PART 3: Authorization to Operate (ATO)

Except for date received, the Section below is to be completed by the Owner.

LHD USE ONLY: Initial submittal of request for ATO received: _____ (*Date*) by _____ (*Initials*)

Date of Post-construction Conference: _____

The following items are included in this submittal for an Authorization to Operate under an LSS COVID-19 permit:

1. Signed and sealed copy of the LSS's report that includes the information in G.S. 130A-336.2(k) ☑ Yes ☐ No
2. Operation and management program ☑ Yes ☐ No
3. Fee (as applicable) ☑ Yes ☐ No
4. Notarized letter documenting Owner's acceptance of the system from the LSS ☑ Yes ☐ No
5. On-site Wastewater Contractor name: A&M Contracting - Jason Mabe License number: #2737

   Mailing address: PO Box 1020 City: Ellerbe State: NC Zip: 28338

   Telephone number: 910-652-6230 E-mail Address: amc1@rsnet.org
6. Proof of Errors and Omissions or other appropriate liability insurance for the On-site Wastewater Contractor is attached and includes the name of the insurer, name of the insured, and the effective dates of coverage. ☑ Yes ☐ No

Attestation by the Owner for Authorization to Operate

I, Pioneer Companies, LLC (*Print name of Owner*) hereby attest that all items indicated above have been provided to the Harnett County LHD and the system shall meet applicable federal, State, and local laws, regulations, rules, and ordinances.

_____ (*Signature of Owner*) 10/13/22 (*Date*)

This section for LHD Use Only.

LHD Review of required information for the ATO

☐ INCOMPLETE

Based upon review of information submitted in the Section above, the following items are missing from the information required for an Authorization to Operate for an LSS COVID-19 permit: _____.

Copies of this signed form were sent to the LSS and the Owner on _____ (*Date*) via _____ (*Email, FAX, USPS, Hand-delivered*).

_____ (*Print name of authorized Agent of the LHD*) _____ (*Signature of authorized Agent of the LHD*) _____ (*Date*)

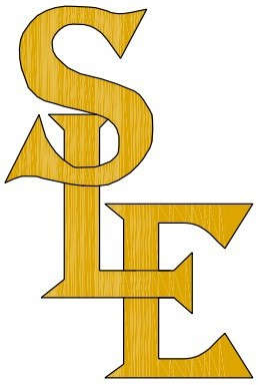
☐ COMPLETE

Based upon review of information submitted in the Section above, this Authorization to Operate is hereby issued in accordance with G.S. 130A-336.2(m).

A copy of this complete NOI/ATO with tracking information was sent to the State on _____ (*Date*) via _____ (*Email, FAX, USPS, Hand-delivered*).

_____ (*Print name of authorized Agent of the LHD*) _____ (*Signature of authorized Agent of the LHD*) _____ (*Date*)

ISSUANCE OF CERTIFICATE OF OCCUPANCY: Once the LHD determines completeness based upon the ATO submission, the owner may apply to the local permitting agency for permanent electrical service to a residence, place of business or place of public assembly pursuant to G.S. 130A-339.



Septic System Maintenance Program

Septic Systems and Their Maintenance

Soil Facts

NC STATE UNIVERSITY

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The septic system is an effective, long-standing method for collecting, treating, and disposing of sewage from rural and suburban homes and businesses. Septic systems are used in every county in North Carolina. Nearly 50 percent of the state's homes have them. This fact sheet will answer some typical questions about septic systems and their maintenance.

Why Use a Septic System?

Septic systems are used when centralized sewage treatment plants are not accessible in a community. They safely treat and dispose of wastewaters produced in the bathroom, kitchen, and laundry. These wastewaters may contain disease-causing germs and pollutants that must be treated to protect human health and the environment. Septic systems are usually a permanent solution to wastewater treatment and disposal. Therefore, they must be properly used, operated, and maintained by the homeowner to assure the long-term performance of these systems. Even when used as a temporary wastewater treatment solution until sewer lines are extended to a community, special care and maintenance are needed for septic systems so that they don't pose a risk to public health or the environment.

What is a Septic System?

Several different types of septic systems are available, each with its own design. The traditional, conventional system is the one that has been most commonly used in North Carolina up until the past decade (Figure 1). *It consists of three main parts: the septic tank, the drainfield, and the soil beneath the drainfield.*

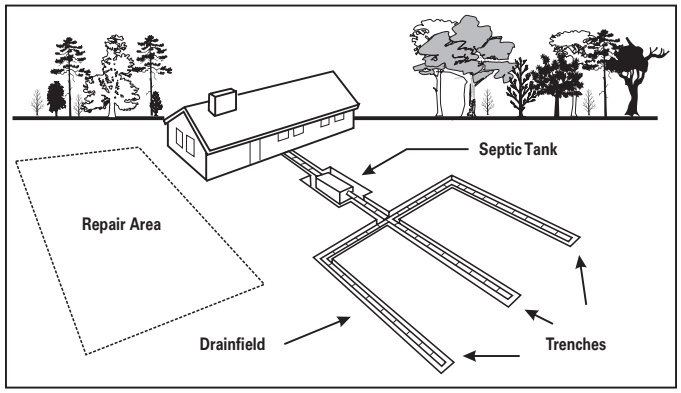

Figure 1. A conventional septic system.

The septic tank is a watertight container about 9 feet long and 5 feet tall. It is buried in the ground just outside the home. The tank is usually precast from reinforced concrete, although tanks made from plastic or fiberglass may be seen on occasion. While a tank is typically designed with a 1,000-gallon liquid capacity, its size is legally determined by the number of bedrooms in the home. The tank temporarily holds household wastes and allows a small amount of pretreatment to take place (Figure 2).

What Takes Place in the Septic Tank?

All of the wastewaters from the home should flow into the septic tank. Even waters from the shower, bathtub, and washing machine can contain disease-causing germs or environmental pollutants. As wastewater flows into the tank, the heavier solid materials settle to the bottom (forming a sludge layer), and the lighter greases and fats float to the top (forming a scum layer). The tank's primary purpose is to retain the solids. After a retention time of about two days, the liquid portion (the sewage effluent) flows out of the tank through the outlet pipe. The retention time is necessary for separation of the solids from the liquid and for anaerobic digestion of the solids to begin in the septic tank.

An outlet baffle (or a sanitary tee at the outlet end) prevents solids from flowing out with the liquids. Newer septic systems installed since 1999, however, include an effluent filter in the septic tank. These are installed in place of the sanitary tee at the outlet end of the septic tank (in the second compartment shown in Figure 2).

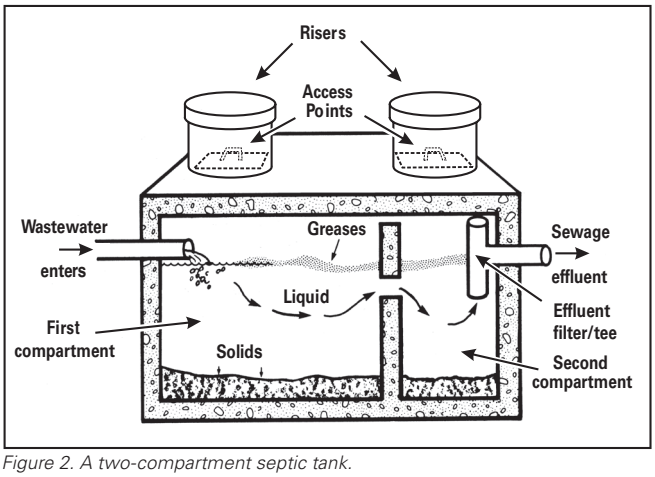

Figure 2. A two-compartment septic tank.

What Happens in the Drainfield and the Soil?

The purpose of the drainfield is to deliver the liquid sewage effluent to the soil. The real treatment of the wastewater occurs in the soil beneath the drainfield. Sewage effluent flows out of the tank as a cloudy liquid that still contains many disease-causing germs and environmental pollutants. Effluent flows into the perforated pipe in the trenches, passes through the holes in the pipe, and then trickles down through the gravel to the soil (Figure 3). There are also "gravel-less" trenches used where plastic louvered chambers, polystyrene aggregate, tire chip aggregate, or large diameter pipes are used in place of the gravel aggregate. These materials provide a void space in the trench to allow distribution of the effluent to the trench bottom. As sewage effluent enters and flows through the ground, soil particles filter out many of the bacteria that can cause diseases. The soil adsorbs some of the smaller germs, such as viruses, until they are destroyed. The soil can also retain certain chemicals, including phosphorus and some forms of nitrogen.

A special zone, called a biomat, forms in the upper 1 to 6 inches of the soil at the soil/trench interface just below the trench bottom. This biomat zone is useful. It helps remove many of the germs and chemical pollutants. If the solids accumulating in the septic tank are never pumped out, however, they can flow into the trenches and accumulate into an intensive biomat that becomes too thick. When that happens, the biomat completely clogs the soil and does not allow the sewage effluent to flow out of the trench. An improperly maintained system will fail and cause untreated sewage to completely fill the trenches and come out on top of the ground or back up into the home in its plumbing system.

Where Can a Septic System Be Used?

A centralized sewer system with a large sewage treatment plant usually discharges treated wastewater into a body of water. On the other hand, a septic system depends on the soil around the home to treat and dispose of sewage effluent (Figure 3). For this reason, a septic system can be used only on soils that will adequately absorb and purify the effluent. If a septic system is installed in soil that cannot do so, the effluent will seep out onto the soil surface overlying the drainfield or back up into the home. In addition to causing an unpleasant smell, this untreated sewage can pose health problems.

In some cases where the soils do not adequately absorb the wastewater, the toilets and sinks might not drain freely. If the soil can absorb the effluent, but not treat it, or if the trenches are installed directly into groundwater or bedrock, the sewage may contaminate the groundwater. Because the underlying groundwater serves as the source of drinking water for your well or possibly your neighbors' wells (Figure 3), it is very important that the system be installed in the proper soil conditions and that the septic system is correctly used, operated, and maintained.

What Kinds of Soil Conditions Are Best Suited To a Conventional Septic System?

Gently sloping, thick, permeable soils with deep water tables make the best sites for the traditional, conventional septic system and simple modifications of it. The soil should be a uniform brown, yellow, or bright red color. It should not have spots of gray colors that often indicate the soil becomes excessively wet or that groundwater comes up close to the ground surface during the wet times of the year. The soil texture should be neither too sandy nor too clayey, and it should have good aggregation, or structure (that is, a handful of the soil should easily break apart into small aggregates).

Areas that are unsuitable for conventional septic systems have rock close to the surface, very sticky clays, soil layers that restrict the downward flow of water, or areas with shallow groundwater. These factors would prevent a conventional septic system from working properly.

What About Other Types of On-Site Systems That Are Alternatives to the Conventional System?

Other types of on-site systems are sometimes used on sites where the soil is not suited to a conventional system. Where soils are too wet or too shallow for the

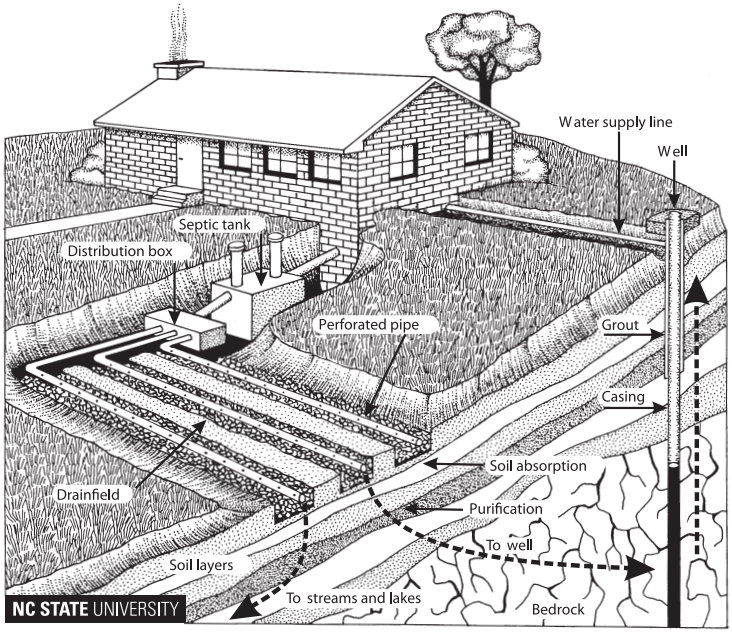

Figure 3. Wastewater treatment and disposal in the soil.

conventional system, the drainfield might be placed very close to the ground surface in the upper layers of the soil. In some wet soils, artificial drainage around the septic system lowers the level of the shallow water table. On some clayey soils that have a thick sandy surface, the low-pressure pipe (LPP) system provides an alternative.

On some soils that are not deep enough to provide adequate treatment of the sewage effluent, it may be possible to use an advanced pretreatment unit to supplement the soil's treatment capacity. Examples are fixed media biofilters such as a sand filter, peat filter, textile filter, or porous foam biofilter or mechanical aerobic treatment units that bubble air into the sewage itself. Most of these pretreatment units are installed between the septic tank and drainfield. They provide better purification of the wastewater than is provided by the traditional septic tank alone. Some sites may need more sophisticated methods of distributing the sewage effluent within the drainfield itself using a pressure manifold, LPP, or drip irrigation system. These systems use pumps, special controls, and specially designed pipe networks that can improve the wastewater treatment in the soil. In other situations, it may be cost effective to collect the wastewater from several homes in an area or subdivision by using a cluster system. This type of system has a drainfield located in a common area within the best-suited soils in the tract of land. These newer and more sophisticated types of on-site system options can often provide a better wastewater treatment solution for a particular building lot, or a tract of land, than either the traditional, conventional septic tank system or large-scale, centralized public sewers.

How Do I Know if My Site is Suitable for a Septic System?

North Carolina has more than 400 different kinds of soil, and a 1-acre lot can contain several different soil types. Because many of these soils are unsuitable for conventional septic systems and even unsuitable for more advanced or alternative on-site systems, you should always obtain an improvement permit (I.P.) before purchasing a lot that you intend to build on. You will submit an application and a site plan to the county health department. The environmental health specialist (sanitarian) will conduct a comprehensive soil and site evaluation and either issue or deny the permit. If an I.P. can be issued, you will also need to obtain a construction authorization (C.A.) before a building permit can be issued.

If you are interested in developing a tract of land to subdivide, you should hire a licensed soil scientist to conduct preliminary evaluations and advise you on the location of suitable soils and lot configuration. You can obtain additional information from the Cooperative Extension publication (AG-439-12), *Investigate Before You Invest*, available online at www.soil.ncsu.edu/publications/Soilfacts/AG-439-12/.

How Large is a Typical Drainfield?

