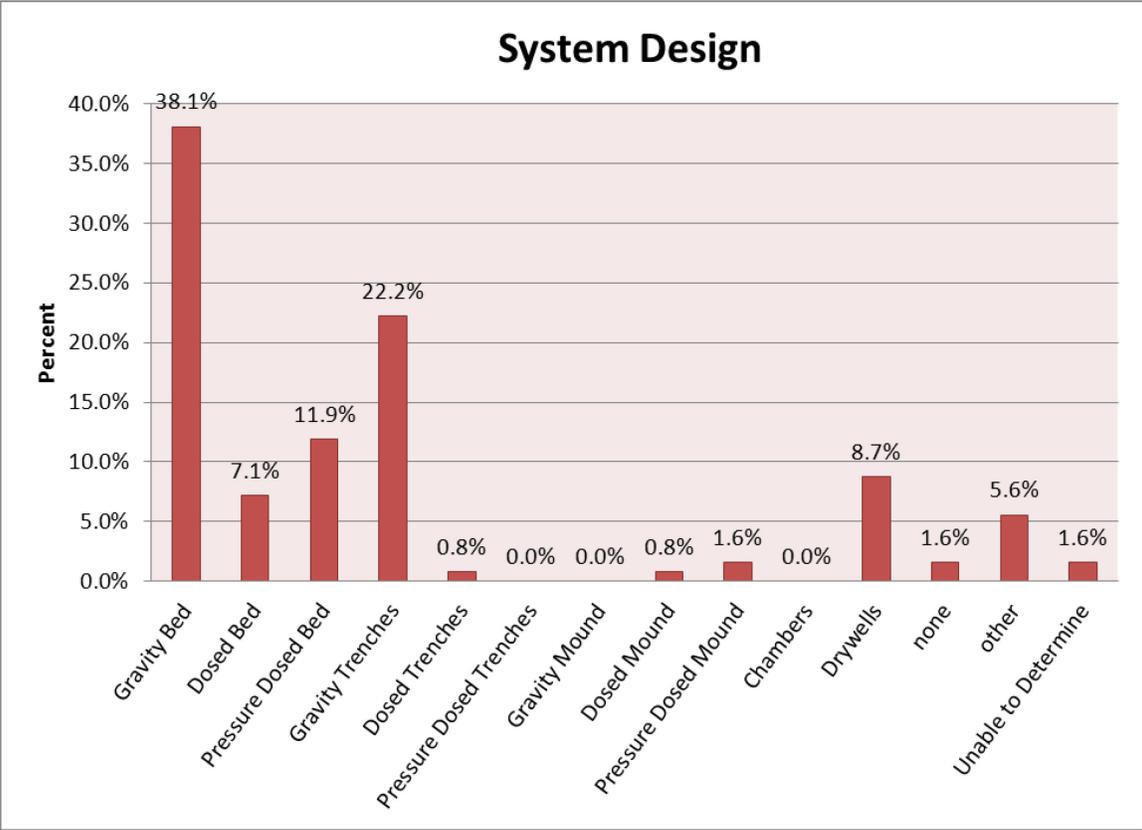
Probable Cause(s) of Failure

