

H₂O&M

The Community System Owner's Guide

UNIVERSITY OF MINNESOTA

**ONSITE
SEWAGE
TREATMENT
PROGRAM**



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septic.umn.edu

H2OandM.com

UNIVERSITY OF MINNESOTA

**ONSITE
SEWAGE
TREATMENT
PROGRAM**



- Professional Training – Designers, Inspectors, Installers, Service Providers, Maintainers
- Research and Demonstration
- Homeowner Operation & Maintenance
- Small Community Wastewater Education Program

Presentation overview

- Why this project?
- Project objectives
- Tool
- Using the tool
- Next steps and timeline



Collaborative effort

UNIVERSITY OF MINNESOTA

ONSITE
SEWAGE
TREATMENT
PROGRAM



- Funding: National Institute of Food and Agriculture (NIFA) grant
- Lead institution: University of Minnesota, Sara Heger (PI) and Dave Gustafson
- Project development team
 - Iowa Department of Natural Resources, Dan Olson
 - North Carolina Onsite Water Protection Section, Nancy Deal
 - Southeast Wastewater Initiative, Aaron Wills & Sheila Craig
 - University of Arizona, Kitt Farrell-Poe
 - Wastewater Education, Dendra Best
- Tool/database support
 - The Carney Group, Jules Inda and Pat Carney

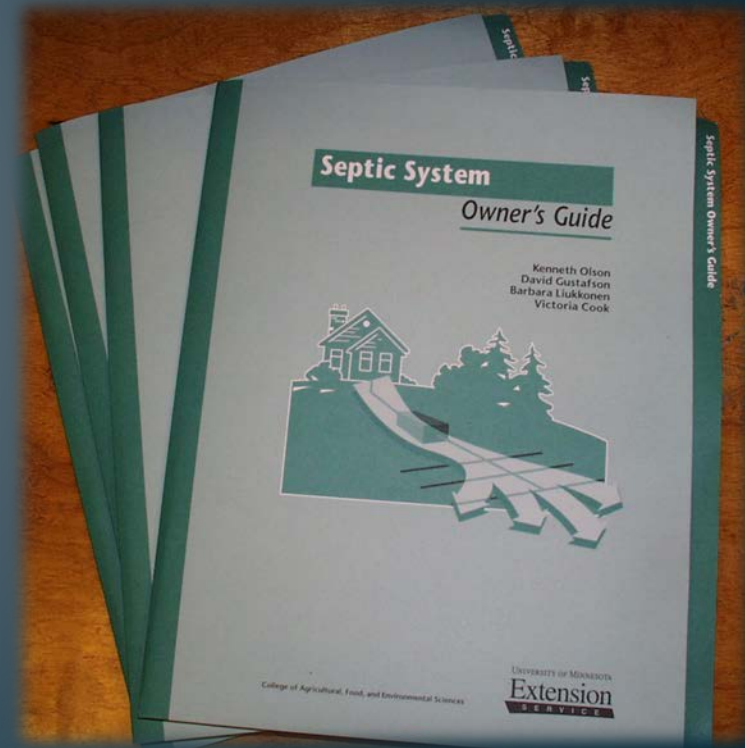
Onsite wastewater management

Why should we care about managing decentralized?

- Onsite systems serve approximately 25 percent of the U.S. population and one-third of new development
- According EPA at least 10 percent of onsite systems fail each year
- State agencies report that these failing systems are the third most common source of groundwater contamination