Usually, the drainfield for a home can fit within the front yard or the backyard of a typical 1-acre home site. Sometimes smaller lots can be used. The precise area requirements will depend upon the kinds of soils at the home site, the size of the house (the number of bedrooms), the topography of the lot, and the type of on-site system used there. A site with clayey, slowly permeable soils needs a larger drainfield to absorb the sewage effluent than does a site with sandy, permeable soils. A home with five bedrooms will need a larger tank and drainfield area than a home with three bedrooms. A rental property at the beach may require a larger drainfield than a similar-sized permanent residence with the same number of bedrooms. A home using one of the newer, more advanced types of on-site technologies may be able to use a smaller area for the drainfield than if a conventional septic system is installed. Adequate land area must be available to achieve adequate setback distances from any nearby wells, springs, streams, lakes, or other bodies of water located either on the lot or off-site.

There also must be enough area to install a second system, called a replacement system, in case it is ever needed. This replacement area (sometimes called a repair area) also must have acceptable soil and site conditions and must be left undisturbed and available for system replacement. Be aware that the type of on-site system required for use in the repair area could be a completely different, more sophisticated type of on-site system. Hence, if that repair area is ever needed, you might have to install a more expensive system than the original system installed when the lot was first developed.

What Legal Requirements Regulate Septic Systems?

State law requires that soils be evaluated by the local health department and that an I.P. and a C.A. be issued before house construction begins or the septic system is installed. The I.P. allows the site to be used, while the C.A. determines what type of system must be installed. Sometimes these are issued at the same time by the health department. An I.P. is good only for five years unless it is renewed, or unless it is issued under special conditions for a lot that has been professionally surveyed. If a permanent I.P. is issued, then you have some limited guarantee that the lot can be used (even if the state rules change), assuming that the conditions on the lot or the intended use don't

change. Nevertheless, the type of system that will be required as well as home size and location are not assured until the C.A. is issued. Contact your local health department to be sure that you follow the correct procedures and that you are fully aware of the limitations that will protect your investment. Also, the installation must be approved by the health department and an operation permit (O.P.) must be issued by the health department before electrical service can be permanently connected to the home and the septic system put into use.

Once the home has been occupied and the system put into use, you will need to contact the county health department if you plan to add on to the home, install a pool, build an outbuilding, or engage in activity that requires a building permit. First, obtain an authorization from the county health department to make sure that the septic system and repair area remain intact and are properly sized for the proposal.

What Maintenance Is Needed?

Both the septic tank and the drainfield must be properly maintained for the standard conventional septic system. With conscientious maintenance, the system should work correctly for many years. Such maintenance begins with water use and waste disposal habits. Your family will determine which materials enter the system, so you should establish family rules for proper use and maintenance. The suggestions outlined in the box will save you anguish and money when applied to most conventional systems.

If your system has an effluent filter, it will need checking and servicing approximately every 2 to 3 years. While this could be done by a homeowner, it is a messy, unpleasant task and there are potential safety issues because of the germs in the sewage and toxic gases. For most people, it would be appropriate to hire a company that specializes in septic system maintenance and service to inspect and clean the effluent filter.

Special types of pretreatment units and drainfield distribution technologies also must be carefully maintained for the more advanced, newer technologies described earlier. These newer technologies will be more expensive to operate and maintain than the traditional, conventional septic system. Most advanced on-site and cluster wastewater treatment systems require regular inspections and professional maintenance. Research conducted in North Carolina has shown that about 40 to 50 percent of the advanced systems will fail within 6 years if this maintenance is not provided. Therefore, in North Carolina, a professionally trained, state-certified "subsurface system operator" hired by the homeowner is required by the O.P. to provide the needed inspections and maintenance for advanced technologies. For more information about these requirements, contact your local health department or the state Water Pollution Control Systems Operator Certification Commission.

Note, however, that individual homeowners are allowed to take the same training programs and state licensing exam as the professional operators. If they pass the exam, they can operate their own system by themselves. Because this generally is not done, most homeowners will have to pay for this service if they have one of these more advanced technologies.

Regardless of whether a professional operator is hired, it is the home-owner's responsibility to assure proper use, inspection, operation, and maintenance of any type of on-site wastewater system.

Will I Need to Pump the Tank?

Yes. After a few years, the solids that accumulate in the septic tank should be pumped out and disposed of at an approved location. If not removed, these solids will eventually overflow, accumulate in the drainfield, and clog the pores (openings) in the soil.

This blockage severely damages the drainfield. Although some clogging of soil pores slowly occurs even in a properly functioning system (the biomat described earlier), excess solids from a poorly maintained tank can completely close all soil pores so that no wastewater can flow into the soil. The sewage effluent will then either back up into the house or flow

Tips for Maintaining Your Septic System

- Do not put too much water into the septic system; typical water use is about 50 gallons per day for each person in the family.
- Do not add materials (chemicals, sanitary napkins, applicators, and so on) other than domestic wastewater.
- Restrict the use of your garbage disposal.
- Do not pour grease or cooking oils down the sink drain.
- Make a diagram showing the location of your tank, drainfield, and repair area.
- Install a watertight riser over the septic tank to simplify access.
- Have the effluent filter in the septic tank cleaned periodically by a professional.
- Have the solids pumped out of the septic tank periodically.
- Maintain adequate vegetative cover over the drainfield.
- Keep surface waters away from the tank and drainfield.
- Keep automobiles and heavy equipment off the system.
- Do not plan any building additions, pools, driveways, or other construction work near the septic system or the repair area.

across the ground surface over the drainfield. If this happens, you may need to construct a new drainfield on a different part of your lot. Pumping the septic tank after the soil drainfield has become completely clogged will not rejuvenate the system. It will provide only a few days of reprieve until the tank fills up again. Once the soil has become completely clogged, it is usually necessary to install a new drainfield or an advanced pretreatment unit, or both. This can have a significant negative effect on your landscaping and yard, as well as being expensive. An ounce of prevention is worth a pound of cure with septic systems.

How Will I Know When to Pump the Tank?

The frequency with which you will need to pump depends on three variables: the tank size, the amount of water used by your family, and the solids content of your wastewater. If you are unsure about when to have the tank pumped, have a professional operator observe the rate of solids accumulation in the tank each year. He or she can clean and replace the effluent filter cartridge in the tank at the same time. The tank should be pumped if the sludge layer at the bottom of the septic tank has built up to within 25 to 33 percent of the tank's liquid capacity or if the scum layer in the tank is more than 4 to 6 inches thick. Therefore, a typical 1,000-gallon tank with a 4-foot liquid capacity should be pumped when the solids reach 1-foot thick in the tank bottom. If the tank is not easily accessible and the rate of solids accumulation cannot be checked yearly, then you may wish to inspect and pump it according to the frequency guidelines in Table 1. Your local health department should be able to tell you the size of your tank. When inspecting the tank, check the effluent filter (or for older systems check the sanitary tee or the outlet baffle to be sure that it has not broken off and dropped into the tank). Also, be sure to have both compartments of the tank pumped (note the two compartments shown earlier in Figure 2).

If the septic system is not used very often (as in an infrequently used vacation home with a correctly sized tank), it will probably not need to be pumped as frequently as indicated in Table 1. If you use a garbage disposal, the tank may need to be pumped more frequently. After a few inspections, you should be able to adjust the schedule according to the rate at which solids accumulate.

What Should Not Be Put into the Septic System?

Make sure you are aware of the types and amounts of extra waste materials that are poured down the drain. Limiting the use of your garbage disposal will minimize the flow of excess solids to your tank. Garbage disposals usually double the amount of solids added to the tank.

Do not pour cooking greases, oils, and fats down the drain. Grease hardens in the septic tank and accumulates until it clogs the inlet or outlet. Grease poured down the drain with hot water may flow through the septic tank, but then it can clog soil pores completely and ruin the drainfield.

Pesticides, paints, paint thinners, solvents, disinfectants, poisons, and other household chemicals should not be dumped down the drain into a septic system because they may kill beneficial bacteria in the septic tank and soil microorganisms that help purify the sewage. Also, some organic chemicals will flow untreated through the septic tank and the soil, thus contaminating the underlying groundwater.

If your home has a water treatment system, such as a water softener, the discharge pipe from the backwash should not be connected to the waste plumbing system or septic tank.

Are Septic-Tank Additives Necessary?

No. These products include biologically based materials (bacteria, enzymes, and yeast), inorganic chemicals (acids and bases), or organic chemicals (including solvents). Research conducted to date on three of these types of bacterial additives has not shown any reduction in the rate of solids buildup nor increases in bacterial activity in the septic tank. Therefore, they do not seem to reduce the need for regular pumping of the septic tank. Some additive products contain organic chemicals and may even damage the drainfield or contaminate the groundwater and nearby wells.

Is Special Care Needed for the Drainfield?

Yes. The drainfield does not have an unlimited capacity. The more water your family uses, the greater the likelihood of problems with the septic system.

Table 1. Estimated Septic Tank Inspection and Pumping Frequency (in Years)

Tank Size (gallons)	Number of People Using the System				
	1	2	4	6	8
900	11	5	2	1	<1
1,000	12	6	3	2	1
1,250	16	8	3	2	1
1,500	19	9	4	3	2

Source: Adapted from "Estimated Septic Tank Pumping Frequency," by Karen Mancl, 1984, *Journal of Environmental Engineering*. Vol. 110(1):283-285.

Water conservation practices can help reduce the amount of wastewater generated in the home. Periodically check your plumbing for leaky faucets and toilets. Uncorrected leaks can more than double the amount of water you use. Many soils can absorb the 200 to 250 gallons of sewage usually produced each day by a family of four, but these soils would become waterlogged if an extra 250 gallons were added. For more information on this subject, see North Carolina Cooperative Extension Service publication WQWM-75/HE-250, *Focus on Residential Water Conservation*. These publications can be viewed and printed online at www.bae.ncsu.edu/programs/extension/.

Be sure that foundation drains, roof waters, gutter waters, and surface waters from driveways and other paved areas do not flow over the septic tank or the drainfield. Careful landscaping can help direct excess surface waters away from the system.

Summary

The septic system is an efficient, inexpensive, and convenient method for treating and disposing of household wastewater. Because not all soils are suited for conventional systems, comprehensive soil and site investigations must be performed before you purchase any land.

Septic systems will adequately absorb and purify wastewater if they are properly maintained.

Contrary to popular belief, septic systems are not maintenance free. Money that is saved by not paying a monthly sewer bill should be set aside for regular inspections and maintenance. A few precautions can save you anguish and money. Reducing water use, avoiding grease, cleaning the effluent filter, pumping the tank periodically, and properly landscaping the yard to keep surface water away from the tank and drainfield are inexpensive precautions that can help assure your system a long life. The North Carolina Cooperative Extension publication AG-439-22, *Septic System Owner's Guide,* summarizes some important day-to-day management and periodic maintenance activities to improve your system's longevity. When properly located and maintained, your system should provide years of trouble-free, low-cost service.

Reference

Mancl, K.M. 1984. *Journal of Environmental Engineering*, Vol. 110(1):283–285.

Acknowledgements

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content.ces.ncsu.edu/septic-systems-and-their-maintenance

Home*A*Syst
NORTH CAROLINA

Environmental Stewardship for Homeowners — #4

Improving Septic Systems

Is your well protected from your septic system?

One of the easiest ways to protect well water from pollution is to check your septic system. Septic systems can pollute wells when they are placed too close to the well, are not properly maintained, or have not been properly installed. The major contaminants from septic systems that enter wells are disease-causing germs. These invisible germs such as bacteria and viruses can cause many human diseases. Another potential contaminant that can come from septic systems is nitrogen in the form of nitrate-nitrogen. If the nitrate level of your well water is too high, the water can be hazardous to infants in their first six months of life, and other human health problems can arise.

How can we help?

We have prepared this publication to help you focus on potential problems with your drinking water that may be caused by an improperly placed, constructed, or maintained septic system. Read the publication before you begin answering the questions in this publication. Gather any records you have about your septic system: the type of system you have, the location of the septic tank and the drainfield, and the location and type of well on your property. If you do not have records, contact your local health department for a copy of your septic system permit and soil evaluation sheet. Walk around the area near your septic system and look at it closely. Also look at the area around your well for depressions, odors, and greener vegetation.

Each of the following sections deals with different topics. Next to each topic is a question for you to answer. Your answers will help you to see where you have potential problems.

- If you answer a question either a or b, you have few problems with your septic system.
- If you answer a question either c or d, there may be potential problems with the condition of your septic system.
- If you answer a question either c or d, you will want to consider making changes to your septic system in order to protect your drinking water.

If you would like further help in assessing the condition of your septic system, please visit your nearest Cooperative Extension Service Center and talk with your Extension agent and/or your local county health department.

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Helping People Put Knowledge to Work

College of Agriculture and Life Sciences, NC State University
School of Agriculture and Environmental Sciences,
NC A&T State University

What is the North Carolina Home*A*Syst Program?

The North Carolina Home*A*Syst program has a series of publications that can help you to be a good environmental steward and also protect the health and well-being of your family. This publication leads you through an evaluation of your home and property to determine the pollution and health risks of your water supply protection practices. If there is a problem or a potential problem, the Home*A*Syst publications have information about how to solve the problems. The publications also list the North Carolina state and county agencies responsible for helping you solve your particular problem.

The goal of the North Carolina Home*A*Syst program is to help protect your families' and your health and the environment of North Carolina.

How safe is your drinking water?

If you drink water, it comes from a well or spring (groundwater sources) or a river or lake (surface water sources). Drinking water in North Carolina is generally safe, but it can become polluted if we are not careful. Many of the things we do at home can pollute our water and the environment. Poorly maintained or designed septic and animal waste systems can pollute surface and groundwater. Pesticides, fertilizers, fuels, and cleaning products can contaminate our water when they are not stored and handled properly.

It is nearly impossible to get pollutants out of water once they get there. Expensive treatments or new wells would be required to get safe drinking water again. Clearly, it is much more effective to keep pollutants out of water than to try to clean it up afterward.

People who have their own wells or springs for drinking water need to be especially aware of pollution sources because their water is not tested for contaminants as is city water. This is called wellhead protection and involves careful attention to the activities near your well to be sure the water remains safe. However, everyone is responsible for protecting drinking water supplies, whether it is their own or their neighbors'.

