



CITY AUDITOR
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MEMO

Re: City Septic System Inventory

To: Audit Committee:
Deborah McDaniel
Darryl Riley
Leslie Daus
Mike Simpson
Randy Sweeten, CPA

CC: City Council
Mayor Wheeler
Thomas Knuckey
Ned Lever

From: Jenny Sims

Date: July 27, 2021

Dear Audit Committee Members,

SCOPE

I was asked to provide an inventory of septic systems in the City of Bremerton (COB). This review was performed in response to a request by Council Member Eric Younger. Mr. Younger indicated this information may be helpful in assessing the extent septic systems may contribute to certain local environmental problems.

We relied on information provided by COB and the Kitsap Public Health District (KPHD). We assume the information provided to us is reasonably correct.

INVENTORY SUMMARY

Based on our review and analysis, it appears there are 1,062 septic systems in COB. Of these 1,062 septic systems, 58 are known by KPHD to have failed in the past five years.¹ Note, only one of the failed septic systems had not yet been repaired or replaced at the time the data was provided to us. Please refer to [Schedule 1](#) for the complete list of septic systems in COB, and [Schedule 2](#) for the list of failed septic systems in the past five years.² Refer to Exhibit 1 for additional details regarding our methodology used to develop the inventory list.

FAILED SEPTIC SYSTEMS

Per a January 20, 2021 email from Grant Holdcroft (KPHD Program Manager Water Pollution Identification & Correction Program), KPHD identified septic system failures from the following data sources:

- Drinking water and on-site sewage permitting database;
- Water pollution identification and correction program database; and
- Environmental health complaint database.

These sources include some failed septic systems that are outside COB. Premises outside COB were identified through the Kitsap Assessor website and eliminated from the list of failed septic

¹ As of January 2021.

² A map of all septic systems and failed septic systems could be created by IT from this report's spreadsheets.

systems. Based on the information provided by KPHD and after eliminating properties outside COB, the septic system failure data includes 58 septic systems in Bremerton that failed in the past five years, about 12 failures per year. Of the 58 that failed in the past five years, 52 had been repaired or replaced, five had an unknown repair status, and one septic system had ongoing repairs.

According to the KPHD website, the following are warning signs of a failed septic system:

- Sewage on the surface of the ground or discharging into surface waters;
- A foul smelling, slimy, blackish/grayish liquid in the drain field area or out of down-slope pipes or banks;
- Standing/flowing water or soggy soils in the drain field area;
- Greywater (laundry or sink water) discharged to the ground or surface waters; and/or
- Sewage back-up into the residence caused by slow soil absorption.

Notably, a septic system can fail for a variety of reasons, ranging from a relatively low cost repair or maintenance task to an expensive septic leach field replacement. Something as basic as doing seven loads of laundry in a short period can cause a septic system to fail and the failure evidence may only be present during a limited time, complicating KPHD's effort to identify failed septic systems.

Based on a conversation with City Engineer Ned Lever and a review of Bremerton Municipal Code 15.03.050, it appears there are limited instances whereby property owners can be mandated to connect to City sewer. It appears mandating a premise connect to the City's wastewater service requires the following:

1. The premise is within 200 feet of a City wastewater system.
2. KPHD determines that a wastewater service connection is required in order to protect public health and safety.

Thus, it appears KPHD could require a premise connect to the City sewer system if a septic system failed and could not be repaired or replaced and was a threat to public health and safety, and the premise was within 200 feet of the City wastewater system.

Details regarding our methodology for collecting and analyzing the data are reported in Exhibit 1.

EXHIBIT 1

METHODOLOGY

City of Bremerton Septic System Data

Audit's initial request to IT was for septic systems in the COB *sewer service area* with the intent of getting a list of septic systems within the area that COB currently offers sewer service. At the time of the initial request, it was not realized the term "Sewer Service Area" has a broader meaning – it refers to areas currently offered sewer service by COB plus areas that COB plans to offer service in the future. [The request for septic systems in the COB sewer service area resulted in 14,239 properties](#). It was suspected a portion of these may have been septic at one time but had switched to City sewer. The sewer accounts were not removed from this list because Audit Committee members decided to limit the review to septic systems within City limits.

Through GIS capabilities, [COB IT staff clipped the list of Sewer Service Area septic systems to septic systems within COB](#), which reduced the population to 10,202 septic systems before removing properties that had switched to COB sewer and other refinements.

[A list of sewer accounts was provided by COB Utility Billing, which included 11,245 accounts](#). This list included County and City properties. Using codes in the COB 2021 Rate Change Spreadsheet, County properties were eliminated from the sewer account list.

Through data testing, it was learned that sewer accounts/properties with inactive meters and those with discount rate codes had been omitted from the initial sewer database. The sewer database was updated to include these properties.

To eliminate septic systems that had hooked up to sewer, we combined the septic and sewer databases and used Conditional Formatting in Excel to identify duplicate street addresses within the two databases. Using Conditional Formatting only captures exact matches so differences in data entry (i.e. RD vs ROAD) between the two systems could not be captured using Conditional Formatting and were identified manually.

Duplexes and other multifamily properties with addresses reported differently in the sewer and septic databases were also identified manually. Multifamily properties hooked up to sewer were identified based on sewer rate codes. These properties were researched (based on the parcel number) on the Kitsap County Assessor website, which showed whether additional addresses were associated with the same parcel number. Any additional addresses were compared to addresses in the septic database to remove those that were hooked up to City sewer.

The process of refining the data was labor intense and subject to human error. To assess the reasonableness of the data refinement, Christine and Jenny independently refined the data as described above. Their refined databases were compared and differences, which were minimal, were researched and reconciled.