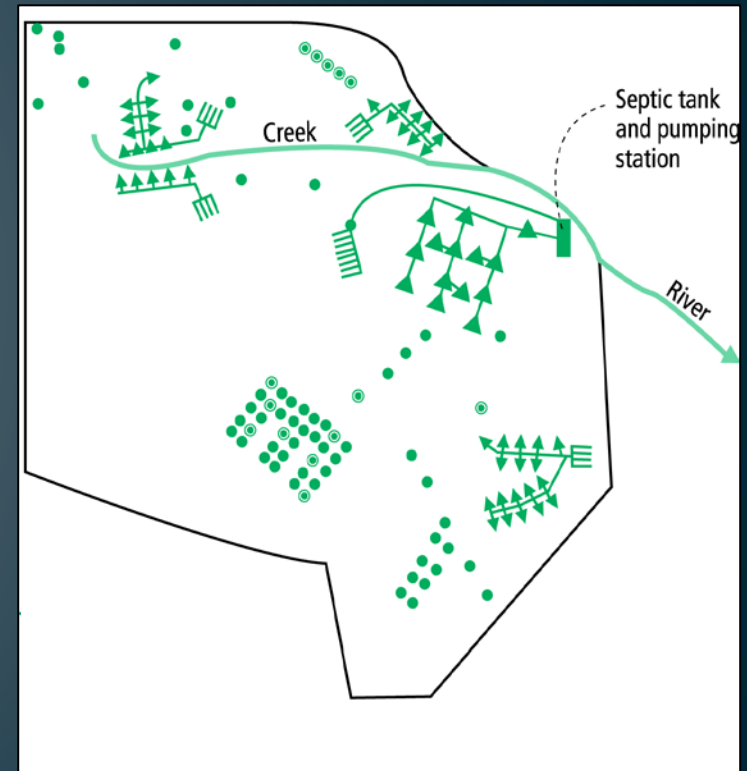
Why a Community Septic System Owner's Guide (CSOG)?

- Management is critical
- Increase in cluster systems and advanced treatment systems with more critical management activities
- Need for customized information



Continued Need for Education & Info

- Bridge the gap between septic system professionals, regulators, and owners
- Produce sound management guidance from the perspective of a system owner
- Raise the bar for management expectations
- Educate system owners to clearly define long term maintenance activities
 - **Increased system performance**
 - **Long-term cost-savings**