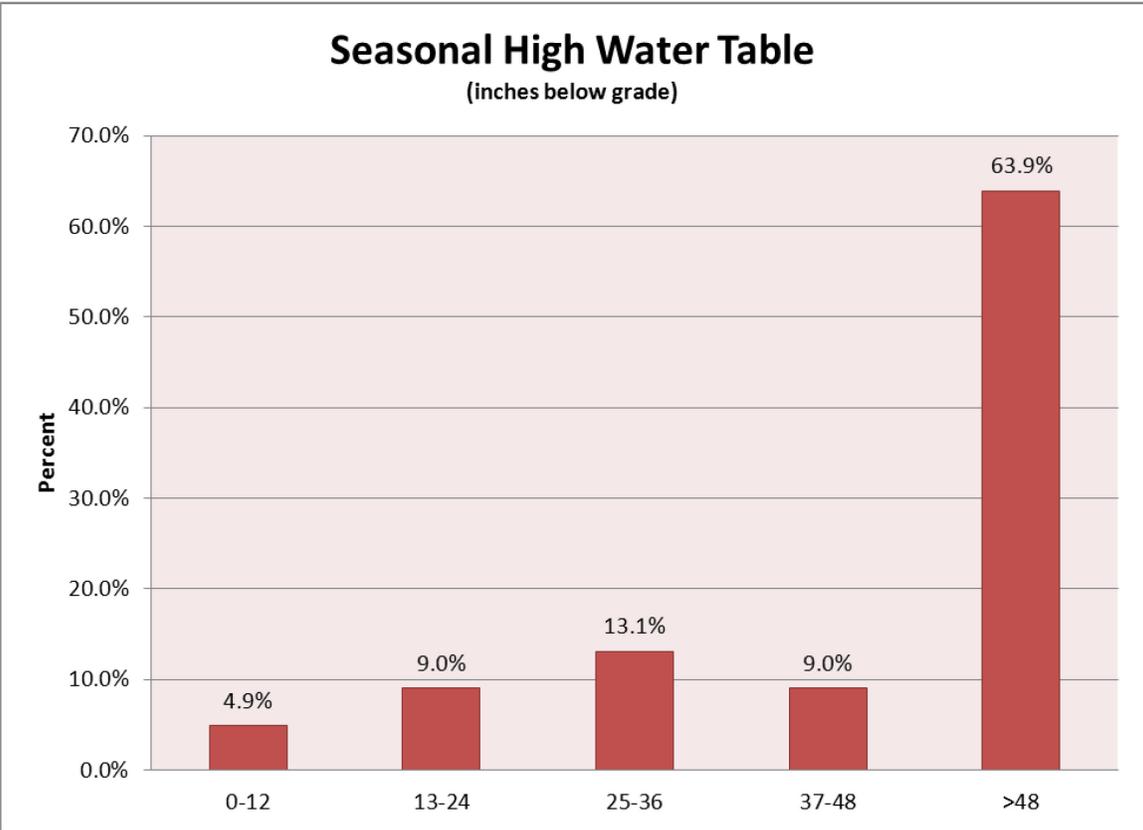
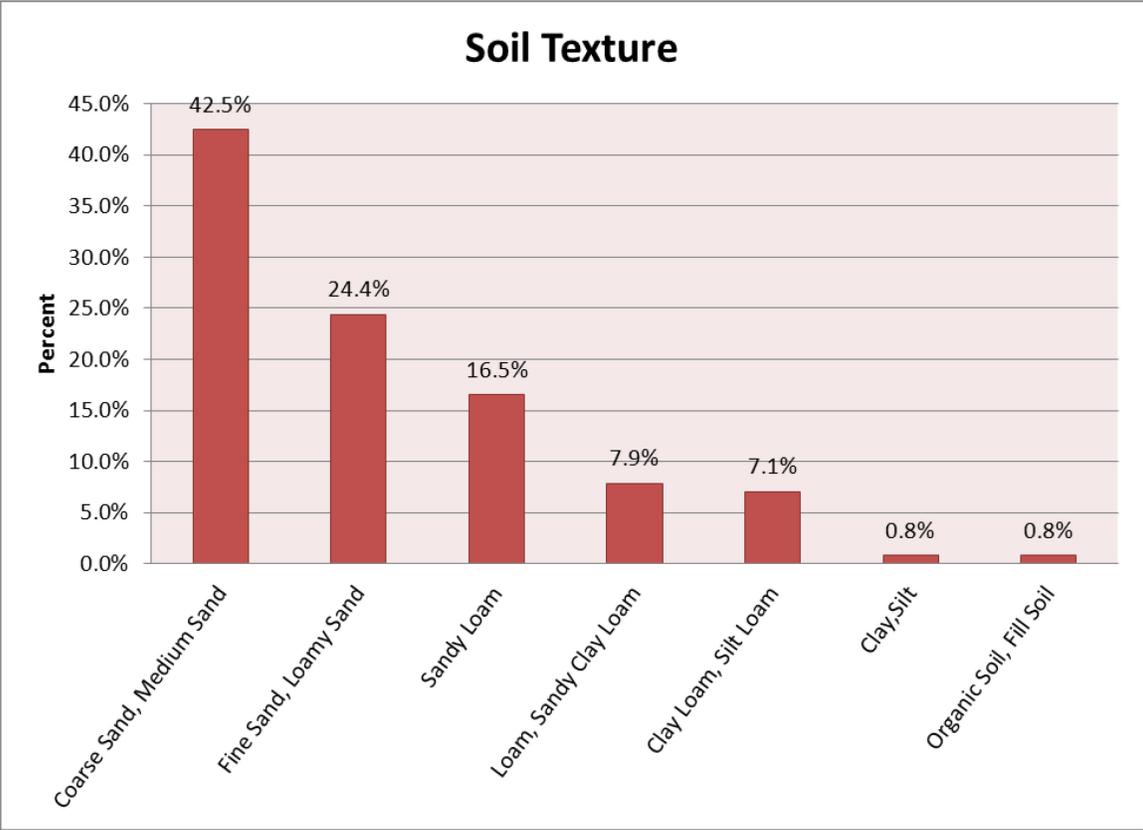