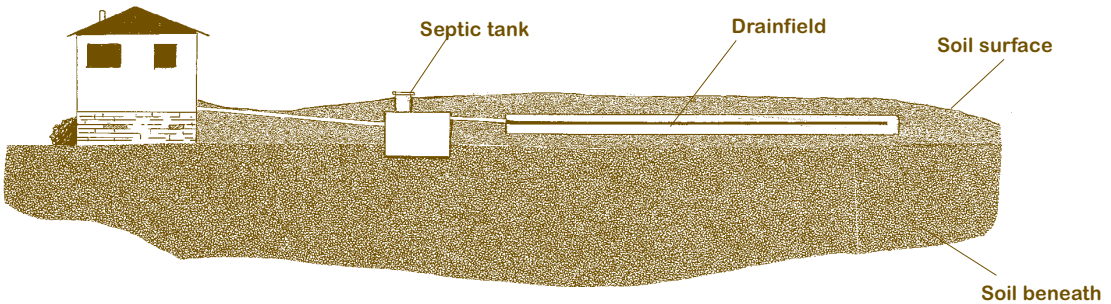
What is a septic system?

A septic system is an efficient, inexpensive, convenient, and safe method for treating and disposing of household wastewater if the system is properly installed and maintained. A septic system consists of three main parts:

1. The **septic tank** collects, stores, and treats the liquid solid that comes from the house.
2. The **drainfield** is made from pipe and gravel that are installed as trenches in the soil. The drainfield delivers wastewater to the soil.
3. The **soil beneath the drainfield** purifies the wastewater before it flows to the underlying groundwater.

North Carolina Home*A*Syst Publications

- *Protecting Water Supply,* #1
- *Improving Fuel Storage,* #2
- *Improving Storage and Handling of Hazardous Waste,* #3
- *Improving Septic Systems,* #4
- *Improving Lawn Care and Gardening,* #5
- *Stormwater Management for Homeowners,* #6
- *Indoor Air Quality: Reducing Health Risks and Improving the Air You Breathe,* #7
- *Lead In and Around the Home: Identifying and Managing Its Sources,* #8



Septic system

Wastewater flows from the house into the septic tank. The solids sink to the bottom of the tank, the grease floats to the top, and the liquid portion of the wastewater flows out into the drainfield. The drainfield distributes the wastewater and allows it to slowly move into the soil. As it moves through the soil, the wastewater is purified by organisms that live in the soil.

State law requires that soils be evaluated by the local health department and that an improvement permit and an authorization to construct an on-site wastewater system (construction authorization) be issued before house construction begins or the septic system is installed. The purpose of this evaluation is to ensure that the soil can both absorb and treat the wastewater from your home. Septic system installation must be approved by the local health department before electrical service can be permanently connected to the home, the home occupied, and the septic system put into use.

General Condition Of Your Septic System

1. How old is your septic system?

North Carolina rules regarding the placement and design of septic systems are being improved over time. Major changes to the state rules occurred in 1977, 1982, and 1992. Current rules require a comprehensive evaluation of the soil before a septic system can be approved for that location. State rules also require home-owners to employ a trained and certified subsurface system operator for certain types of septic systems installed or repaired after 1992. These operators ensure that the system is operating well. The changes in the rules have improved the chances that your septic system will work better.

If you do not know the age and type of your septic system, this information may be available from your local health department.

1. Circle the answer that best describes the age of your septic system.

a. Your septic system was installed after 1992.

b. Your septic system was installed between 1982 and 1992.

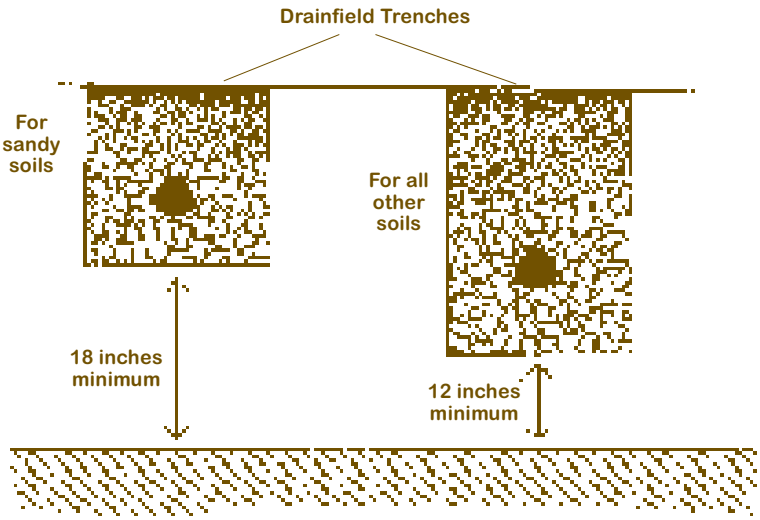
c. Your septic system was installed between 1977 and 1982.

d. Your septic system was installed before 1977; OR do not know.

2. What is the depth between your drainfield and the groundwater table?

Wastewater moves from the septic tank into the drainfield and then slowly into the soil. The drainfield trenches are normally installed 2-3 feet deep. The wastewater is purified as it moves down through the soil and into the groundwater.

North Carolina septic rules require that the groundwater table or soil wetness conditions be at least 12 to 18 inches deeper than the drainfield trenches. Soil above the groundwater table is considered to be "aerobic." "Aerobic" means that the soil has some air in it and is not totally saturated (or filled with water). This aerobic soil is where most of the germs from the sewage are removed.



Required distance between bottom of drainfield and groundwater table

2. Circle the answer that best describes the relationship between the location of your septic system and the groundwater.

a. The groundwater always remains at least 4 feet below the surface.

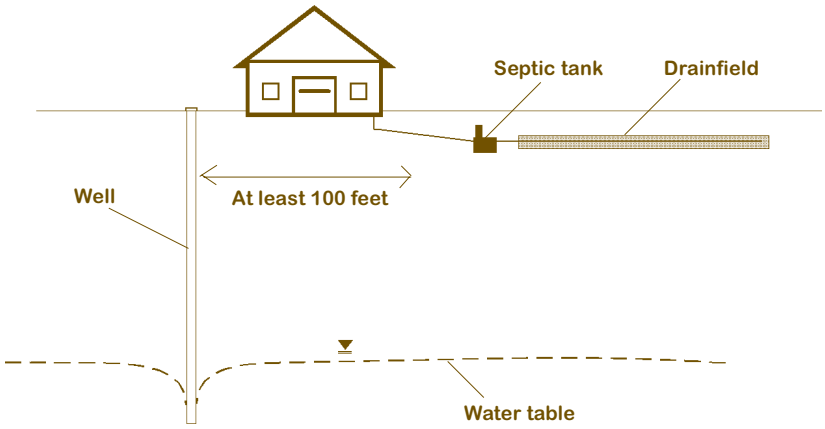
b. The groundwater normally remains more than 4 feet below the surface except for very short periods of time (less than a week) during wet times of the year.

c. The groundwater normally remains more than 2 feet below the surface except for very short periods of time (less than a week) during wet times of the year.

d. The groundwater periodically rises to within 2 feet of the surface; OR do not know.

3. Where are your septic system and well located?

Once the purified wastewater drains through the soil, it becomes part of the groundwater. The best way to protect your drinking water from your septic system is to separate the two. North Carolina law requires that septic systems be placed at least 100 feet away from a well or other water source.



Safe separation distance between septic system and well

3. Circle the answer that best describes the relationship between the location of your well and your septic system.

a. Your septic system is downhill from your well or other water source and is more than 100 feet away from it.

b. Your septic system is uphill from your well or other water source and is more than 100 feet away from it.

c. Your septic system is 50 to 100 feet away from your well or other water source.

d. Your septic system is less than 50 feet away from the well or other water source; OR do not know.

4. What type of soil is your septic system installed in?

The type of soil in which your septic system is located is important for protecting the groundwater from pollution. Gently sloping, deep soils that aren't too clayey or too sandy with a deep groundwater table make the best sites. If the soil is too sandy, wastewater flows through the soil into the groundwater too fast and is not purified. On the other hand, if the soil is too clayey, wastewater flows too slowly, causing untreated sewage to collect on top of the ground. Avoid areas that have rock close to the surface, very sticky clays, or soil layers that restrict the downward flow. Any of these conditions can keep water from flowing through the soil and cause untreated sewage to collect on the ground surface, where it can flow over to your water source.

The soil should be uniform, yellow, yellowish-red, or bright red in color, and it should not have spots of gray. Gray spots indicate that the soil may be too wet to contain enough air (anaerobic conditions) during the winter and spring.

5. Are trees and shrubs planted near your septic system?

Trees or shrubs located closer than 100 feet to septic systems may cause problems. Roots from plants sometimes enter the septic tank drainfield, the tank, or the pipes, preventing the proper working of the septic system. Failing septic systems increase the likelihood of groundwater or surface water pollution.

Trees should not be located too close to septic system

6. Does runoff drain away from your septic system?

To reduce water that flows through the soil where the drainfield is buried, keep the water that runs off your foundation drains, gutters, driveway, and other paved areas away from the drainfield of your septic system. Careful landscaping can help direct excess surface water away from your septic system.

4. Circle the answer that best describes the type of soil and conditions in which your septic system drainfield is buried.

a. Your septic system is installed in deep, well-drained soil (not to clayey, not too sandy) to allow full absorption and treatment of wastewater or you have a low-pressure pipe system installed in sandy soil or a pretreatment system installed in any soil.

b. Your septic system drainfield is installed in deep red, clayey soil that drains reasonably well. If your soil is clayey, a handful of it easily breaks into small pieces when moist.

c. Your septic system drainfield is installed in sandy soil with a shallow groundwater and does not have a low pressure or pretreatment system.

d. Your septic system drainfield is installed in thin soil with hard rock, very sticky clay soils, or soil layers that restrict downward flow of water; and the system does not include a pretreatment system, such as a sand filter; OR do not know.

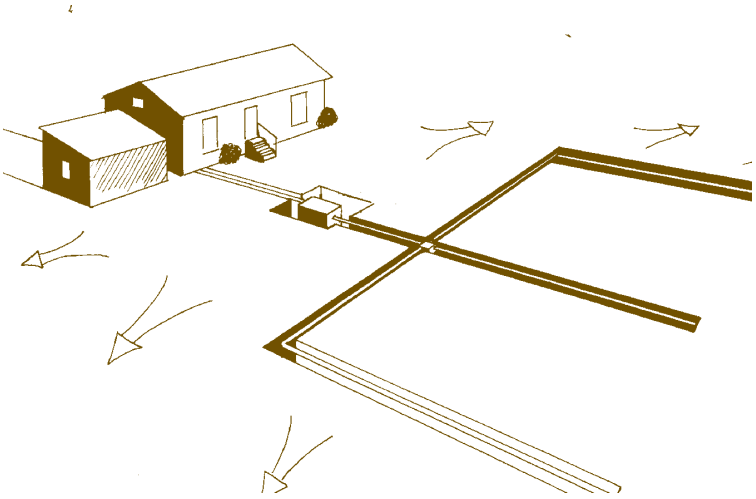
5. Circle the answer that best describes the location between your trees and your septic system.

a. No trees are within 100 feet of your septic drainfield. You've never had a problem with roots in the drainfield, pipes, or tank.

b. No trees are within 50 feet of your drainfield.

c. The only trees within 50 feet of your septic drainfield are trees that grow poorly under wet conditions (most oaks, dogwoods).

d. Trees or shrubs within 50 feet of your drainfield that grow well under wet conditions (willows, willow oaks, some maples) or you've removed roots from drainfield lines at least once and make no effort to prevent root regrowth; OR do not know.



Runoff draining away from the septic system

6. Circle the answer that best describes how surface water flows in your yard.

a. You have landscaped the yard to divert rain water and water from your roof, gutters, and foundation drains away from the septic system.

b. You have landscaped the yard to divert rain water away from your septic system. You're not sure where the roof, gutters, and foundation waters drain.

c. You have landscaped the yard to divert rain water away from your septic system. Your roof, gutters, and foundation drain across your septic system.

d. Water from the roof, gutters, foundation, driveway, and yard drains over your septic system; OR do not know.

Maintenance of Your Septic System

7. How much water do you use?

As with city sewers, there are limits to the amount of water septic systems can treat. However, if you have a city sewer and use too much water, a problem occurs far away at the city sewage treatment plant. If you have a septic system and use too much water, your wastewater may back up into your yard or house, since your septic system serves as your sewage treatment plant.

The soil drainfield was designed for no more than 120 gallons per bedroom per day. Most people use about 50 gallons per day of water. When the amount of water entering the septic system nears design capacity, your septic system may fail.

Problems caused by using too much water can occur throughout the year, seasonally, or from time to time. For example, the soil beneath your drainfield cannot absorb as much water in the spring, when the soil is naturally more moist, as it can absorb in the summer when the soil is drier. If you wash all your laundry in one day, you may have a temporary problem caused by overloading the soil.

Reduce your water use by doing the following:

- Use 1.6 gallon (or less) per flush toilets.
- Periodically check the toilets and faucets to make sure that they are not leaking; fix immediately if they are leaking.
- Use faucet aerators at sinks and flow reducer nozzles at showers.
- Limit the length of your shower to 10 minutes or less.
- Do not fill the bathtub with more than 6 inches of water.
- Do not wash more than 1-2 loads of laundry per day.
- Do not use the dishwasher until it is full.

7. Circle the answer that best describes the total amount of water you use in your house per day.

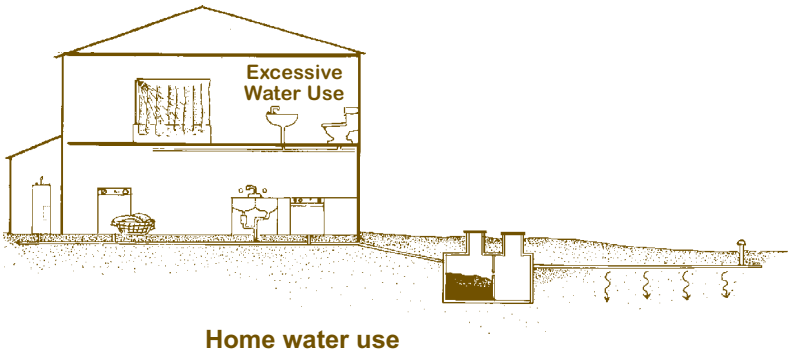
*Note: even if you have a well, you can have a water meter installed to measure your family's water use, or you may contact your local Cooperative Extension Service Center to get help estimating your family's water use.

a. You use less than 35 gallons per person per day.

b. You use between 35 and 50 gallons per person per day.

c. You use between 50 and 60 gallons per person per day.

d. You use more than 60 gallons per person per day, you have an in-home day care center or you take in wash for others, or your toilets or faucets have water leaks; OR do not know.



Home water use

8. Do you use a garbage disposal?

To reduce the possibility of septic system failure, restrict the use of the garbage disposal unit. Garbage disposals usually double the amount of solids added to your septic tank.

9. Do you pour grease or oil down your sink?

Do not pour grease or cooking oils down the sink drain. Grease can harden in the drainfield and clog the soil so that no water can flow through the soil. If this happens you will need to install a new drainfield.