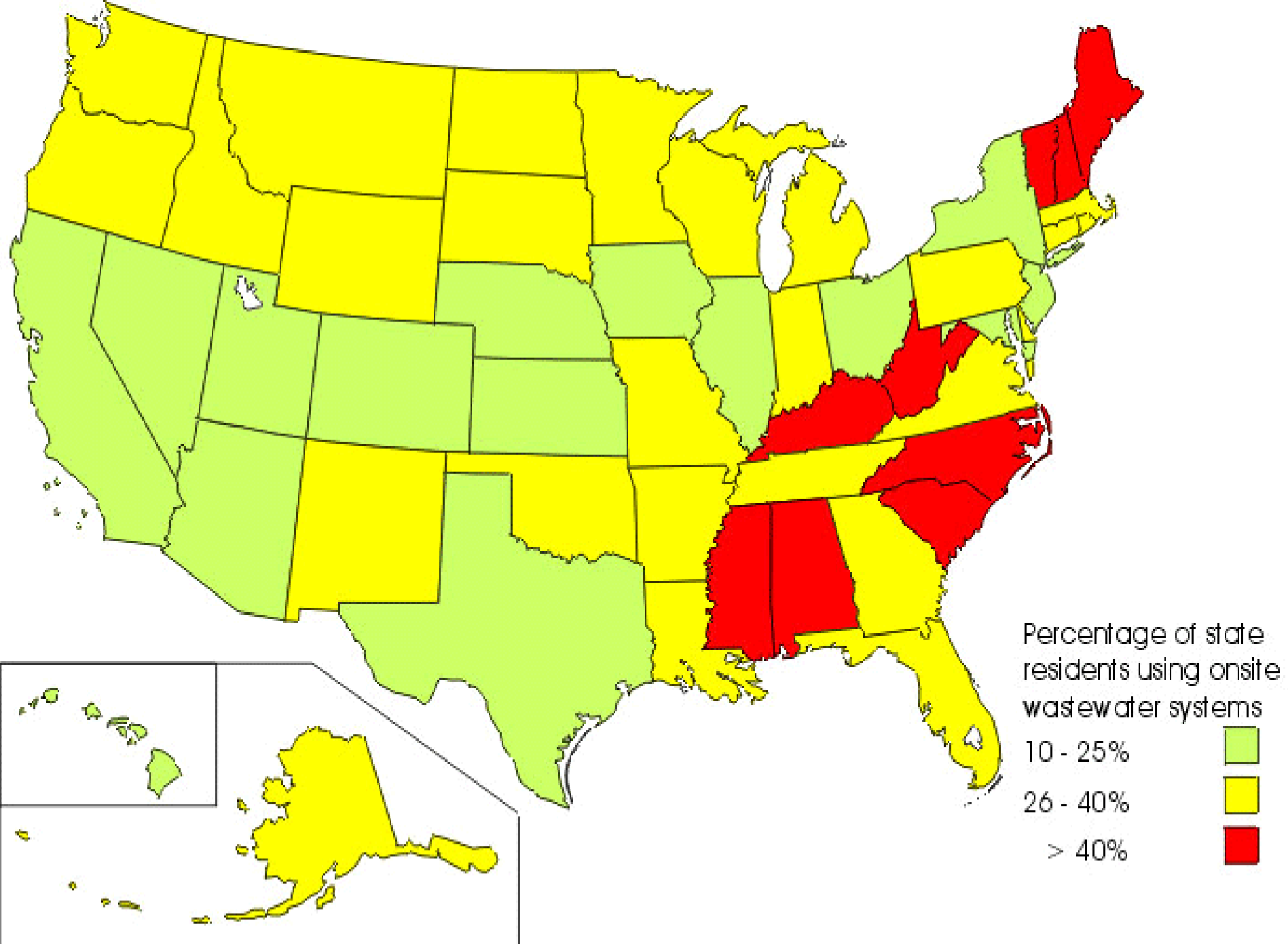


Why an online tool?

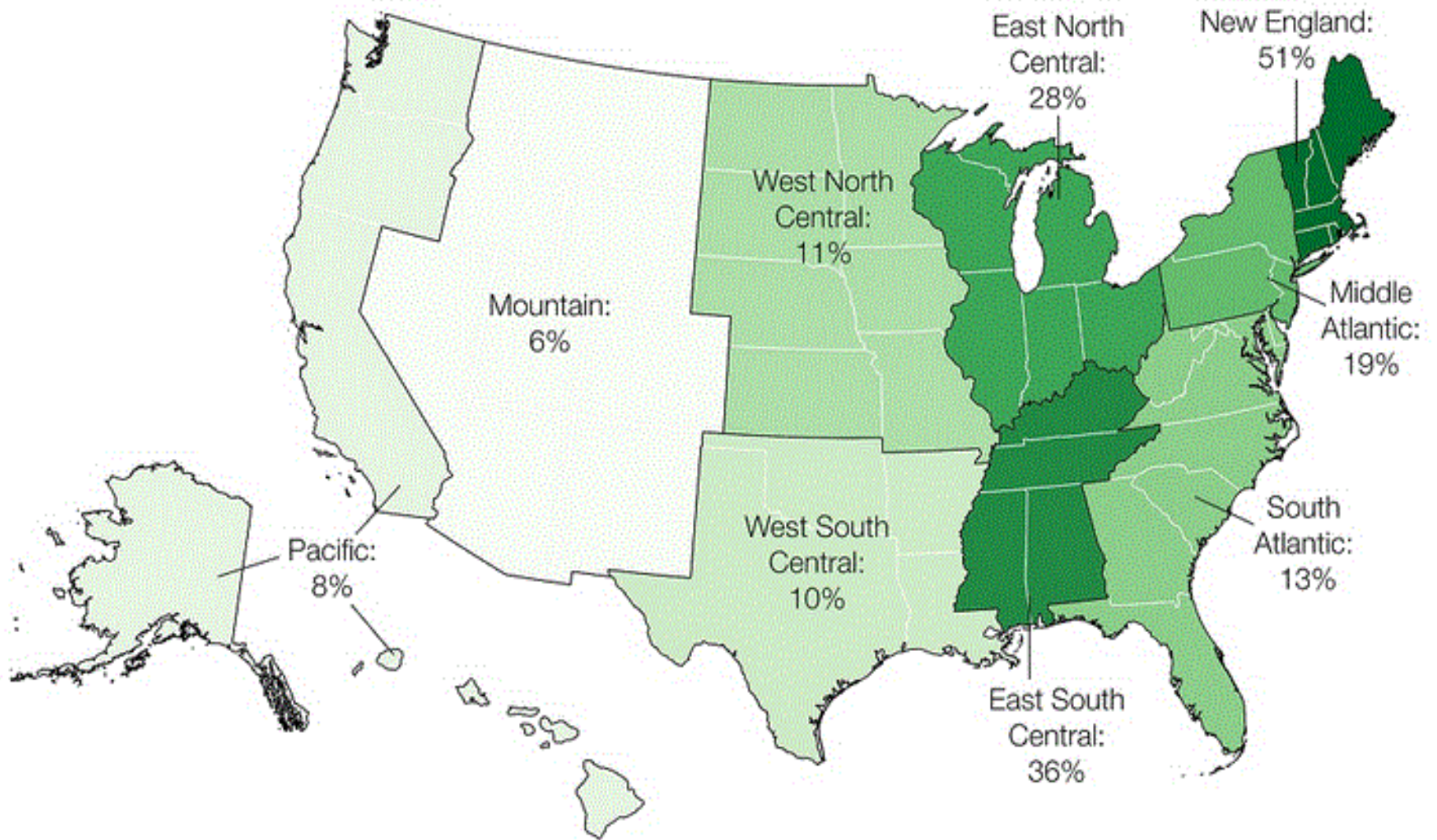
- There wasn't one!
- Everything is going electronic
- Allow for national perspective on management
- Allow for local variation
- Ease in updating in the future
- National clearing house