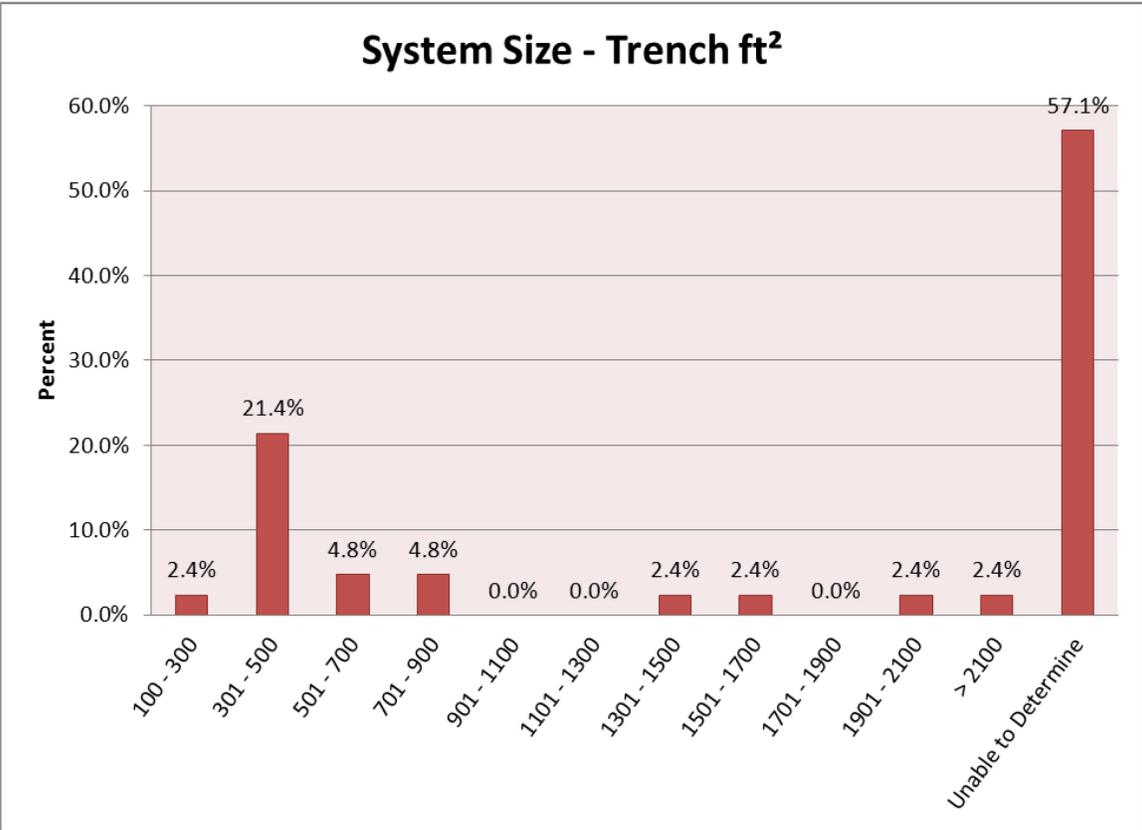