10. Do you use cleaning products?

Use moderate amounts of cleaning products and do not pour solvents or other poisons down the drain. Don't dispose of extra cleaning products by pouring them down the drain. Do not use toilet cleaners that are placed in the toilet tank. Such chemicals can kill the good bacteria in your septic tank and in the soil beneath your drainfield. These products should go to the proper hazardous waste facility.

DO NOT FLUSH

hazardous chemicals, such as:

paints
varnishes
thinners
waste oils
photographic solutions
pesticides

8. Circle the answer that best describes your garbage disposal.

a. No garbage disposal.

b. Have a garbage disposal but also have a separate tank that treats garbage disposal waste before it goes to the septic tank.

c. Limited use of garbage disposal (3 times per week) but no separate tank.

d. Daily use of garbage disposal and no separate tank; OR do not know.

9. Circle the answer that best describes how you dispose of your grease and oil.

a. No disposal of grease and oil down the drain, and oil and grease wiped from cooking items with a paper towel before washing.

b. Limited rinsing of grease and oil while cleaning cooking items during special occasions (holidays, or when entertaining).

c. Routine rinsing of grease and oil down the drain when cleaning cooking items.

d. Routine disposal of grease and oil down the drain from cooking pans, fryers, etc.; OR do not know.

10. Circle the answer that best describes your use of household cleaning products and how you dispose of solvents and poisons.

a. Minimal use of household chemicals (only 2 cups per week). No disposal of harmful chemicals such as solvents, paints, thinners, disinfectants, pesticides, poisons, and other substances that can kill the bacteria in the tank and soil.

b. Careful use of household chemicals only when needed to unclog pipes, clean fixtures, etc.

c. Daily use of household chemicals, such as degreasers, pipe decloggers or toilet bowl sanitizers.

d. Excessive amounts of cleaning agents poured down the drain or periodic disposal of solvents and other substances such as paints, paint thinners, poisons that can kill the bacteria in the tank and soil or pollute the groundwater; OR do not know.

11. Do you dispose of solid waste materials?

Do not put items down the drain that may clog the septic tank or other parts of the system. These items include cigarette butts, sanitary napkins, tampons, condoms, disposable diapers, paper towels, egg shells, and coffee grounds. Do not use your toilet for disposal of facial tissues. This adds extra solids and water to the septic system.

12. Does all your wastewater drain into your septic system?

Make sure that all wastewater produced in the house is directed into the septic system. This includes not only the wastewater from the kitchen sink and the toilets, but also wastewater from tubs, showers, and laundry facilities.

13. Have you protected your septic system from physical damage?

To protect your septic system from physical damage:

- Keep the soil over the drainfield covered with grass to prevent soil erosion.
- Be careful not to mow the lateral turn-ups if you have a special type of septic system called a "low-pressure pipe system."
- Don't drive over the system.
- Maintain the natural shape of the land immediately downslope of the system. Protect this area from cutting and filling.
- Do not build over the drainfield area.

11. Circle the answer that best describes how you dispose of solid products.

a. You never use your septic system as a trash can for any solid products such as cigarette butts, tissues, sanitary napkins, tampons, condoms, cotton swabs, cat litter, coffee grounds, or disposable diapers.

b. You occasionally (once or twice yearly) use your septic system as a trash can for cigarette butts, tissues, sanitary napkins, tampons, condoms, cotton swabs, cat litter, coffee grounds, or disposable diapers.

c. You use your septic system every month as a trash can for cigarette butts, tissues, sanitary napkins, tampons, condoms, cotton swabs, cat litter, coffee grounds, or disposable diapers.

d. You use your septic system every week as a trash can for cigarette butts, tissues, sanitary napkins, tampons, condoms, cotton swabs, cat litter, coffee grounds, or disposable diapers; OR do not know.

12. Circle the answer that best describes how you dispose of wastewater.

a. All of your wastewater is disposed of in an approved septic system.

b. All of your wastewater is disposed of in a septic system that was installed before state regulations went into effect but seems to be working okay.

c. Some of your wastewater, such as wash water or kitchen wastewater, goes to a separate pipe that discharges into a ditch or dry well or in the woods.

d. All of your wastewater goes to a pipe that discharges into a ditch or dry well or in the woods; OR do not know.

13. Circle the answer that best describes vehicular traffic over the septic system.

a. No vehicles or equipment are ever driven over your septic tank or drainfield, except lawnmowers.

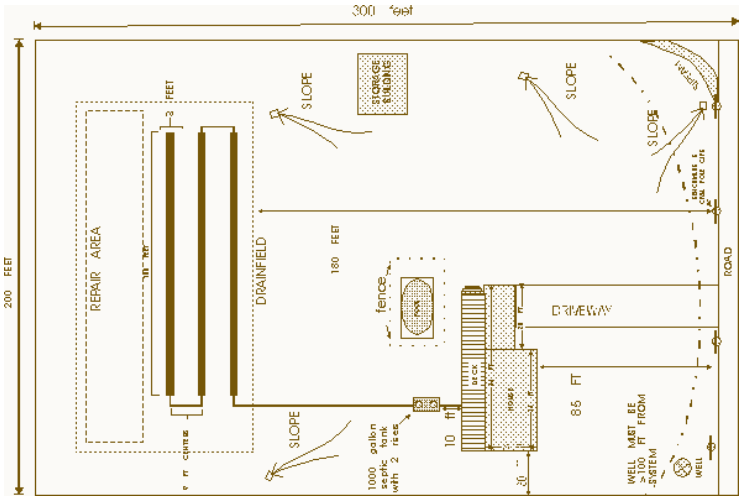
b. You have carefully (once or twice) driven a car over your drainfield, but don't cross it with heavy equipment and have never driven over the tank or pipe network.

c. You have periodically driven vehicles over your drainfield, but don't ever cross it with heavy equipment.

d. You have driven over your septic tank or pipe network with vehicles or over any part of the system with heavy equipment, trucks, etc.; OR do not know.

14. Have you built over your drainfield?

Do not cover the tank or drainfield with asphalt or concrete. Do not build any additions to your house over the drainfield without first checking with your local health department. For proper function and maintenance, your entire septic system must be accessible. Use a property layout sketch to help you place new facilities on your property away from the septic system.



Property layout sketch of the septic system

15. What safety precautions do you take around your septic system?

Some simple precautions should be taken to ensure the safety of you and your family around the septic system.

- Sewage in septic systems may contain germs that can cause disease. To prevent the spread of diseases, you should wash up after checking your septic system. If untreated sewage comes to the ground surface, you should contact your local health department to get a permit to repair your system.
- Be sure to avoid spark and shock hazards on systems with pumps or electrical controls, because sometimes there are toxic or explosive gases in septic systems that can be ignited.
- **The septic tank lid should be tight at all times to prevent children from opening the lid.**

16. Has your septic tank been pumped recently?

After a few years, the solids that collect in your septic tank should be pumped out and disposed of at an approved location. If not removed, these solids will eventually block the soil in your system. The sewage will either back up into your house or flow across the ground surface over the drainfield. If this happens, it is too late to pump your tank and you will have to build a new drainfield on a different part of your lot.

14. Circle the answer that best describes the placement of additions onto your house.

a. No additions to your home or construction of outbuildings, swimming pools, or driveways have been made since your septic system was installed.

b. Additions to your home or construction of outbuildings, swimming pools, or driveways have been preceded by contacting your local health department.

c. You have not contacted your local health department, but have a copy of your septic system permit and are sure that additions to your home or construction of outbuildings, swimming pools, or driveways have been located away from the septic system and repair area.

d. An addition to your home, a swimming pool, or a driveway has been built over the septic system or repair area; OR do not know.

15. Circle the answer that best describes your work habits around the septic system.

a. You wash up after checking your system. You never enter your septic tank. You secure the septic tank lid so that children cannot open it. You use caution to avoid shock and spark hazards on systems with pumps or electrical controls.

b. Not applicable

c. Not applicable

d. You don't wash up after checking your system. You enter your septic tank. You don't secure the septic tank lid so that children can not open it. You are not cautious with the electrical parts of your septic system; OR do not know.

WARNING

Do not inspect or even look into your septic tank. Toxic gases that can kill in minutes are produced in septic tanks. Septic tanks should always be inspected by a professional.

How often your septic tank needs to be pumped depends on three things:

- The size of your tank
- The amount of wastewater you use
- The solids content of your wastewater

Your local health department should be able to tell you the size of your tank. Then, using the table below, determine how often your tank should be pumped. For example, if there are 4 people living in your house and your septic tank can hold 1,000 gallons, the tank should be inspected and pumped at least every three years.

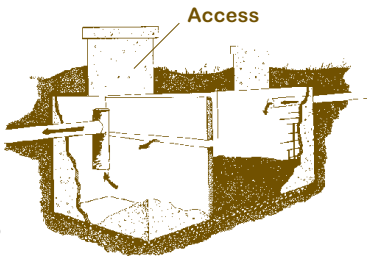
Time Table for Inspecting and Pumping Your Septic Tank (in years)

Tank Size (gallons)	Number of People Using the System				
	1	2	4	6	8
	Number of Years				
900	11	5	2	1	<1
1,000	12	6	3	2	1
1,250	16	8	3	2	1
1,500	19	9	4	3	2

Source: Adapted from "Estimated Septic Tank Pumping Frequency," by Karen Mancl. 1984. *Journal of Environmental Engineering*. Volume 110.

17. Do you have easy access to your septic system?

It is important to know the location of your septic tank system. It is also important to be able to check your septic system. Easy access to your septic tank system through an access riser allows it to be inspected and cleaned. The following diagram illustrates an access riser.



Access riser installed on septic tank

18. Have you hired a certified septic system operator?

Hire a certified operator when you have a system that uses a pump including the following:

- Low-pressure pipe system
- Pump-to-conventional system
- Pressure manifold system
- Mechanical aerobic treatment unit (ATU)
- Drip irrigation system

This operator will check the overall performance of your system and the operation of the pump, electrical controls, and alarm on a

16. Circle the answer that best describes how often your septic tank is cleaned.

a. You have your septic tank inspected and pumped as scheduled in Table 1.

b. You have septic tank scum and sludge levels checked each year and your septic tank pumped out as needed.

c. You have scum and sludge levels checked and your tank pumped out about once every 5-10 years.

d. It has been more than 5-10 years since you've had your septic tank checked and pumped out or you've never pumped out your septic tank, or you don't know if it has ever been pumped out; OR do not know.

17. Circle the answer that best describes your access to your septic tank.

a. You have a concrete riser or manhole over your septic tank that provides easy access to the tank.

b. You do not have a concrete riser, but the location of your tank is marked and the tank is less than six inches deep.

c. You do not have a concrete riser, but the location of your tank is marked. The top of your tank is more than six inches deep.

d. You do not know where your tank is located; OR do not know.

18. Circle the answer that best describes how you use a certified subsurface system operator if you have one of these four special types of septic systems: a pump-to-conventional, pressure manifold, low-pressure pipe system, or ATU system.

a. You have hired a certified subsurface system operator if you have a pump-to-conventional, pressure manifold, or low-pressure pipe system.

b. Not Applicable

c. Not Applicable

d. You have not hired a certified subsurface system operator to help operate and maintain your pump-to-conventional, pressure manifold, low-pressure pipe system, or ATU system; OR do not know.

regular basis. Hiring a certified operator will cost some money, but can provide you with professional care for your septic system.

You are required by state law to hire a certified subsurface system operator if you have a low-pressure pipe system that was installed or repaired after July 1, 1992, or if you have an aerobic treatment unit (ATU).

19. Have you talked to a certified septic system operator?

Hiring a certified operator to inspect your pump system is important. It is also important to talk to your certified operator to find out what you should do to maintain your septic system between visits.

20. Are your drainage ditches maintained?

For septic systems that use ditches or subsurface drain tiles to drain excess water from the soil, it is important that the outlets from these ditches be cleaned. If the outlet becomes plugged up, water can no longer drain from the soil into the ditch. The soil will stay too wet for the drainfield to work properly and your septic system may fail.

For more information:

You must receive a permit from your local health department before installing or repairing any septic system.

Your county health department can be a valuable source of information on the following topics:

- Site selection and construction of septic systems
- Septic system inspection and maintenance
- List of registered septic system installers
- Construction records for existing septic systems
- Information on systems that legally require a certified subsurface system operator

Related publications available from the Cooperative Extension Service:

- *About Septic Systems: What You Need to Know*
- *Septic System Owner's Guide*, AG-439-22
- *Soil Facts: Septic Systems and Their Maintenance*, AG-439-13
- *Soil Facts: Investigate Before You Invest*, AG-439-12
- *Soil Facts: Management of Single Family and Small Community Wastewater Treatment and Disposal Systems*, AG-439-11

The publications listed above are available at your county Cooperative Extension Service Center. You may also order these publications from Communication Services, Campus Box 7603, North Carolina State University, Raleigh, NC 27695-7603.

19. Circle the answer that best describes how you obtain information from your certified operator about your septic system if you have a pump system.

a. You find out from your operator what you should be doing between visits to help the system work properly.

b. You do not discuss your system with your certified operator but do let him/her know immediately if the alarm is activated.

c. You turn off the alarm when it is activated, hope the problem goes away until the next scheduled visit by your certified operator.

d. You have a pump system, but have not hired a certified operator to help you manage the system; OR do not know.

20. If you use drainage ditches, circle the answer that best describes how you maintain your drainage ditches.

a. Your drainage ditches and outlets are maintained on your property and on surrounding properties.

b. Your drainage ditches are well maintained on your property but not on surrounding properties.

c. Your drainage ditch still exists but is beginning to become filled with soil or with trees, or brush growing in it or your drainage outlet is partially covered by water, soil, or debris.

d. The outlet of your drainage ditch is blocked or your drainage ditches have filled in and water is not flowing freely through them; OR do not know.

WARNING

NEVER enter a septic tank.

The following publication is available from the North Carolina Department of Environment and Natural Resources, Division of Environmental Health (919/733-2870, web site: www.deh.enr.state.nc.us/oww/):

- *On-Site Wastewater Management Guidance Manual,* 1996.

Concept adapted for North Carolina from materials produced by the National Home*A*Syst Program, University of Wisconsin (author Karen Filchak, University of Connecticut Cooperative Extension).

North Carolina's modification of Farm*A*Syst and Home*A*Syst is coordinated by Deanna L. Osmond, North Carolina State University. Technical editing was provided by Judith A. Gale.

This project has been funded through the United States Department of Agriculture Water Quality Initiative Funds.