How much wastewater are we talking about?

- 25% of the US population
- 70 million Americans
- 5 billion gallons per day
- ~33% of all new construction
- Unquantified number of commercial properties
 - strip malls, resorts, restaurants, gas stations and similar
- US EPA estimates that there are more than 350,000 existing large-capacity septic systems (serving more than 20 people) nationwide



Share of new homes built with septic systems by region, 2013.



Why more cluster systems?

- Lack of space for individual system replacement
- Reduction of load allocation for meeting total maximum daily load standards
- Reduced costs compared to wastewater treatment plants
- Smart growth initiatives
- Development and redevelopment occurring outside the reach of municipal sewer extensions



Project objectives

1. Develop content and a web interface
2. Create expert-driven and locally-customized manual for:
 - soil-based wastewater treatment system
 - small scale surface discharging systems
3. Provide owners and users with fundamental information about the operation and management of their systems

Project objectives cont'd

4. Scale from single family home to large cluster system
5. Electronic or hard-copy
 - Creates a PDF
6. Can be updated if:
 - System
 - User
 - Other details change



- H2OandM.com is the online tool
- The tool will work for:
 - Newly designed/installed systems
 - Existing systems that are in use

Tool is a survey

- Boilerplate text and graphics created by project team
- Allows the input of local information
 - Number of connections, treatment train components, local permitting issues, rate structures
 - Any regional, state, or local differences in regulations that affect the management of community systems.

Audience for project

- Online tool:
 - Engineers/Designers
 - Installers, Operators, Service Providers
 - Regulators
 - Facilitators
 - Developer?
 - Informed community members?
- H2OandM guide
 - Individual owner of a septic system
 - Homeowner part of cluster system



What will be in each H2O&M guide?

- The specific treatment train components
 - How they work
 - Text
 - Diagrams and pictures
 - Specific O&M requirements for owner and professional
- General management issues and challenges
- Troubleshooting guide

Where does content come from?

- Each H2O&M guide will be a combination of:
 - Boilerplate content and imagery that has been critically reviewed by project development team
 - Locally customized content and images
- What if user of tool doesn't know key info?
 - Guide will end up being more generic
 - May need to get data from designer, county, etc.





- A septic system professional creates an account where all their projects are stored
- Using the web interface they enter specific site and system information
- Tool creates an electronic or hard copy O&M manual which includes
 - stock image and text
 - customized information entered

H2OandM.com



Community Septic System Owner's Guide

[Sign in](#)

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[Register](#)

[Sign In](#)

[Help](#)

New Users

If you are using this tool for the first time, click here to register.

[Register Now](#)

Existing Users

If you already have an account, please log in here:

[Login Here](#)

Welcome to Community Septic: Owners Guide On-Line Tool

About This Tool

This tool is designed to develop an Owner's Guide for everything from a single-family home, to a commercial property, to a cluster system serving 50+ homes. Some key things to keep in mind about the tool:

- It contains generic stock/boiler plate general information, system component descriptions and images, and operations and maintenance (O&M) recommendations
- It allows you to upload site specific descriptions, images and O&M recommendations
- It will produce a PDF guide For homeowners and businesses to use electronically or printed out
- It allows you to start and stop a project during the process and update it years later when things change
- It does NOT cover every scenario that exists across the US, but we hope it covers a vast majority of them!



This tool is funded by the National Institute of Food and Agriculture and created by the University of Minnesota.



Partial funding for this research was supported by USDA National Institute of Food and Agriculture Award Number 2012-51130-20185.



