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Local Government Interim Committee
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FINAL REPORT TO THE 67TH MONTANA LEGISLATURE

**REPORT
SJ 3: STUDY OF
ALTERNATIVE ON-SITE
WASTEWATER SYSTEMS**

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Before the close of each legislative session, the House and Senate leadership appoint lawmakers to interim committees. The members of the Local Government Interim Committee, like most other interim committees, serve one 20-month term. Members who are reelected to the Legislature, subject to overall term limits and if appointed, may serve again on an interim committee. This information is included in order to comply with 2-15-155, MCA.

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This report is a summary of the work of the Local Government Interim Committee, specific to the Local Government Interim Committee’s 2019-2020 study of alternative on-site wastewater systems as outlined in the Local Government Interim Committee’s 2019-20 work plan and Senate Joint Resolution 3 (2019). Members received additional information and public testimony on the subject, and this report is an effort to highlight key information and the processes followed by the Local Government Interim Committee in reaching its conclusions. To review additional information, including audio minutes, and exhibits, visit the Local Government Interim Committee website: <https://leg.mt.gov/committees/interim/2019lgic/>.

A full report including links to the documents referenced in this print report is available at the Local Government Interim Committee website: <https://leg.mt.gov/committees/interim/2019lgic/sj3/>.

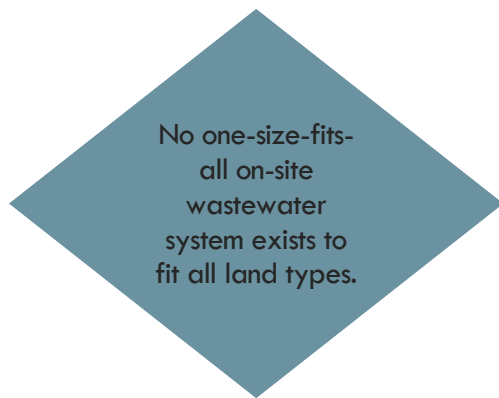
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SJ 3: ALTERNATIVE ON-SITE WASTEWATER SYSTEMS

OVERVIEW

On-site wastewater treatment systems service many homes and properties in the United States, with the Environmental Protection Agency reporting that roughly one in five households depends on an on-site system, such as a septic tank with a drain field. Many citizens utilize municipal wastewater systems, but those living in more remote or unincorporated areas must rely on an on-site system to adequately filter wastewater and protect the water quality of surrounding ground water, rivers, lakes, and streams.



While the use of on-site wastewater treatment systems is common, no one-size-fits-all system exists to fit all land types. Rather, the type of system permitted for a homeowner is determined using many factors, including soil type, site conditions, and usage levels, among other factors. To meet the needs of various geographic, geologic, and hydrologic conditions, many kinds of systems and combinations of system components are available to homeowners.

According to current rules and regulations, the Department of Environmental Quality (DEQ) establishes design and permitting standards for on-site wastewater treatment systems, and local boards of health work with individual homeowners to permit systems that are allowable and adequate for a specific location.

Study Directives and Ranking

The resolution suggested that the study:

- evaluate current state and local regulations for designing and permitting septic systems and compare those regulations to other states;
- compile research on septic system programs in Montana;
- research funding needs and potential funding sources; and
- examine alternative septic systems and provide recommendations to encourage the use of alternative on-site wastewater systems.

The study ranked 17th out of 27 study resolutions in the postsession poll of legislators. The Legislative Council assigned the resolution to the Local Government Interim Committee, the committee's only assigned study.

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Widening the Scope

At its July 2019 meeting, the committee moved to study the resolution in its entirety while also receiving information and research related to failing and aging on-site wastewater treatment systems. The committee heard testimony of the prevalence of failed systems and the difficulty of locating and replacing failed systems. A failed wastewater system may threaten the health and safety of citizens downstream, and with little to no oversight of system age, maintenance, and functionality, the committee determined the topic was worthy of investigation while still operating in a similar vein as the original resolution.

The committee adopted a two-pronged approach to meet the needs of the original study resolution and the additional directive. Most meetings devoted time to examine on-site wastewater treatment system regulation and the types of alternative systems available and also to look at case studies of areas with failed systems and potential programs or options to mitigate the risks of failed systems.