Prepared by

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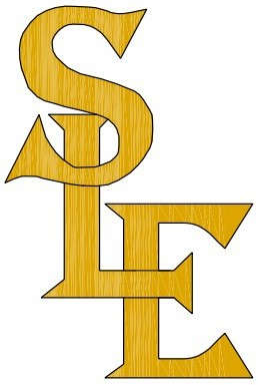


Notarized Letter of Acceptance

October 13, 2022

Harnett County Environmental Health Department

307 West Cornelius Harnett Blvd

Lillington, NC 27546

ATO Submission Package for Dollar General at 7003 Hwy 421 in Lillington, NC

To whom it may concern,

Please find the attached letter as acceptance for the installation of the pump to PPBPS septic system serving the Dollar General at 7003 Hwy 421 in Lillington, NC as initially proposed by SanLee Environmental, LLC of Sanford, NC.

Sincerely,

Pioneer Companies, LLC

Acknowledgement

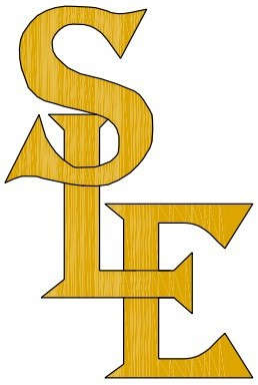
I certify that Richard Vincent personally appeared before me this day, acknowledging to me that he or she signed the foregoing document.

Date: 10/13/22

Teresa Remmenga, Notary Public

My commission expires:
02/25/2024

TERESA REMMENGA NOTARY PUBLIC MOORE COUNTY, NC



Contractor's Letter of Installation

October 13, 2022

Harnett County Environmental Health Department

307 West Cornelius Harnett Blvd

Lillington, NC 27546

ATO Submission Package for Dollar General at 7003 Hwy 421 in Lillington, NC

To whom it may concern,

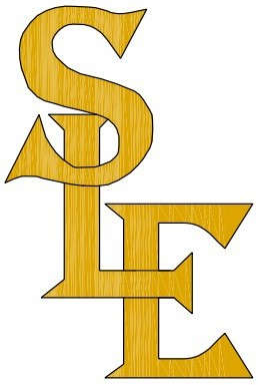
I certify that the above referenced project was installed with due care and to acceptable construction standards. The installation of this septic system meets all necessary state rules and product approvals for their use. The changes in the drainfield design and tank specifications were approved by the soil scientist prior to installation and are referenced on the final drawings.

Sincerely,

10-13-22

Jason Mabe

A&M Contracting



Certificates of Insurance

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 10/19/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Kimberly Kelly	
Dial Insurance Agency P.O. Box 819 Pembroke, NC 28372	PHONE (A/C, No, Ext): (910) 521-9090	FAX (A/C, No): (910) 521-1204
	E-MAIL ADDRESS: Kkelly@dialinsurancenc.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Owners Insurance Company	
INSURED	INSURER B : Builders Mutual	
A & M Contractors, Inc. Po Box 1020 Ellerbe, NC 28338 (910) 652-6230	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 8814 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [ ] PRO-JECT [ ] LOC OTHER:			CPA001575600	06/24/22	06/24/23	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY [ ] SCHEDULED AUTOS X HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY			51-194976-00	06/24/22	06/24/23	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
A	X UMBRELLA LIAB [X] OCCUR EXCESS LIAB [ ] CLAIMS-MADE DED X RETENTION $ 10,000			51-194987-00	06/24/22	06/24/23	EACH OCCURRENCE AGGREGATE	$ 2,000,000 $ 2,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [Y] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		PWC1016381	06/24/22	06/24/23	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

SanLee Environmental, LLC

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 1/18/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Angela Sensenig	
Wade Associates, LLC 250 Pollock St. New Bern NC 28560	PHONE (A/C, No, Ext): (252)631-5269	FAX (A/C, No): (252)649-2443
	E-MAIL ADDRESS: asensenig@wadeict.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Auto-Owners	18988
INSURED	INSURER B : Markel Insurance Company	38970
Sanlee Environmental LLC 235 Avents Ferry Rd Sanford NC 27330-9077	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 21-22 Master **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [ ] OCCUR [X] GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY [ ] PRO-JECT [ ] LOC OTHER:			35761571	3/16/2021	3/16/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ $ $ $
	UMBRELLA LIAB [ ] OCCUR EXCESS LIAB [ ] CLAIMS-MADE DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N [ ] (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ $ $
B	Errors & Omissions			MEO2044	3/16/2021	3/16/2022	General Aggregate	$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

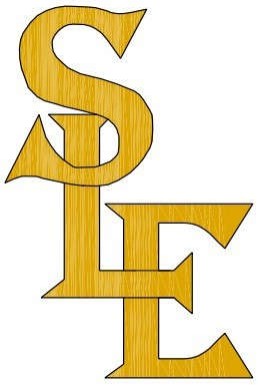
CERTIFICATE HOLDER

CANCELLATION

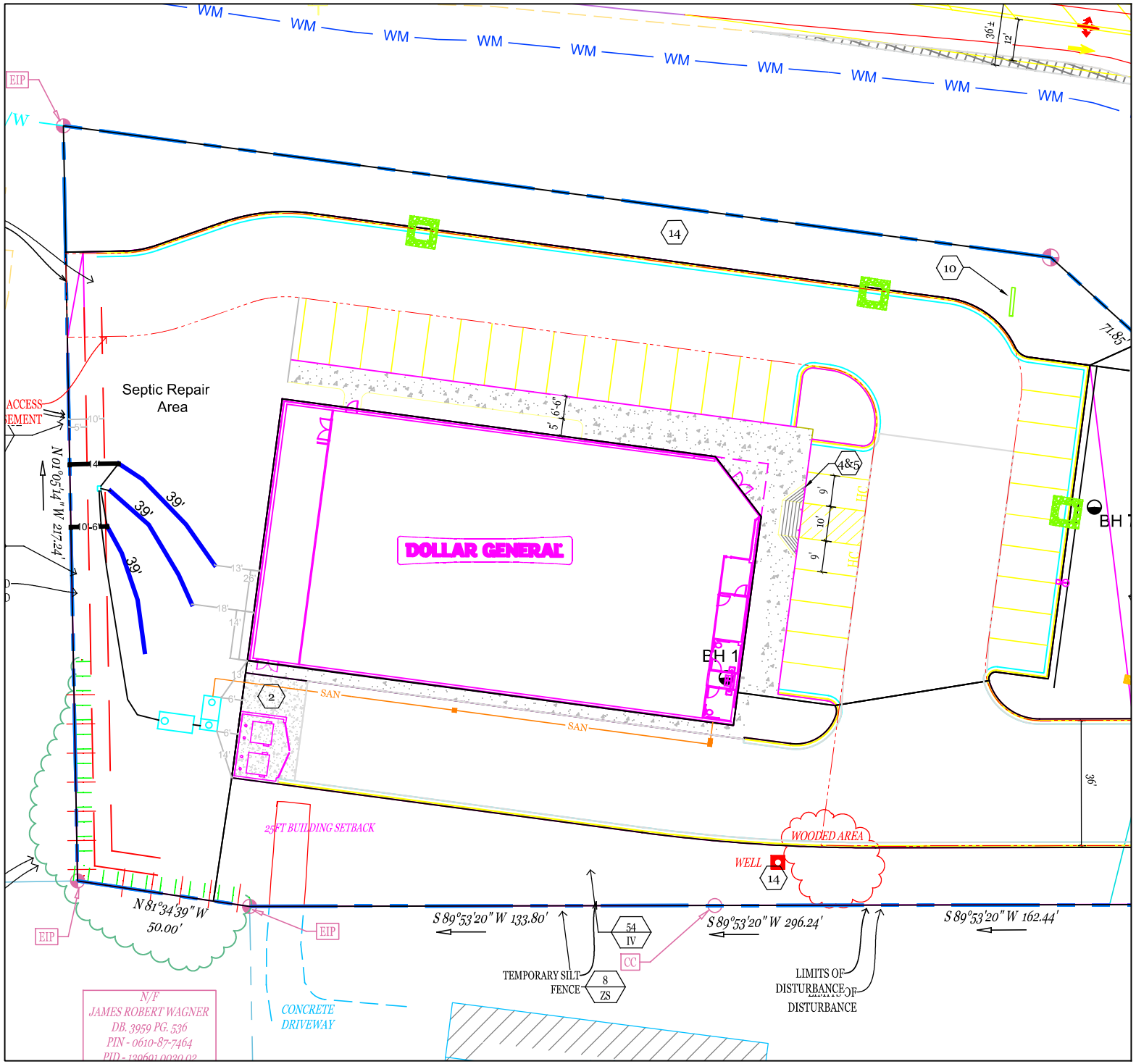
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

N Whitsett/MB



Documentation
of
Final Inspection



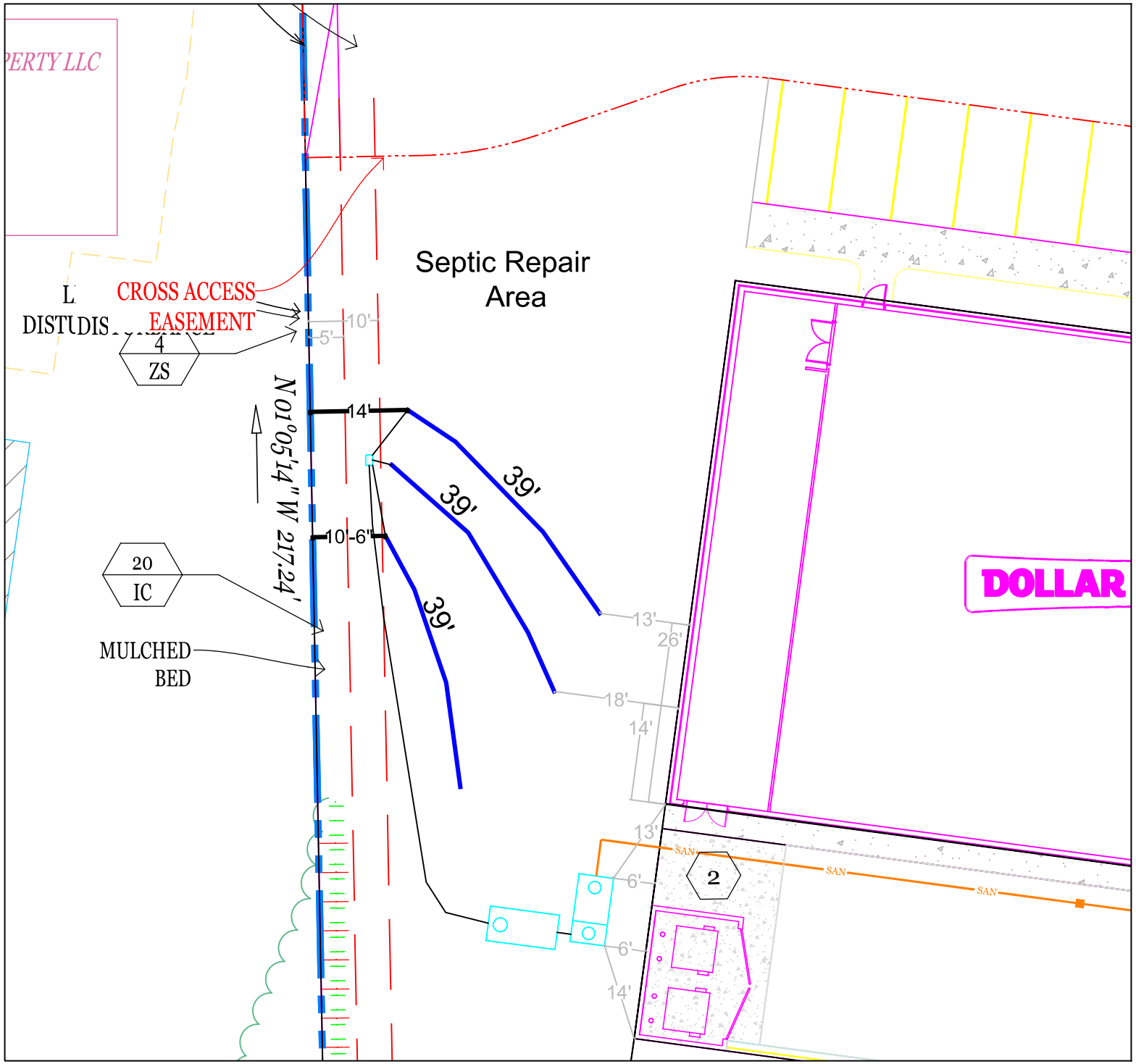
SanLee Environmental, LLC
919-842-6263

Project:
Dollar General
US 421
Lillington, NC

Date:
October 14, 2022

Drawn By:
Sloan Griffin

1" = 40'



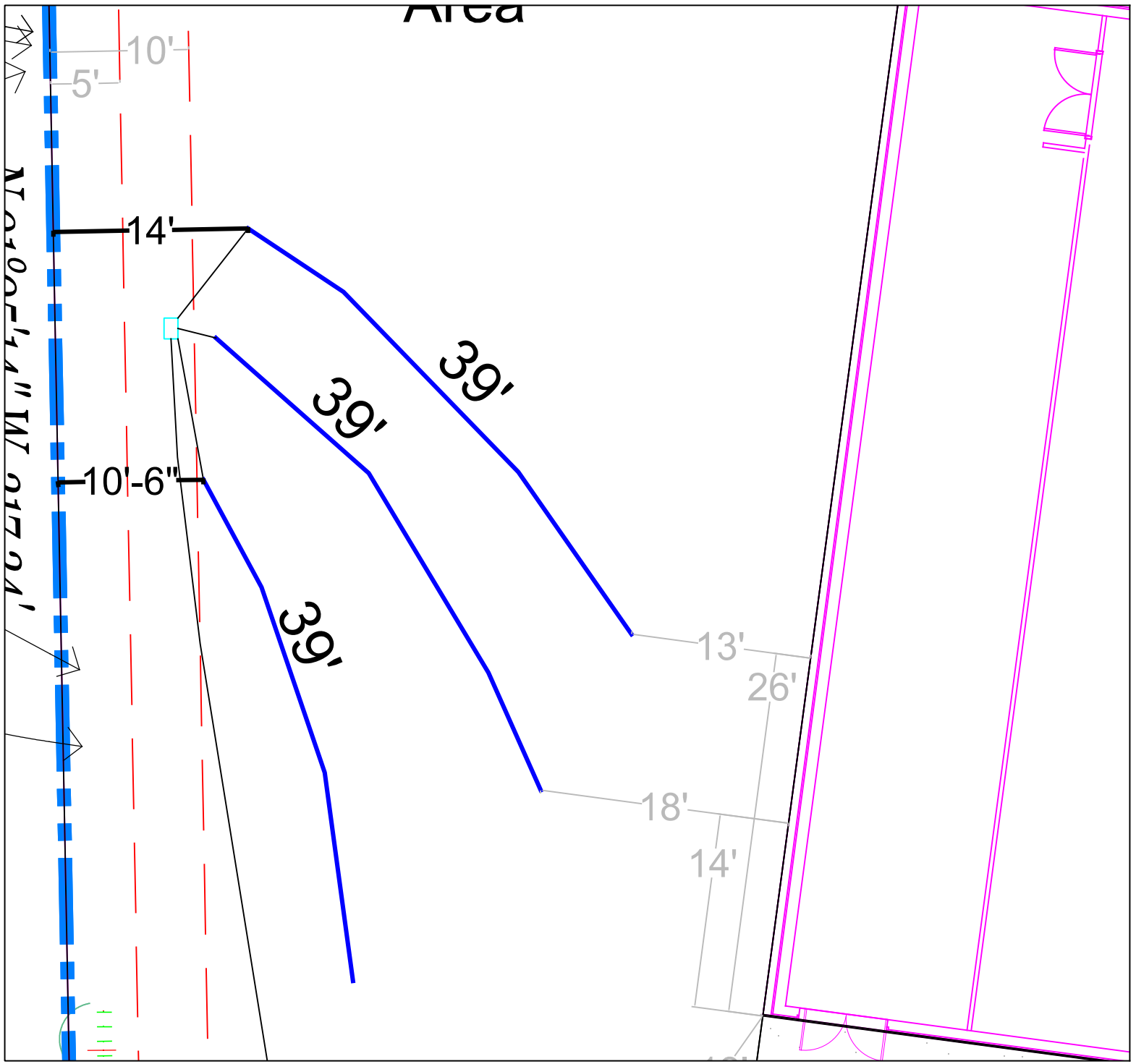
SanLee
Environmental, LLC
919-842-6263

Project:
Dollar General
US 421
Lillington, NC

Date:
May 10, 2022

Drawn By:
Sloan Griffin

1" = 20'