REGISTER

*Everything with a * must be entered*

First & Last Name *



Phone *



Address *



City *



State *



Zip Code *



Company Name



Email *



Password *




Confirm Password *



TERMS OF USE AND DISCLAIMER OF LIABILITY

THE FOLLOWING TERMS OF USE APPLY TO YOUR USE OF THE WEBSITE AND ONLINE TOOL FOR SEPTIC SYSTEM OWNERS GUIDE (COLLECTIVELY, THE WEBSITE). BY USING THE WEBSITE, YOU AGREE TO BE BOUND BY THESE TERMS AND CONDITIONS. PLEASE READ THEM CAREFULLY. IF YOU DO NOT AGREE TO THESE TERMS OF USE, DO NOT USE THE WEBSITE.

Confirmation email



Please Confirm Email Address  Inbox: x

 Community Septic Website
to sfheger 

Community Septic: **Registration Complete**

Thank you for registering. Please confirm your email address by clicking the link below or copying and pasting the URL into a web browser

<http://www.h2oandm.com/auth/register/confirm/FqcGlaLH0w5J8bjRB74nkKXjMfnExr>

Thank you,
Community Septic



Click here to [Reply](#) or [Forward](#)



SIGN IN

Stay logged in

[Forgot password?](#)

Sign In

Don't have Account? [Sign Up](#)



LOCATE AN EXISTING PROJECT

Search here if you think a guide may have been created by another provider, for this property. Search any combination of **Zip Code, Project Name** or **Parcel ID**

Ex: 55125 Lakewood Septic

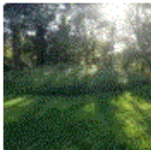
YOUR PROJECTS



UMN



Billota Mound



South Shores

Welcome Sara Heger of University of Minnesota

This is your own account home page: a dashboard for your current projects and portal to all of your information. Use the Account menu at the top to navigate within this section of the website.

Edit Your Profile

Add or edit your personal information like email, login credentials and address.

[Edit Profile](#)

Create New Project

Start a new project to generate your own Owner's Guide PDF for your system.


[+ Create New Project](#)

Manage Your Image Library

Upload images to quickly access them throughout all your projects

[Your Image Library](#)

Help Topics



Community Septic System Owner's Guide

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[Home](#) > [Help](#)

LOCATE AN EXISTING PROJECT

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Ex: 55125 Lakewood Septic

YOUR PROJECTS

Help Topics: Owners Guide On-Line Tool

Help topics pertain to creating your own PDF within our system. You must be a registered user and logged in to start creating a new PDF.

- ▶ [Before You Start](#)
- ▶ [Image Upload Information](#)
- ▶ [Navigation Tips](#)
- ▶ [Privacy](#)
- ▶ [Search for a Project](#)
- ▶ [Template Tips](#)

Image Help

Help Topics: Owners Guide On-Line Tool

Help topics pertain to creating your own PDF within our system. You must be a registered user and logged in to start creating a new PDF.

▶ Before You Start

▼ Image Upload Information

At many points in the Tool you will be able to upload photographs or graphics.

Please note: file formats are limited to JPG, JPEG, PNG, GIF

Maximum file size allowed is 1MB (1 MegaByte)

(Note: images that are larger than the maximum allowable size will not print or render properly in your final document.)

The web is full of helpful sites if you are not sure how to resize your images. See http://www.ehow.com/how_4570888_reduce-photo-file-size.html

▶ Navigation Tips

Image Library

[Home](#) [Account](#) [Help](#) [Administration](#)

[Home](#) > [Account](#) > Image Library

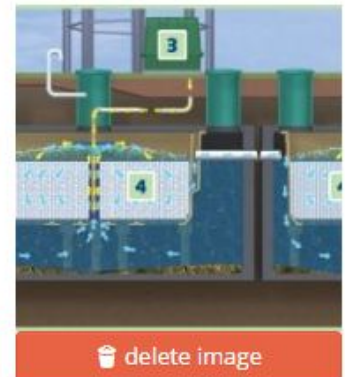
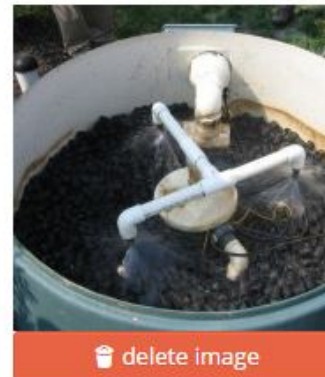
Sara Heger: Image Library

Your image library is where you can store your own commonly used images throughout your projects.