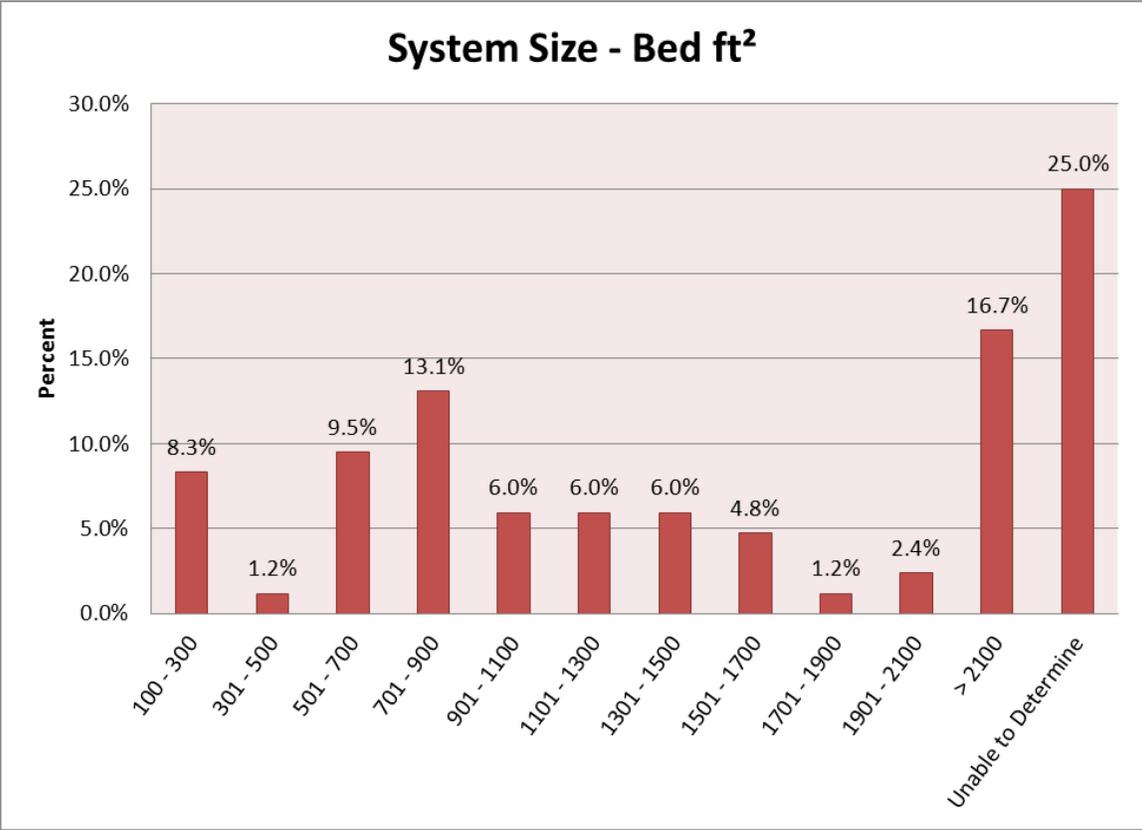
Non-Residential Data Summary