SanLee
Environmental, LLC
919-842-6263

Project:
Dollar General
US 421
Lillington, NC

Date:
May 10, 2022

Drawn By:
Sloan Griffin

1" = 10'

SanLee Environmental, LLC

Project: Lillington DG Date: 5/10/2022

Address: TBD US 421 Hwy, Lillington, NC

County: Harnett PIN# Water Source: Public

# of Bedrooms: NA Design Daily Flow: 260 Waste Strength: Domestic

Initial System

LTAR: 0.4 Trench Width: 3 Trench Depth: 24"

Min. ft of Drainfield: 108 Adjusted ft of Drainfield: 117

Septic Tank Size: 1200 Gallons Pump Tank Size: 1200 Gallons

Distribution Method: Pressure Manifold Specified Product: PPBPS

Pretreatment Required? No Amount of Soil Cover Required NA

Notes

1) Maintain all applicable setback to septic system components
2) Install when soils are dry and rake trench sidewalls if any smearing occurs
3) A time dosed control panel is requireded with the pressure manifold distribution of the PPBPS product
4) Preconstruction conference required prior to installation
5) Property lines and easements should remain clearly marked to ensure proper setbacks

Repair System

LTAR: 0.4 Trench Width: 3 Trench Depth: 24"

Min. ft of Drainfield: 108 Adjusted ft of Drainfield: 108

Septic Tank Size: 1200 Gallons Pump Tank Size: 1200 Gallons

Distribution Method: Pressure Manifold Specified Product: PPBPS

Pretreatment Required? No Amount of Soil Cover Required NA

Notes

1) Maintain all applicable setback to septic system components
2) Install when soils are dry and rake trench sidewalls if any smearing occurs

PRESSURE MANIFOLD SEPTIC SYSTEM DESIGN (Initial/Primary)

Site Information

Applicants:	Dollar General - Lillington
Site Address:	TBD Us 421 Hwy
	Lillington, NC

Design Information

Flow/Unit:	260	gpd over 10,600 sq ft
Design Daily Flow:	260	gal/day
L.T.A.R. :	0.4	gal/day/ft^2
L.T.A.R. + 5%:	0.42	gal/day/ft^2
Trench Width:	3	ft.
Line Length Required:	108.3	ft.
Adjusted Line Length	117	ft. (50% Reduction Product)
L.T.A.R. Reduced:	0.7407407	gal/day/ft^2
L.T.A.R. Reduced + 5%:	0.778	gal/day/ft^2

DRAINFIELD INFO. - **Initial (Primary)**

Proposed Type of System/Distribution: ***PPBPS***

Line No. (EL in ft)	Flag Color	Line Length (ft.)	Number of PPBPS Panels	Lateral Flow	Flow/Foot (gpm/ft)	Line L.T.A.R.
1		39	9	7.11	0.182	0.741
2		39	9	7.11	0.182	0.741
3		39	9	7.11	0.182	0.741
TOTAL		**117**	**27**	**21.33**		

Note: Flow/tap estimate assumes 2.0 ft. of head.

Total Run Time =	12.19	min.	
# of PPBPS Panels =	27		
Dose Volume =	86.6	gal/dose	
Run Time/Dose =	**4.1**	**min**	
Volume/depth =	35	gal/in	(Dependent upon tank manufacturer, to be field verified)
Estimated Drawdown =	2.5	in.	

PRESSURE MANIFOLD SEPTIC SYSTEM DESIGN (Repair)

Site Information

Applicants: Dollar General - Lillington
Site Address: TBD Us 421 Hwy
Lillington, NC

Design Information

Flow/Unit:	260	gpd over 10,600 sq ft
Design Daily Flow:	260	gal/day
L.T.A.R. :	0.4	gal/day/ft^2
L.T.A.R. + 5%:	0.42	gal/day/ft^2
Trench Width:	3	ft.
Line Length Required:	108.3	ft.
Adjusted Line Length	108	ft. (50% Reduction Product)
L.T.A.R. Reduced:	0.8024691	gal/day/ft^2
L.T.A.R. Reduced + 5%:	0.843	gal/day/ft^2

DRAINFIELD INFO. - **Repair**

Proposed Type of System/Distribution: ***PPBPS***

Line No. (EL in ft)	Flag Color	Line Length (ft.)	Number of PPBPS Panels	Lateral Flow	Flow/Foot (gpm/ft)	Line L.T.A.R.
4		39	9	7.11	0.182	0.741
5		39	9	7.11	0.182	0.741
6		39	9	7.11	0.182	0.741
TOTAL		**117**	**27**	**21.33**		

Note: Flow/tap estimate assumes 2.0 ft. of head.

Total Run Time =	12.19	min.	
# of PPBPS Panels =	27		
Dose Volume =	86.7	gal/dose	
Run Time/Dose =	**4.1**	**min**	
Volume/depth =	35	gal/in	(Dependent upon tank manufacturer, to be field verified)
Estimated Drawdown =	2.5	in.	

PUMP DESIGN

Applicants: Dollar General - Lillington
Site Address: TBD Us 421 Hwy
Lillington, NC

Friction Losses

Suction Head =		0	ft.	*(submersible = 0)*
Elev. Difference (highest point from pump) =		10.00	ft.	
Design Pressure At Outlet =		2	ft.	
Supply Line - *2" Schedule 40 PVC from Pump to Manifold*				
Pipe Diameter (ID) =	2.047 in.	Flow =	21.33	gpm
Pipe Length =	70 ft.	Velocity =	2.08	ft/sec
Pipe Length for Fittings =	70 ft.			
Est. Friction Loss per 100' =		0.87	ft/100 ft.	
Estimated Friction Loss =		1.22	ft.	
Friction Loss - Taps/Special Fittings =		3.5	ft.	
SUB-TOTAL =		16.72	ft.	
Friction Loss - Fittings (5%) =		0.84	ft.	
TOTAL =		**17.56**	**ft.**	

Flow for Anti-Siphon Hole

Hole Diameter =	5/32	in.
Hole Flowrate =	1.21	gpm

Pump Efficiency =	0.7	*(assumed, typical)*
Motor Efficiency =	0.9	*(assumed for electric pumps)*
Flow =	**22.54**	**gpm**
Required Horsepower =	0.16	hp
TDH =	**17.56**	**ft.**

Recommeded Pump: Zoeller N98

Soil Notes

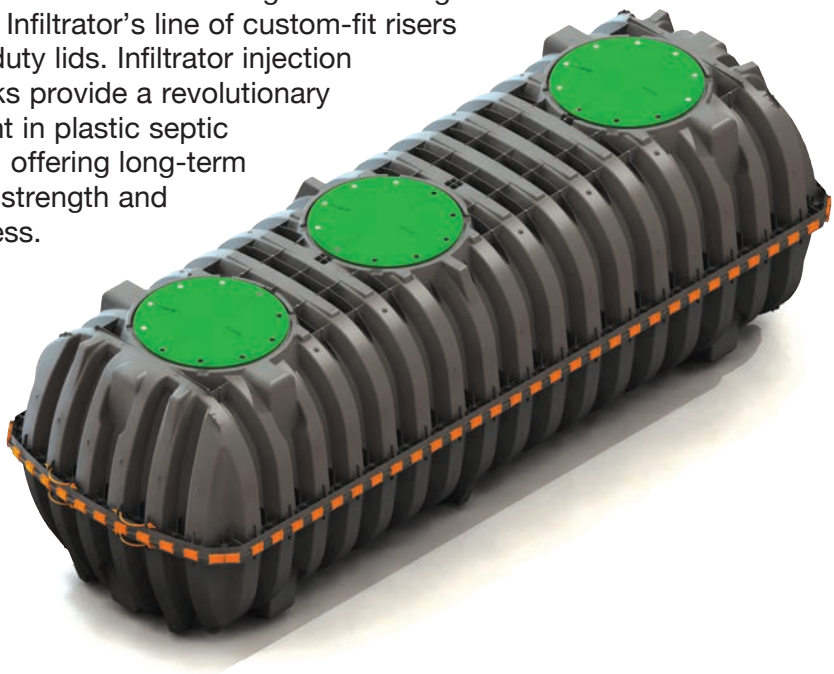
Name	Horizon 1	Horizon 2	Horizon 3	Horizon 4
WPT 6	0-17 l gr fr nsnp sexp	17-38 sl gr fr nsnp sexp	38-48 scl wsbk fr sssp sexp	
WPT 5	0-13 fill	13-34 sl gr fr nsnp sexp	34-41 scl wsbk fr sssp sexp	41+ scl wsbk fr sssp sexp 10yr 7/1
WPT 4	0-18 l gr fr nsnp sexp	18-35 sl gr fr nsnp sexp	35-48 scl wsbk fr sssp sexp	
WPT 3	0-17 l gr fr nsnp sexp	17-43 sl gr fr nsnp sexp	43-48 scl wsbk fr sssp sexp	
WPT 2	0-26 l gr fr nsnp sexp	26-41 scl wsbk fr sssp sexp	41+ scl wsbk fr sssp sexp 10yr 7/2	
WPT 1	0-29 l gr fr nsnp sexp	29-48 scl wsbk fr sssp sexp		

Name	LTAR	Restrictive Layer	Slope	Soil Depth
WPT 6	0.45		4	48
WPT 5	0.4	swc	4	41
WPT 4	0.5		4	48
WPT 3	0.5		5	48
WPT 2	0.45	swc	5	41
WPT 1	0.45		4	48

INFILTRATOR® tanks

IM-1530

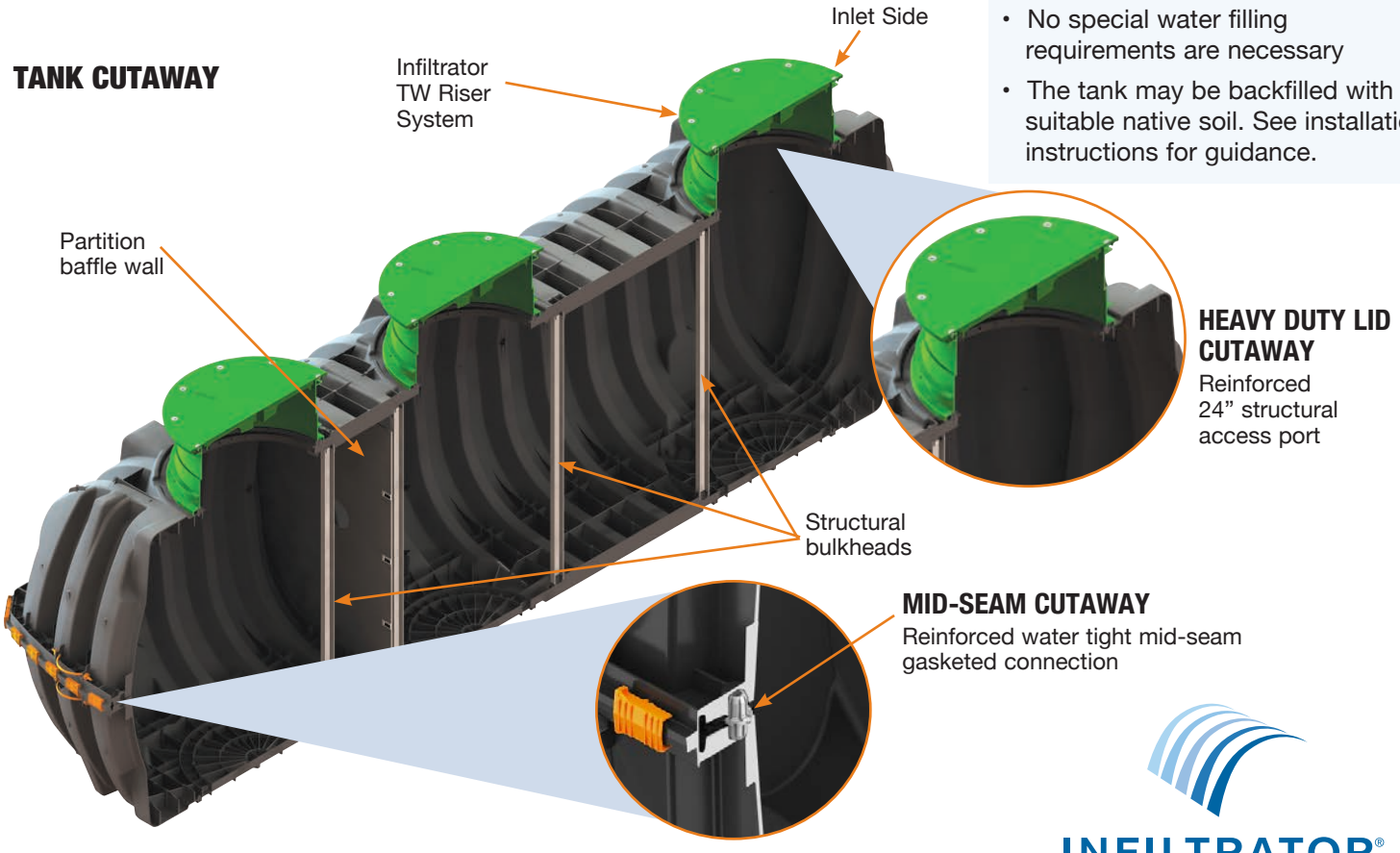
The Infiltrator IM-1530 is a lightweight strong and durable septic tank. This watertight tank design is offered with Infiltrator's line of custom-fit risers and heavy-duty lids. Infiltrator injection molded tanks provide a revolutionary improvement in plastic septic tank design, offering long-term exceptional strength and watertightness.