[? Image Upload Help](#)

Upload Images

[+ Add Images](#)



i Alert X
Your project Test 102715 has been deleted

My Projects

Manage all your existing projects or start a new one. You may change the display order by clicking the up and down arrows next to each project.

[+ Start New Project](#)



Icon	Project Name	Add PDF Content	Download PDF	Last Modified	Delete
	Chris and Leo's Caseys	Edit PDF Content	Download PDF	02-01-2016 07:49 pm	Delete
	South Shores Development	Edit PDF Content	Download PDF	10-16-2015 06:39 pm	Delete
	Billota Mound	Edit PDF Content	Download PDF	10-16-2015 06:33 pm	Delete
	UMN	Edit PDF Content	Download PDF	10-16-2015 06:14 pm	Delete



New Project or Template

Home Account Help

Home Account Create New Project


Create New Project Form

To create a new project, fill out the required fields indicated by a * then click submit form.

Project Information

Project Name *

Template *

Default Content 

Project Logo

No file chosen

Cover Image

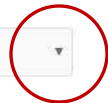
No file chosen

System Location

System Address *

City *

State *



Sections of tool/guide

1. Organization of the system – connections, design flow, people served
2. General system information – residential versus commercial, location, setbacks
3. Expenses – capital, annual, electrical, etc.
4. Interior plumbing – type, access and O&M
5. Collection – type, access and O&M

Sections of the Tool

6. Tanks – type, access and O&M
7. Advanced treatment systems - type, access and O&M
8. Final treatment and dispersal – type, access and O&M
9. General maintenance
10. Problems/Troubleshooting
11. General use and operation

Sections of the tool

Home Account ▾ Help Administration ▾

Home > Account > My Projects > Chris and Leo's Caseys

- Organization Of The System
- Wastewater Treatment System
- Expenses
- Interior Plumbing
- Collection Of Wastewater
- Tanks
 - Grease Interceptors
 - Septic Tanks
 - Pump Tanks
- Advanced Treatment
 - Aerobic Treatment Unit
- Final Treatment And Dispersal
- Maintenance
- Problems And Troubleshooting
- General Use And Operation

Wastewater Treatment System

▸ Sources

▾ Location


Location(s)

Fill in the relevant information for this particular system.

Diagram Of The System reset item

Enter a caption for the diagram describe the system's location in relation to the property. We have provided this generic image which shows the typical arrangement of system components. As an alternative you may choose to upload a location specific graphic schematic or photograph for which the text you enter will become the image caption.

[Upload From Device](#) [Open Image Library](#)



[Delete Image](#)

[Organization Of The System](#)[Wastewater Treatment System](#)[Expenses](#)[Interior Plumbing](#)[Collection Of Wastewater](#)[Tanks](#)[Grease Interceptors](#)[Septic Tanks](#)[Pump Tanks](#)[Advanced Treatment](#)[Aerobic Treatment Unit](#)[Final Treatment And Dispersal](#)[Maintenance](#)[Problems And Troubleshooting](#)[General Use And Operation](#)[🔄 Make PDF](#)

Tanks

 Holding Tanks Grease Interceptors Septic Tanks Siphon Tanks Pump Tanks Trash Traps Flow Equalization Tanks Recirculation Tanks Processing Tanks

When you select the tanks in the system they show up on the left menu



Completed
guide



Chris and Leo's Caseys



Tool advantages

- Value added information to customer
- Professional/third party recommendations on O&M activities and home management tips
- Ability to update the O&M manuals as the system or user changes
- Capability to create templates for commonly designed, installed or serviced systems

Acknowledgements

This project was supported by the National Integrated Water Quality Grant Program no. 2012-51130-20185 from the USDA National Institute of Food and Agriculture.

Example community

- 4 homes
- 1 business
- Average 20 people per day on the system
- 2,500 gallons per day System:
 - Septic tanks (2)
 - Pump tank
 - Single pass sand filter
 - Pressurized trenches

Organization Of The System

Wastewater Treatment System

Expenses

Interior Plumbing

Collection Of Wastewater

Tanks

Septic Tanks

Pump Tanks

Advanced Treatment

Single Pass Media Filter

Final Treatment And Dispersal

Low Pressure Pipe System

Maintenance

Problems And Troubleshooting

General Use And Operation

 Make PDF

Organization Of The System

Basic System Information

Number Of Properties *

reset item

Enter the current number of properties connected to the septic system.