STATE AND LOCAL REGULATION OF ON-SITE WASTEWATER SYSTEMS

To meet the first directive of the resolution and orient the committee members in the field of on-site wastewater treatment systems, the committee received an overview of how system components work, both individually and in conjunction with other components necessary to fully filter waste.

The specific design standards for system components are compiled in the [Circular DEQ-4](#). Many sources of authority govern the standards included in the Circular DEQ-4, as illustrated in the following diagram:¹



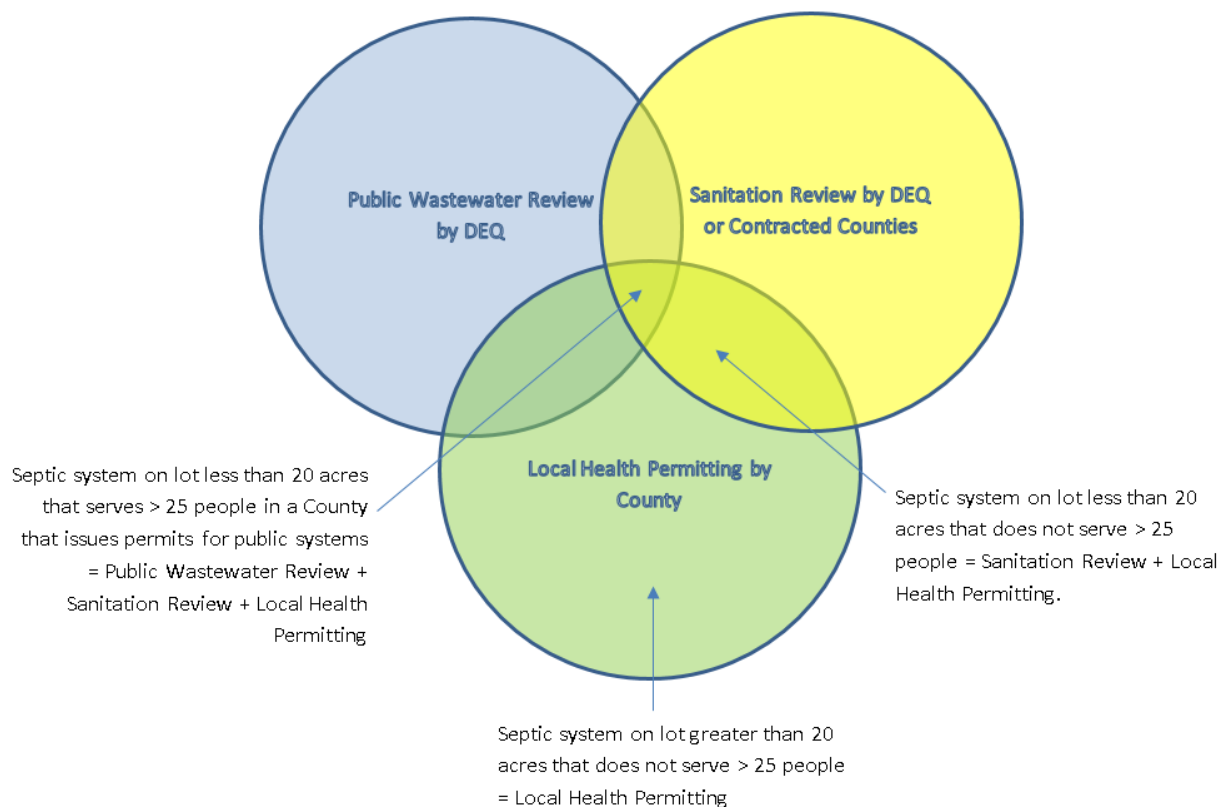
¹ Diagram taken from “[On-Site Wastewater Treatment Systems - State Regulations](#),” provided at the September 2019 meeting.

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The Circular DEQ-4 lists systems currently permitted in Montana, including but not limited to septic tanks, absorption trenches, sand filters, aerobic wastewater treatment units, and holding tanks. The Circular DEQ-4 also details the process to request a deviation from the minimum standards for existing system components or for new, experimental systems that may not have been thoroughly researched by the department.

While the state outlines the specific design standards and the types of soil conditions that allow a system to be installed, local boards of health permit individual systems. According to [50-2-130, MCA](#), a local board of health may not adopt a rule that is more stringent than state regulations or guidelines unless the local board makes a written finding and holds a public hearing. The local board of health utilizes the rules and standards written by the Department of Environmental Quality to determine the permitting of on-site wastewater treatment systems.

