EDUCATIONAL MATERIALS AND DEMONSTRATION SITE DESIGNED TO BETTER EDUCATE ON THE MANAGEMENT OF ON-SITE WASTEWATER

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Abstract. Wastewater is an issue that impacts everyone worldwide. As of 2015, UNICEF reported that in rural parts of the United States, roughly 70 percent of homes rely on septic tanks (UNICEF, 2017). Additionally, in 2013, Circle of Blue estimated that nearly 13-36 percent of all new homes being built will depend on septic systems (LaFond, 2015). Most of the time, once someone flushes a toilet or drains a sink, thoughts of how and where the water and waste go is a distant memory. Even though that is the case, wastewater and gray water management needs to be considered. Within the University of Georgia Crop and Soil Science Department in partnership with the Emory Rollins School of Public Health and the Georgia Department of Public Health, educational programs have begun to materialize. One specific continuing education program consists of a PowerPoint presentation for UGA County Extension Agents to utilize during educational modules. Course development consisted of basic information on the background of on-site wastewater treatment, management practices, and items that should or should not be flushed. In part with this program, site development has begun on UGA's Griffin Campus to house a training and demonstration facility. This site will be used to conduct field trainings for DPH personnel, UGA Extension Agents, and On-site septic industry members on various aspects of the wastewater process. These trainings for DPH personnel and on-site waste industry members will be used as a means to provide both certification trainings and renewals. The proposed presentation is to provide a short insight into what the educational module looks like as well as a preview to the design of the training facility in Griffin, GA.

HISTORY OR GEORGA SEPTIC SYSTEMS

There are approximately 1.5 million septic systems in Georgia, with more than 12,000 systems being added each year (Kumnick, 2018). Metropolitan North Georgia Water Planning District (MNGWPD) estimates roughly 90 percent of residential homes in Metro-Atlanta rely on septic systems. Records also indicate at least 15 percent of in-use septic systems in each county are more than 20 years old (MNGWPD, 2006). Homeowners are responsible for ensuring older gravity-fed systems stay in working condition. However, for advanced systems, including drip line and aerobic treatment units, maintenance and servicing must be completed by a septic service professional. The risk of absorption trench clogging increases when maintenance is neglected, which can reduce the soil-absorption rate. If loading rates are maintained, biological activity at the infiltrative surface prevents waste accumulation (EPA, 2000). Consequently, in addition to infrastructure-based inspections, it is recommended that the homeowner contact septic service professionals to pump waste out of systems every three to five years to prevent dangerous bacteria, microbes and pathogens from re-entering the groundwater supply as well as maintaining the system (Infiltrator, 2019).

Georgia regulations require septic industry members to hold active credentials. These credentials require renewal every two years, which is conditional on meeting continuing education requirements (Georgia Department of Public Health Environmental Health Section, 2016). Certification and renewal credits are administered through Georgia On-site Wastewater Association (GOWA), who is responsible for maintaining the database of active licensees, as well as collecting fees. Various Colleges and Departments at the University of Georgia (UGA) partner with Georgia's Department of Public Health (DPH) to facilitate accredited trainings for the septic system community, which includes Soil Classifiers, Septic Tank Contractors, On-Site Sewage Management System Inspectors, Maintenance Personnel, and Sewage Pumpers (Georgia Department of Public Health Environmental Health Section, 2016).

ONSITE WASTEWATER PROGRAM

The University of Georgia College of Agricultural and Environmental Sciences (UGA-CAES) is one of the Land Grant Universities in the U.S.A. established under the Morrill Acts of 1862, 1890, and 1994 (University of Georgia, 2019). The UGA Cooperative Extension Service was founded in 1914 to provide a connection between the university and citizens throughout the state of Georgia.

To better provide extension agents with information to assist Georgia citizens, a public health graduate student with advisement from UGA-CAES faculty developed a program where agents can be trained on different aspects of onsite wastewater management. During the training, the learning topics include basic septic system functions as well as maintenance and troubleshooting. To further enhance the training, a demonstration facility has been designed and is currently being built.

DEMONSTRATION FACILITY

The UGA-Griffin campus has been the host to the on-site waste treatment training and demonstration facility. The site was initially constructed around 2005, and was active until 2008, when the housing market crash decreased demand for training sessions. In 2017 Georgia Department of Public Health (DPH) voiced a desire to revitalize and update the Griffin site. This facility is used to educate a wide range of stakeholders about how to treat residential waste water as well as installation of different on-site waste water treatment systems commonly used in Georgia, ensuring DPH regulation approval.

Products selected for display were selected based on frequency of use as well as popularity for North and South Georgia, which differs regionally by soil type. Soil composition across the state has been categorized into six distinct types: 1) limestone valley, 2) blue ridge, 3) southern piedmont, 4) sand hills, 5) southern coastal plain, and 6) Atlantic coast flatwoods (GSWCC, 2018). For simplification, specific soil classification was denoted as the following:

- South Georgia: gravel, limestone, sand, and sandstone
- North Georgia: silt, shale, clay, and rock.

Installation site soil properties highly influence the type of septic systems built. Further product selection and recommendations were made after meeting with DPH personnel and product representatives. Specific display and hands-on product models were based on how training sessions are anticipated to be conducted

Renovation details include:

- The old serial trench displays have been removed and replaced with a single serial display that will be used to provide hands-on training on how to properly design serial trenches for transferring waste material down a slope along land contours.
- The tank and distribution system will be renovated to be used to demonstrate how water from a tank should be properly distributed to the leach field.
- A stone/gravel and pipe trench display area will also be renovated.

New additions to the facility consist of the following:

- Display boxes by manufactures of on-site waste treatment distribution systems to provide a view of what the product should look like when installed.
- A drip irrigation display area will provide a view on two different drip emitter systems.
- A cross-section display providing a profile view of each on-site treatment distribution system highlights how installed products should look in the ground.

CONCLUSION

The on-site waste training facility has been redesigned to facilitate educating on-site waste professionals and Extension Agents. Those taking the Onsite Wastewater Training will gain knowledge on how to effectively communicate septic system basics to community members, as well as help find solutions to various malfunctions. To make the demonstration and training facility more conducive to educational opportunities, the site design contains distinct static and working displays of typical septic systems. The site will be used to facilitate accredited training for the septic system community, as well as DPH and UGA Extension Agents. Training courses in development include a 1-week certification course and a one- or two-day course for Extension Agents. Future site growth will not only enhance Extension Agent Training, but allow opportunities for UGA Departments and UGA Extension to host events catered to Georgia on-site professionals and homeowners as well.

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