Future Plans For Hook Ups *

reset item

Check yes if additional homes or businesses may connect in the future and enter the anticipated number of additional connections.

- Yes
- No

Daily Design Flow For The System *

reset item

Enter the design flow in gallons per day. Check the unknown box only if you don't know the design flow for the system. Contact the permitting authority to obtain this value if possible.

- Unknown
- Enter design flow in GPD

Population *

reset item

Enter the approximate number of people connected to system.

Organization Of The System

Wastewater Treatment System

Expenses

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Septic Tanks

Pump Tanks

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Low Pressure Pipe System

Maintenance

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Tanks

Holding Tanks

Grease Interceptors

Septic Tanks

Siphon Tanks

Pump Tanks

Trash Traps

Flow Equalization Tanks

Recirculation Tanks

Processing Tanks

Stilling Tanks

Replacing Stock Images

Tanks


▼ Septic Tanks

Septic Tank Image (#1) reset item

Upload an image of a septic tank, otherwise this generic holding tank image will be used. Enter text as further description or as a caption to an uploaded picture.

Septic tank

[Upload From Device](#) [Open Image Library](#)



Tanks


▼ Septic Tanks

Septic Tank Image (#1) reset item

Upload an image of a septic tank, otherwise this generic holding tank image will be used. Enter text as further description or as a caption to an uploaded picture.

Septic tank

[Upload From Device](#) [Open Image Library](#)



[Delete Image](#)






- Tanks
 - Septic Tanks
 - Pump Tanks
- Advanced Treatment
 - Single Pass Media Filter
- Final Treatment And Dispersal
 - Low Pressure Pipe System
- Maintenance
- Problems And Troubleshooting
- General Use And Operation
- [Make PDF](#)

uncheck →

Operations & Maintenance Table

Below you will find a table with a list of responsibilities for your system. Please deselect any that do not apply to your system. You are free to edit or add more to this table using the form below.

Hide deselected activities

Activity	Frequency	Responsibility	
<input checked="" type="checkbox"/> Tank structural condition. Check to make sure that the tank is watertight (no visual leaks), no rebar is exposed, no corrosion or spalling is present, no cracks are present, and no roots are present.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider	
<input checked="" type="checkbox"/> Tank operating conditions. Check to make sure that there is no evidence that the liquid level has been higher or lower than operating level. Check height at which alarm is activated as measured from top of maximum liquid level.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider	
<input checked="" type="checkbox"/> Pump. Check to make sure that a pull chain or rope is present.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider	
<input checked="" type="checkbox"/> Pump operation. Ensure that the pump is operating properly. This may include measuring the amps and volts and making sure the pump turns on and off. Check the pump operation independently from the controls.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider	
<input checked="" type="checkbox"/> Pump operation. The pump discharge rate should be checked by timing the period it takes the pump to empty the chamber. If the time has increased significantly, the pump should be removed and inspected for wear, clogging, or impeller damage.	At the time of pumping or annually – whichever is the shorter time period.	Service Provider	

← **Edit**

Organization Of The System

Wastewater Treatment System

Expenses

Interior Plumbing

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🔄 Make PDF

Advanced Treatment

▾ Single Pass Media Filter

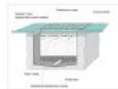
reset item

Single Pass Media Filter Image (#1)

You may upload an image of a single pass media filter, otherwise this generic image will be used. Enter text as added description and as a caption to this image or any image you upload.

📁 Upload From Device

🖼️ Open Image Library



reset item

Specific Technology Information (#1)

Provide the manufacturer for a packaged system or the type of system for a generic technology. Include any other information about the system you would like the homeowner to know aside from O&M activities in sentence form.



reset item

Location (#1)

Where is your single pass media filter located? You may upload an image of the location.