Systems are permitted using a cross-jurisdictional approach, depending on the system type and the number of lots serviced, as the following diagram illustrates:²



² Diagram taken from "[Septic System Permitting in Montana](#)," presented by Tim Davis, DEQ Water Quality Division Administrator, at the July 2019 meeting.

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Waivers, Deviations, and Variances — Experimental Systems

When revising the Circular DEQ-4 approximately every five years, the department often adds additional types of systems that have proven popular and successful. Adequate research must be compiled and tests completed that prove a system is able to perform successfully in Montana. A system owner may file for a deviation from the design standards for a system not currently approved. The deviation request must include, among other requirements, adequate proof that the system will work effectively and not degrade water quality. The reviewing authority having jurisdiction will review the request and make final determination on whether a deviation may be granted.

A system that has been granted a deviation is considered an “experimental system,”³ and the system owner must provide consistent maintenance and operation records to the department to ensure the system is functioning adequately.

HOW DO MONTANA REGULATIONS COMPARE TO OTHER STATES?

In addition to the types of on-site wastewater treatment systems allowed in other states, the committee expressed interest in comparing vertical and horizontal separation requirements. Staff analyzed the rules of 10 states, chosen for their varied geography in hopes of determining what differences in regulations, if any, exist in areas whose landscapes offer various challenges. The states chosen experience diverse climate patterns and offer a range of geographic diversity, including mountain ranges, high plains, sea-level wetlands, ocean beaches, and deserts.

While most states have vertical separation requirements that mandate an average of four feet of vertical separation, similar to Montana, a few states offered different methods and parameters. The horizontal separation requirements for each state varied as well, and a [full report of the multistate regulation comparison](#) can be found on the committee website.

All states surveyed employ a similar procedure to Montana in regard to experimental systems. Most other states’ rules include design standards for approved systems and the various allowable conditions for which a certain type of system is appropriate. For those systems not considered standard or approved, states provide a system to apply for deviations, waivers, or variances from rule to install a system not included in rule.

³ DEQ provided a [list of approved and experimental systems](#) in response to committee questions.

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The following table illustrates the types of system components allowed in each state.⁴

Type of System	MT	AZ	CO	FL	MA	MN	NE	NY	OR	SD	WY
Septic tank	X	X	X	X	X	X	X	X	X	X	X
Pressure distribution system	X	X	X	X	X	X	X	X	X	X	X
Absorption trench	X	X	X	X	X	X	X	X	X	X	X
Absorption bed	X	X	X	X	X	X	X	X	X	X	X
Sand mound	X	X	X	X		X	X	X	X	X	X
Gray water irrigation	X	X		X	X	X		X		X	X
Composting toilet	X	X	X	X		X		X		X	
Incinerating toilet	X	X	X			X		X		X	
Evapotranspiration system	X	X	X							X	
Chamber technology	X	X	X		X						X
Subsurface drip	X	X	X	X							
Recirculating media trickling filter	X	X	X		X				X		
Intermittent sand filter	X		X					X	X		
Recirculating sand filter	X		X								
Aerobic wastewater treatment unit	X	X		X			X				
Chemical nutrient reduction system	X										
Gravelless trench	X	X					X				
Engineered pad	X	X									
Peat filter		X									
Surface disposal		X									
Tire chip aggregate			X	X				X			
In-ground nitrogen-reducing biofilters (INRB)				X							
Absorption trenches in saprolite									X		
Chemical/recirculating toilet						X		X	X	X	

LEWIS AND CLARK COUNTY SEPTIC MAINTENANCE PROGRAM

After the committee chose to widen the scope of the study to include examining processes to counteract the negative impacts of aging and failing on-site wastewater treatment systems, a request was made to examine the Septic Maintenance Program implemented in Lewis and Clark County in 2011. The city-county board of health established the program in an effort to collaborate with septic system owners to help maintain their

⁴ Table from report presented at the January 2020 meeting, "[Multi-State Comparison: On-Site Wastewater Treatment System Regulations](#)."

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systems and protect public health. Currently, the program is the only one of its kind in the state.