Features & Benefits

- Strong injection molded polypropylene construction
- Lightweight plastic construction and inboard lifting lugs allow for easy delivery and handling
- Integral heavy-duty green lids that interconnect with TW™ risers and pipe riser solutions
- Structurally reinforced access ports eliminate distortion during installation and pump-outs
- Reinforced structural ribbing and fiberglass bulkheads offer additional strength
- Can be installed with 6" to 48" of cover
- Can be pumped dry during pump-outs
- Suitable for use as a septic tank, pump tank, or rainwater (non-potable) tank
- No special water filling requirements are necessary
- The tank may be backfilled with suitable native soil. See installation instructions for guidance.

TANK CUTAWAY



HEAVY DUTY LID CUTAWAY
Reinforced 24" structural access port

MID-SEAM CUTAWAY
Reinforced water tight mid-seam gasketed connection

Protecting the Environment with **Innovative Wastewater Treatment Solutions**

INFILTRATOR® water technologies

IM-1530 General Specifications and Illustrations

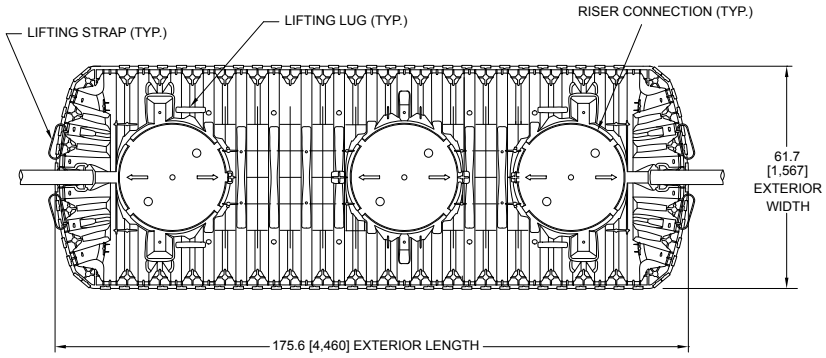
The IM-1530 is an injection molded two piece mid-seam plastic tank. The IM-1530 injection molded plastic design allows for a mid-seam joint that has precise dimensions for accepting an engineered EPDM gasket. Infiltrator's gasket design utilizes technology from the water industry to deliver proven means of maintaining a watertight seal.

The two-piece design is permanently fastened using a series of non-corrosive plastic alignment dowels and locking seam clips. The IM-1530 is assembled and sold through a network of certified Infiltrator distributors.

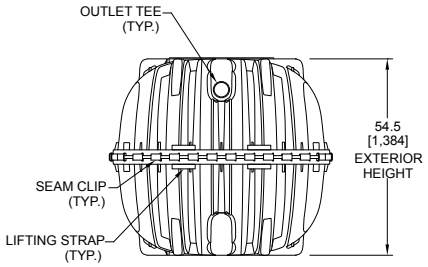
Must be backfilled and installed in accordance with Infiltrator Water Technologies, Infiltrator IM-Series Septic Tank General Installation Instructions and for shallow ground water conditions reference the Infiltrator IM-Series Tank Buoyancy Control Guidance.

Please visit www.infiltratorwater.com/images/pdf/ManualsGuides/TANK01.pdf for the latest information.

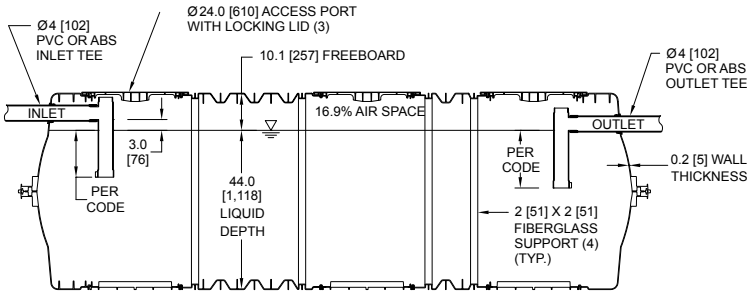
IM-1530	
Working Capacity	1537 gal (5818 L)
Total Capacity	1787 gal (6765 L)
Airspace	16.9%
Length	176" (4460 mm)
Width	62" (1567 mm)
Length-to-Width Ratio	2.8 to 1
Height	55" (1384 mm)
Liquid Level	44" (1118 mm)
Invert Drop	3" (76 mm)
Fiberglass Supports	4
Compartments	1 or 2
Maximum Burial Depth	48" (1219 mm)
Minimum Burial Depth	6" (152 mm)
Maximum Pipe Diameter	4" (100 mm)
Weight	501 lbs (228 kg)



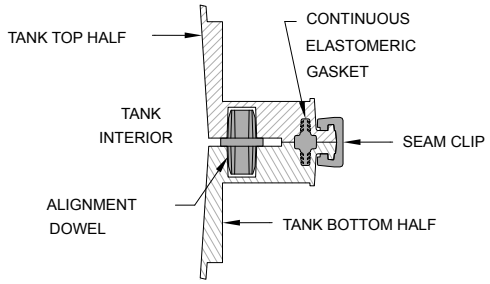
TOP VIEW



END VIEW



SIDE VIEW



MID-HEIGHT SEAM SECTION

INFILTRATOR® water technologies

4 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com

IM21 1116

Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436

Trusted. Tested. Tough.®

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER® PUMP COMPANY

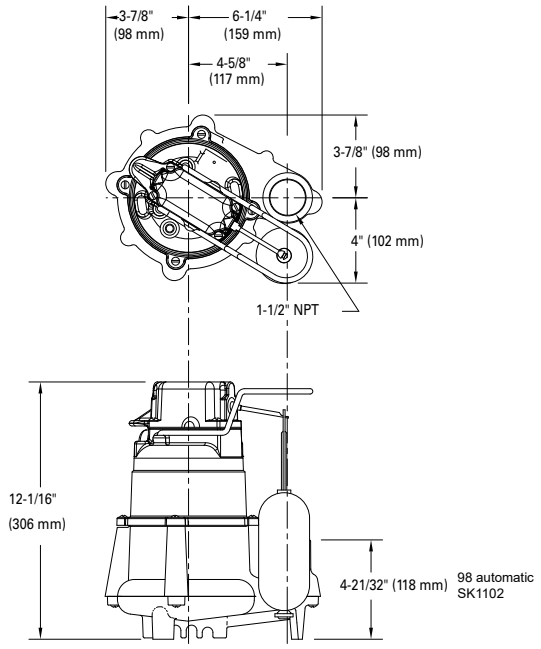
SECTION: 2.15.050
FM2779
1120
Supersedes
0619

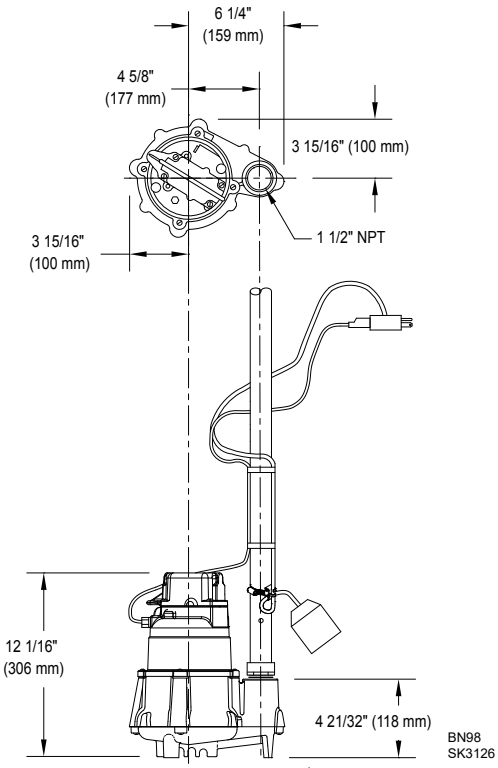
TECHNICAL DATA SHEET
FLOW-MATE SERIES
Model 98 Submersible Effluent/Dewatering Pump

PRODUCT SPECIFICATIONS

MOTOR	Horse Power	1/2
	Voltage	115 or 230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	1725
	Type	Permanent split capacitor
	Insulation	Class B
	Amps	4.7 - 9.4
PUMP	Operation	Automatic or nonautomatic
	Auto On/Off Points	9-1/2" (24 cm) / 3" (7.6 cm)
	Discharge Size	1-1/2" NPT
	Solids Handling	1/2" (13 mm) spherical solids
	Cord Length	15' (5 m) standard
	Cord Type	UL listed
	Max. Head	23' (7 m)
	Max. Flow Rate	72 GPM (273 LPM)
	Max. Operating Temp.	130° F (54° C)
	Cooling	Oil filled
	Motor Protection	Auto reset thermal overload
MATERIALS	Cap	Cast iron
	Motor Housing	Cast iron
	Pump Housing	Cast iron
	Base	Engineered thermoplactic
	Upper Bearing	Oil-fed cast iron
	Lower Bearing	Oil-fed cast iron
	Mechanical Seals	Carbon and ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Engineered plastic
	Hardware	Stainless steel
	Motor Shaft	AISI 1215 cold rolled steel
	Gasket	Neoprene

NOTE: See model comparison chart for specific details.



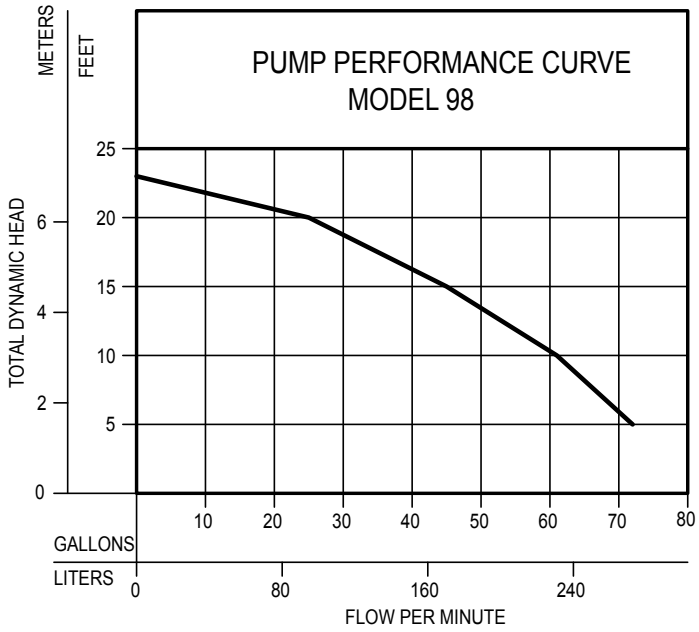


Tested to Standard UL778 and Certified to CSA Standard C22.2 No. 108

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | zoellerpump.com

TOTAL DYNAMIC HEAD FLOW PER MINUTE

MODEL		98	
Feet	Meters	Gal.	Liters
5	1.5	72	273
10	3.0	61	231
15	4.6	45	170
20	7.1	25	95
Shut-off Head:		23 ft.(7.0m)	



009971

Model	MODEL COMPARISON										
	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs	Kg	Simplex	Duplex
M98	Single	Auto	115	1	9.4	1/2	60	36	16	1	4
N98	Single	Non	115	1	9.4	1/2	60	36	16	2 or 3	4
D98	Single	Auto	230	1	4.7	1/2	60	36	16	1	4
E98	Single	Non	230	1	4.7	1/2	60	35	16	2 or 3	4
BN98	Single	Auto	115	1	9.4	1/2	60	37	17	*	--
BE98	Single	Auto	230	1	9.4	1/2	60	40	18	*	--

*BN and BE models include a 20' (6 m) piggyback variable level pump switch. Additional cord lengths are available in 25' (8 m) and 35' (11 m). 50' (15 m) cords are available for 230 V units only.

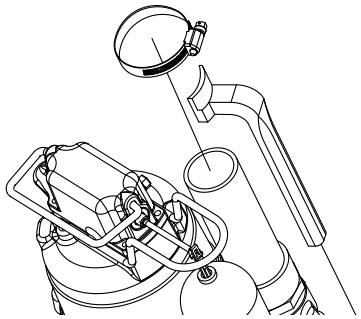
SELECTION GUIDE

1. Integral float-operated mechanical switch, no external control required.
2. For automatic, use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM1228 for correct model of simplex control panel.
4. See FM0712 for correct model of duplex control panel or FM1663 for a residential alternator system.

OPTIONAL PUMP STAND P/N 10-2421

- Reduces potential clogging by debris
- Replaces rocks or bricks under the pump
- Made of durable, noncorrosive ABS
- Raises pump 2" (5 cm) off bottom of basin
- Provides the ability to raise intake by adding sections of 1½" or 2" (DN40 or DN50) PVC piping
- Attaches securely to pump
- Accommodates sump, dewatering and effluent applications

NOTE: Make sure float is free from obstruction.