Location



Organization Of The System

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Single Pass Media Filter

Final Treatment And Dispersal

Low Pressure Pipe System

Maintenance

Problems And Troubleshooting

General Use And Operation

Final Treatment And Dispersal

▼ Low Pressure Pipe System

reset item

Low Pressure Pipe System (#1)

Low pressure pipe system

Low pressure pipe system image

 Upload From Device

 Open Image Library



+ Add More Low Pressure Pipe System

▶ Operations & Maintenance (Low Pressure Pipe System)

Making Edits – Effluent Screen

Operation & Maintenance Activities

Select the ownership and financial responsibility for operation and maintenance for Pump Tanks


- Service Provider
- Owner
- Both

Enter here detailing specific activities necessary for maintaining plumbing i.e. check for hard water deposits and descale; clean out grease interceptor.

Details

 Effluent screen. Check to make sure that effluent screen is accessible from the ground

Frequency

 At the time of pumping or annually – whichever is the shorter time period.

Save

General maintenance

Organization Of The System

Wastewater Treatment System

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Advanced Treatment

Single Pass Media Filter

Final Treatment And Dispersal

Low Pressure Pipe System

Maintenance

Problems And Troubleshooting

General Use And Operation

Maintenance

▼ Requirements And Recommendations

Contracts

reset item

Check this box if the system has a service contract. Enter text in a sentence form to describe.

Check here to add more information

✓ A maintenance contract exists with R&R Service

Seasonal

reset item

Check this box if the location has seasonal usage. Enter text in a sentence form to describe.

Check here to add more information

Special Use

reset item

Check this box if the system is used for purposes other than residential. Enter text in a sentence form to describe.

Check here to add more information

✓ A daycare is part of the system.

Organization Of The System

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General Use And Operation

🔄 Make PDF

Problems And Troubleshooting



▼ What To Do?

Optional based on system or location

If any of these issues impact the system check the box and information will be included in the guide.

Troubleshooting Guide

If there are any other local or site specific information regarding troubleshooting this system please provide them here.

Edit	Problem	Risk	Potential Causes	Potential Remedies	Delete
	Sewage surfacing in yard	show ...	show ...	show ...	
	Sewage odors — indoors	show ...	show ...	show ...	
	Sewage odors — outdoors	Major nuisance, but no serious health risk	show ...	show ...	
	Contaminated surface waters	show ...	show ...	show ...	
	System is covered with floodwater	show ...	show ...	show ...	
	System was burned by a forest fire	show ...	- The system is located in an area prone to forest fires	show ...	
	Distribution pipes and/or soil treatment system freezes in winter	The system may be inoperable	show ...	show ...	
	Pest or rodents are living or borrowing into system	show ...	- The system is located in an area prone to pest or rodents	show ...	

Organization Of The System

Wastewater Treatment System

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General Use And Operation

 Make PDF

General Use And Operation

Improving Septic System Performance

Does Your System Use Electricity?

reset item

Check this box if the system has electrical components.



Change Of Use

reset item

Check this box if a change in use such as an increase in the square footage of the home or adding a in-home business will require regulatory or design modifications. Use the text field to describe in paragraph form anything specific.

Check here to add more information

Permit Requiring Activities

reset item

Check this box if there are permitting conditions that trigger septic related requirements. Use the text field to describe in paragraph form.

Check here to add more information

Change Of Ownership

reset item

Check this box if there are local requirements at time of transfer. Use the text field to describe in paragraph form.

Check here to add more information

Next steps and timeline



- Tool available at H2OandM.com
- Training will be conducted in 2016 at conferences and via webcast
- March 1st and 31st
- To register: <http://bit.ly/1RqLYrx>
- **More information – Email** Sara Heger
sheger@umn.edu



Questions & more information

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Onsite Sewage Treatment Program

Home Workshops Research Publications Septic System Owners SSTS Professionals Real Estate Agents Small Community Septic

The Onsite Sewage Treatment Program protects public health and the environment by improving wastewater treatment through research-based workshops, as well as outreach to homeowners, small communities, professionals and policy-makers.

The OSTP team advises homeowners about septic system installation and has created the Septic System Owner's Guide with instructions for septic system use and maintenance.

Staff

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Soils Questions
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E-mail: wheeld27@umn.edu

Upcoming Workshops

[10.1 Introduction to Onsite Systems](#)
Feb 8 2016 to Feb 10 2016
Mankato

[112.1 Installing Onsite Systems](#)

H₂O&M Community Septic System Owner's Guide

Sign in Register

Home Register Sign In Help

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USDA United States Department of Agriculture National Institute of Food and Agriculture

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