Under the Lewis and Clark County On-Site Wastewater Treatment Regulations, a homeowner is expected to report the status of a septic system to the county health department every three to five years, depending on system use and how often the tank is pumped. Homeowners may satisfy the reporting requirements in one of the following two ways:

1. Complete a scored self-assessment online or on paper and pump the septic system at the interval indicated by the resulting score (every three, four, or five years). System owners are required to submit the completed self-assessment, pumping record, and fee (currently \$50) to the city-county health department.
2. Hire an operation and maintenance service provider to perform an inspection at least every four years. A licensed septage hauler must pump the tank, and system owners must submit the inspection results, pumping record, and fee to the city-county health department.

In addition, all septic system owners are required to report system failures to the county, prevent adverse impacts to the system caused by factors listed in program rules, and monitor their systems for rule conformance. Owners are required to correct deficiencies discovered in an operation and maintenance inspection.

The Septic Maintenance Program took many years and resources to implement. Lewis and Clark County received Clean Water Act Section 319(h) and Targeted Watershed grants from the U.S. Environmental Protection Agency in 2007 to help the implement the program.⁵

LIMITED FUNDING SOURCES FOR SYSTEM OWNERS

The third study directive asked the committee to locate possible funding sources to aid on-site wastewater treatment system owners.

Multiple funding options at both the federal and state levels exist to help local governments fund wastewater projects. However, private homeowners have few funding programs available. Limited funding is offered for septic replacement, and funding to install a new system is restricted to low-income homeowners with no options to hook up to a municipal system.

The following table depicts two programs that may offer some funding support to system owners:

⁵ Information taken from “[Helena Valley Septic System Maintenance District Implementation Plan](#),” 2008, and “[Lewis and Clark County Septic Maintenance Program: Program Review and Business Process Analysis](#),” 2019. Both of these documents and additional resources are located on the committee website: <https://leg.mt.gov/committees/interim/2019lgic/sj3/>.

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Program	Eligible Applicants	Type of Funding	Amounts Allowed, if Applicable
U.S. Department of Agriculture (USDA) 504 Program	Low-income homeowners with family income below 50% of the area median income	Loans and grants; grants available for those age 62 and older who are not able to repay loan	Maximum loan: \$20,000 Maximum grant: \$7,500 May be combined for up to \$27,500 in assistance.
DNRC Renewable Resource Grants to Private Entities	Individuals, associations, corporations, and nonprofits	Reimbursement grants; may be used for septic tank replacement, emergency water system improvements, and watershed improvements	Reimbursement grants up to \$5,000 or 25% of project cost, whichever is least. Receipts must be provided and reimbursements are on a one-time-only basis.

ENCOURAGING ALTERNATIVE SYSTEMS

At the January 2020 meeting, the committee heard from a panel of engineers, developers, and sanitarians who offered their experiences working not only with various types of systems but also with state and local regulations. Most panelists expressed that working with the varied and often challenging terrain in Montana increases the need for a wide range of options when it comes to system components. Looking at the multistate comparison offered earlier in the meeting, many panelists agreed that Montana offers a list of systems very comparable to other states but that finding a workable, affordable solution can still prove difficult for many landowners.

To meet the needs of system owners, engineers testified that they often turn to experimental systems and the current deviation process to install systems in locations with challenging conditions. One such system is the total incineration unit currently permitted by DEQ as an experimental system to rid the user of both liquid and solid wastes through incineration. Systems like an incinerating toilet that eliminate the need for a drain field have become more popular, and with that popularity comes more research and conclusions that may lead to more widespread acceptance of systems currently considered “experimental.”

To increase awareness and encourage the use of experimental systems, the committee introduced [PD 8](#), a bill to mandate a timeline for DEQ to review and approve experimental systems. Under this legislation, the department shall review experimental systems that have received a deviation and determine if those systems may be added to the Circular DEQ-4 as approved systems. Once a system is added as an approved system, system owners are not required to submit a deviation request to install the system, reducing the time and money required to secure a system permit. Systems that are considered approved will most likely become more commonly used, thus encouraging systems that use new technology.

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CONCLUSIONS

The committee completed the following actions to conclude its work on Senate Joint Resolution 3:

- sent a [letter](#) to the Montana Department of Natural Resources and Conservation regarding increased funding for on-site wastewater treatment system installation and replacement programs; and
- introduced [PD 8](#), a bill to:
 - regulate the Department of Environmental Quality’s timeline for review of experimental systems;
 - mandate that peer-reviewed and third-party research be utilized in the review process;
 - propose for adoption into rule those experimental systems that meet the requirements; and
 - report the results of experimental system reviews to the Local Government Interim Committee biennially.