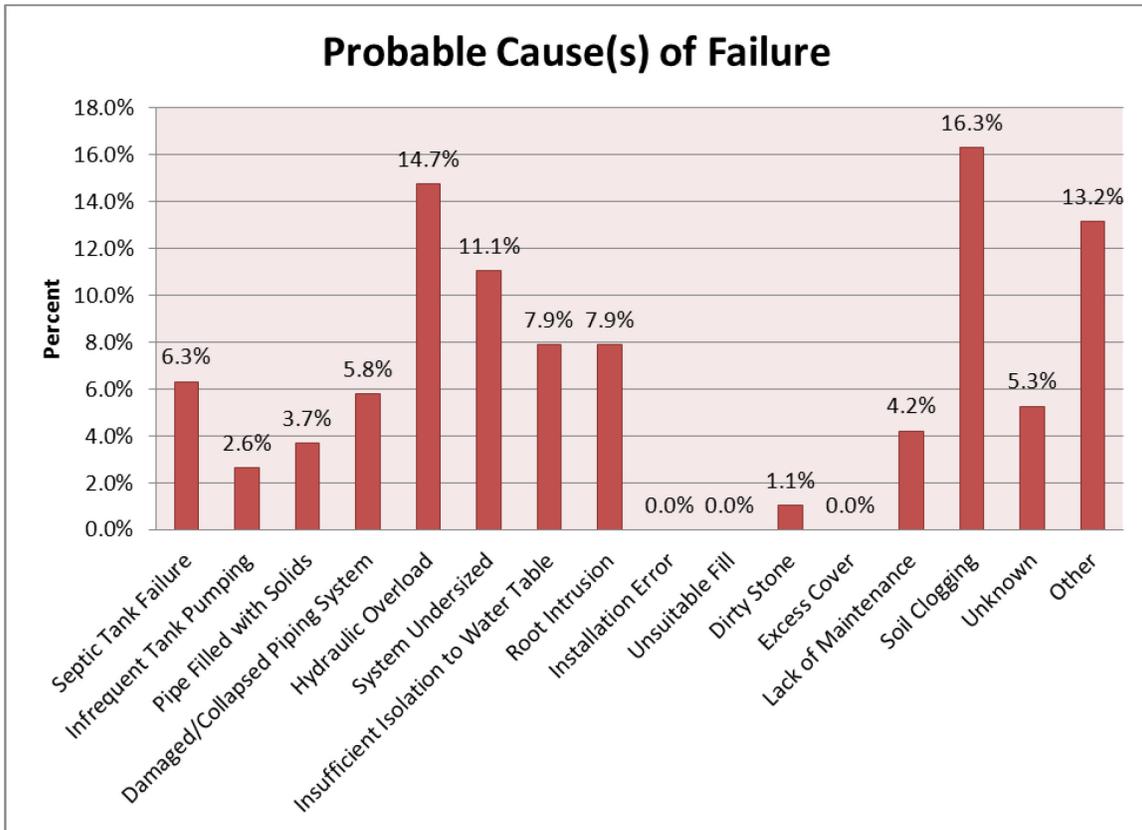












Review of Data Collection for Consistency

The DEQ periodically participates in LHD staff meetings, and/or meetings that LHDs have with their sewage system installers/contractors, in order to discuss the annual statewide failed system data summary. As a part of that effort, the DEQ assessed the consistency of LHD reporting of the failed system data over Fiscal Years (FY) 2010, 2011 and 2012. This was done in order to share with the LHDs their level of consistency in reporting failed system data as compared to the state as a whole. More specifically, the total number of sewage permits issued and the total number of failed sewage systems evaluated were used to establish the percentage of failure for each LHD. The percentage failed was then compared to the data the LHD reported the previous year. The following represents the findings:

Change in Percentage Failed between FY 2010 and FY 2011

- 20 LHDs with 0 to 5% change
- 10 LHDs with 6 to 10% change
- 4 LHDs with 11 to 15% change
- 3 LHDs with 16 to 20% change
- 7 LHDs with 21% change or more...
 - 6 LHDs were greater than 21% in FY 2011: 23%, 28%, 29%, 30%, 43%, and 58%, respectively, above their percentage failed in FY 2010
 - 1 LHD was down 36% in FY 2011 below its percentage failed in FY 2010.

Change in Percentage Failed between FY 2011 and FY 2012

- 17 LHDs with 0 to 5% change
- 12 LHDs with 6 to 10% change
- 7 LHDs with 11 to 15% change
- 4 LHDs with 16 to 20% change
- 4 LHDs with 21% change or more...
 - 1 LHD was up 21% in FY 2012 above its percentage failed in FY 2011
 - 3 LHDs were down in FY 2012, 23%, 30%, and 62%, respectively, below their percentage failed in FY 2011.

During FY 2010 through FY 2012, the high percentages (11 percent and above) are believed to be attributed to several reasons, including:

- A lack of clear guidance and direction from the DEQ on how and what to report
- LHD's with staff turnover, such as:
 - EH Director
 - Sewage Program Manager or Coordinator
 - EH Field Staff, and
 - New Staff or newly assigned staff to the on-site wastewater program.

In an effort to provide an update on the current status of data collection consistency by LHDs, an assessment of the data collected during CYs 2011 and 2012 was conducted. The following represents the findings:

Change in Percentage Failed between CYs 2011 and 2012

- 32 LHDs with 0 to 5% change
- 10 LHDs with 6 to 10% change
- 1 LHD with 11 to 15% change
- 1 LHD with 16 to 20% change

Based on the most recent findings, LHD consistency in the reporting of failed system data has improved significantly over the past two years. The improvement is believed to be attributed to LHDs becoming more comfortable with the data-collection process.