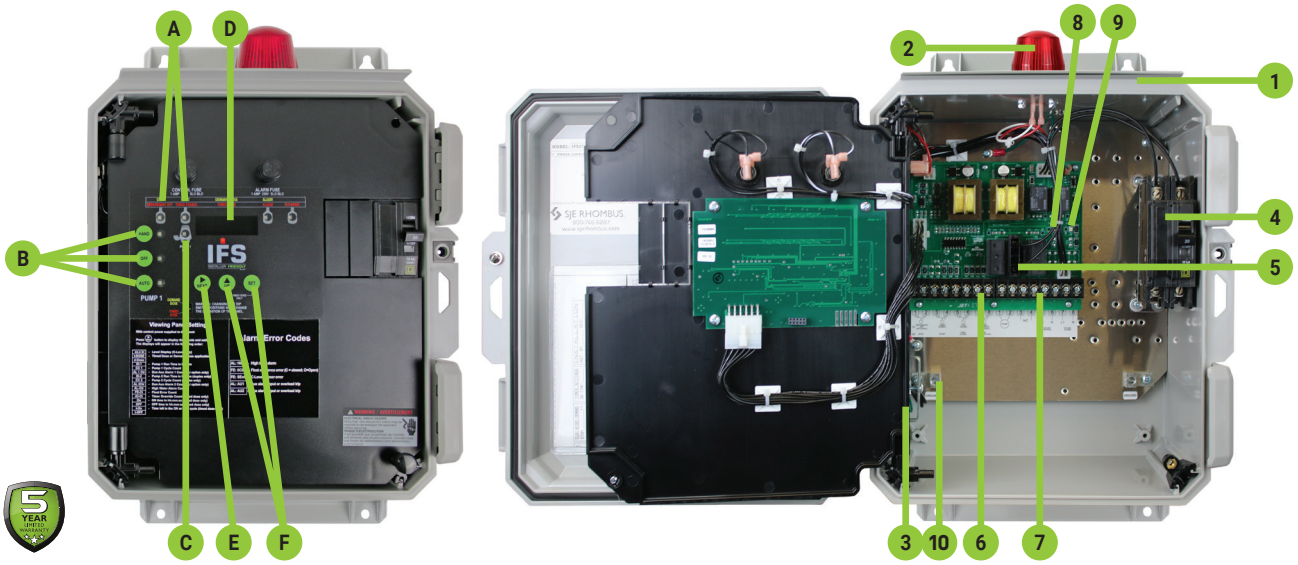


⚠ CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | zoellerpump.com

INSTALLER FRIENDLY SERIES® (IFS)
SINGLE PHASE SIMPLEX

Demand Dose or Timed Dose, Float or C-Level™ Sensor Controlled System for Pump Control and System Monitoring



c UL us LISTED

5 YEAR LIMITED WARRANTY

Panel layout may vary with options.
Reg. Cdn Pat. & TM Off
C-Level™ Sensor US Patent No. 8,336,385; 8,567,242; 8,650,949

The IFS simplex control panel utilizes an innovative circuit board design to control one 120/208/240V single phase pump in water and sewage applications. IFS panels feature an easy-to-use touch pad on inner door for programming and system monitoring. The panel configuration can be easily converted in the field to either a timed dose or demand dose. Available with the EZconnex® float system.

The panel can utilize the C-Level™ sensor for continuous level monitoring. It senses the level in the tank and sends a signal to the panel. Pump activation levels can be adjusted by using the panel touch pad. C-Level™ CL40 sensor operating range is 3-39.9 inches (7.6-101.3 cm). C-Level™ CL100 operating range is 3-99.5 inches (7.6-252.7 cm).

TOUCH PAD FEATURES

A. Level Status indicators illuminate when floats or set points are activated; alarm will activate if a float operates out of sequence
B. HOA (Hand-Off-Automatic) buttons control pump mode with indication; hand mode defaults to Automatic when stop level or redundant off level is reached
C. Pump Run indicator illuminates when pump is called to run
D. LED Display for system information including: level in inches or centimeters (C-Level™ only), mode, pump elapsed time (hh:mm), events (cycles), alarm counter, float error count, timed dose override counter (timed dose only), and ON/OFF times (timed dose only)
E. NEXT push button toggles display
F. UP and SET Push Buttons set pump ON/OFF times (timed dose only) or activation levels (C-Level™ only)

COMPONENTS

1. Enclosure measures 12 x 10 x 6 inches (30.48 x 24.4 x 15.24) NEMA 4X (ultraviolet stabilized thermoplastic, padlockable with integral mounting flanges, drip shield, (2) heavy duty cover latches, and stainless steel ¼ turn set screw; for outdoor or indoor use)
2. Red LED beacon provides 360° visual check of alarm condition
3. Alarm horn provides audio warning of alarm condition (83 to 85 decibel rating)
4. Circuit breaker (optional) provides pump disconnect and branch circuit protection
5. Power relay controls pump by switching electrical lines; definite purpose contactor used when pump full load amps are above 15
6. Float connection terminal block
7. Incoming control/alarm power & pump terminal block
8. Control Power Indicator/Fuse indicator light illuminates if control power is present in panel; alarm will activate if control fuse is blown
9. Alarm Power Indicator/Fuse indicator light illuminates if alarm power is present in panel
10. Ground lug
11. Exterior Alarm Test/Normal/Silence switch allows horn and light to be tested and horn to be silenced in an alarm condition; alarm automatically resets once alarm condition is cleared (not shown)

Note: Added options, voltage, and amp range selected may change enclosure size and enclosure features, and component layout.

Note: Schematic/Wiring Diagram and Pump Specification Label are located inside the panel.

SJE RHOMBUS®

9500053J Rev 05/21

INSTALLER FRIENDLY SERIES® SINGLE PHASE SIMPLEX - Demand or timed dose float controlled system for pump control and system monitoring.

IFS		1	W					8AC10E
CONTROL PANEL	MODEL TYPE	ALARM PACKAGE	ENCLOSURE RATING	STARTING DEVICE	PUMP FULL LOAD AMPS	PUMP DISCONNECTS	FLOAT SWITCH APPLICATION	OPTIONS (LISTED BELOW)

CONTROL PANEL	✓	IFS		
MODEL TYPE		1	Simplex Timed Dose (includes Options 8AC and 10E as standard)	
		2	Simplex Demand Dose (includes Options 8AC and 10E as standard)	
ALARM PACKAGE	✓	1	Alarm Package (includes test/normal/silence switch, fuse, red light, & horn)	
ENCLOSURE RATING	✓	W	Weatherproof, NEMA 4X (engineered thermoplastic)	
STARTING DEVICE		1	120/208/240V	
		9	120V only	
PUMP FULL LOAD AMPS		0	0 - 7 FLA	
		1	7 - 15 FLA	
		2	15 - 20 FLA	
PUMP DISCONNECTS		0	No Pump Disconnect	
		4	Circuit Breaker 120V (select STARTING DEVICE Option 9 above)	
			Circuit Breaker 120/208/240V (select STARTING DEVICE Option 1 above)	
FLOAT SWITCH APPLICATION		H	Floats - Pump Down (select Option 17 below) Timed dose = timer enable and alarm / Demand dose=stop, start, and alarm	
		E	EZconnex® Float Switch System (select Option 33, 35 or 36 below)	Timed Dose
				Demand Dose
		X	No Floats	Timed Dose
				Demand Dose
		C	C-Level™ Sensor (select Option 24 or 29) Select Option 3E and/ or 4A & 4D for high water alarm and/or redundant off floats	Timed Dose
				Demand Dose

PRICING WORKSHEET

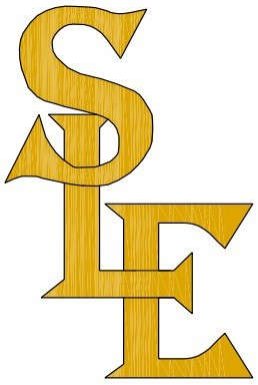
IFS Simplex Base Price	_____
Alarm Package	_____
Enclosure Rating	_____
Starting Device	_____
Pump Full Load Amps	_____
Pump Disconnects	_____
Float Switch Application	_____
Total Options	_____
TOTAL LIST PRICE	_____

NOTE: Pump down applications only. Industry practices suggest that a secondary device, such as a float switch, be used for redundant activation of the high level alarm and pump shut off when using the C-Level™ sensor.

	OPTIONS	DESCRIPTION	
	1J	Duo Alarm Inputs	
	3A	Alarm Flasher	
	3B	Manual Alarm Reset	
	3E	High Water Alarm Float (must also select Option 17) **Only Available with Float Switch Application = C**	
	4A	Redundant Off (must also select Option 4D if floats are required)	Timed Dose
			Demand Dose
	4D	Redundant Off Float (must also select Option 4A and Option 17)	
	6A	Auxiliary Alarm Contact, Form C	
✓	**8AC**	**Display Board - Includes: ETM Counter, Events (Cycles) Counter, Alarm Counter, and Override Counter (Timed Dose Only) (included as standard)**	
✓	**10E**	**Lockable Latch - NEMA 4X (included as standard)**	
	10F	Lightning Arrestor (select pump circuit breaker, control and alarm power combined)	
	10K	Anti-condensation Heater	
	11C	Additional NEMA 1 Remote Alarm Panel (must also select Option 6A)	
	11D	Additional NEMA 4X Remote Alarm Panel (must also select Option 6A)	
	15A	Control/Alarm Circuit Breaker	
	16A	10' Cord in Lieu of 20' Cord (per Float)	
	16B	15' Cord in Lieu of 20' Cord (per Float)	
	16C	30' Cord in Lieu of 20' Cord (per Float)	
	16D	40' Cord in Lieu of 20' Cord (per Float)	

	OPTIONS	DESCRIPTION
	17C	Sensor Float® / Internally Weighted (per Float) - Mercury
	17D	Sensor Float® / Externally Weighted (per Float) - Mercury
	17G	SJE MilliAmpMaster™ / Pipe Clamp (per Float) - Mechanical
	17H	SJE MilliAmpMaster™ / Externally Weighted (per Float) - Mechanical
	17J	Sensor Float® / Pipe Clamp (per Float) - Mercury
	18A	Timer Override Float (Timed Dose Float Panel Only)
	24E	C-Level™ CL40 Sensor with 4' Vent Tube and 20' Cord
	24F	C-Level™ CL40 Sensor with 4' Vent Tube and 40' Cord
	24G	C-Level™ CL40 Sensor with 8' Vent Tube and 20' Cord
	24H	C-Level™ CL40 Sensor with 8' Vent Tube and 40' Cord
	24X	No C-Level™ CL40 Sensor
	29A	C-Level™ CL100 Sensor with 10' Vent Tube and 20' Cord
	29B	C-Level™ CL100 Sensor with 10' Vent Tube and 40' Cord
	29X	No C-Level™ CL100 Sensor
	33D ■	EZconnex® 3-Port, 25', with 10' Floats (3) / Pipe Clamp
	33E ■	EZconnex® 3-Port, 50', with 10' Floats (3) / Pipe Clamp
	33G ■	EZconnex® 3-Port, 25', with 20' Floats (3) / Pipe Clamp
	33H ■	EZconnex® 3-Port, 50', with 20' Floats (3) / Pipe Clamp
	35D ■	EZconnex® 4-Port, 25', with 10' Floats (4) / Pipe Clamp
	35E ■	EZconnex® 4-Port, 50', with 10' Floats (4) / Pipe Clamp
	35G ■	EZconnex® 4-Port, 25', with 20' Floats (4) / Pipe Clamp
	35H ■	EZconnex® 4-Port, 50', with 20' Floats (4) / Pipe Clamp
	36D ■	EZconnex® 3-Port, 25', with 10' Floats (2) / Pipe Clamp, Sealing Plug
	36E ■	EZconnex® 3-Port, 50', with 10' Floats (2) / Pipe Clamp, Sealing Plug
	36G ■	EZconnex® 3-Port, 25', with 20' Floats (2) / Pipe Clamp, Sealing Plug
	36H ■	EZconnex® 3-Port, 50', with 20' Floats (2) / Pipe Clamp, Sealing Plug

■ EZconnex® mechanically-activated, narrow angle float switches with quick release connections



Documentation of Flow Equalization

Design Flow:	260	Pump Run Time:	4 min 4 sec
Length of Drainfield:	117	Pump Off Time:	7hr 55m 56sec
% Dose Volue	113%	Pump Submergence Vol:	421
Design Dose Volume:	86.06871	Storage Volume:	256
Measured Delivery Rate:	21.33	Emergency Volume:	260
Suggested Tank Size:	1200	Miminum Tank Size:	937
Gallons/Inch:	21.07	Dose Drawdown (inches):	4.08

Week	Day	Hour	% of Flow	Inflow	Dose Volume	Storage
Week 1	Monday	1:00 AM		0		120
		2:00 AM		0		120
		3:00 AM		0		120
		4:00 AM		0		120
		5:00 AM		0		120
		6:00 AM		0		120
		7:00 AM		0		120
		8:00 AM	5.0%	13	86.06871	46.93129
		9:00 AM	6.0%	15.6		62.53129
		10:00 AM	6.0%	15.6		78.13129
		11:00 AM	6.0%	15.6		93.73129
		12:00 PM	6.0%	15.6		109.33129
		1:00 PM	6.0%	15.6		124.93129
		2:00 PM	6.0%	15.6		140.53129
		3:00 PM	7.0%	18.2		158.73129
		4:00 PM	7.0%	18.2	86.06871	90.86258
		5:00 PM	7.0%	18.2		109.06258
		6:00 PM	7.0%	18.2		127.26258
		7:00 PM	7.0%	18.2		145.46258
		8:00 PM	7.0%	18.2		163.66258
		9:00 PM	6.0%	15.6		179.26258
		10:00 PM	6.0%	15.6		194.86258
		11:00 PM	5.0%	13		207.86258
	Tuesday	12:00 AM		0	86.06871	121.79387
		1:00 AM		0		121.79387
		2:00 AM		0		121.79387
		3:00 AM		0		121.79387
		4:00 AM		0		121.79387
		5:00 AM		0		121.79387
		6:00 AM		0		121.79387
		7:00 AM		0		121.79387
		8:00 AM	5.0%	13	86.06871	48.72516
		9:00 AM	6.0%	15.6		64.32516
		10:00 AM	6.0%	15.6		79.92516
		11:00 AM	6.0%	15.6		95.52516
		12:00 PM	6.0%	15.6		111.12516
		1:00 PM	6.0%	15.6		126.72516

	2:00 PM	6.0%	15.6		142.32516
	3:00 PM	7.0%	18.2		160.52516
	4:00 PM	7.0%	18.2	86.06871	92.65645
	5:00 PM	7.0%	18.2		110.85645
	6:00 PM	7.0%	18.2		129.05645
	7:00 PM	7.0%	18.2		147.25645
	8:00 PM	7.0%	18.2		165.45645
	9:00 PM	6.0%	15.6		181.05645
	10:00 PM	6.0%	15.6		196.65645
	11:00 PM	5.0%	13		209.65645
Wednesday	12:00 AM		0	86.06871	123.58774
	1:00 AM		0		123.58774
	2:00 AM		0		123.58774
	3:00 AM		0		123.58774
	4:00 AM		0		123.58774
	5:00 AM		0		123.58774
	6:00 AM		0		123.58774
	7:00 AM		0		123.58774
	8:00 AM	5.0%	13	86.06871	50.51903
	9:00 AM	6.0%	15.6		66.11903
	10:00 AM	6.0%	15.6		81.71903
	11:00 AM	6.0%	15.6		97.31903
	12:00 PM	6.0%	15.6		112.91903
	1:00 PM	6.0%	15.6		128.51903
	2:00 PM	6.0%	15.6		144.11903
	3:00 PM	7.0%	18.2		162.31903
	4:00 PM	7.0%	18.2	86.06871	94.45032
	5:00 PM	7.0%	18.2		112.65032
	6:00 PM	7.0%	18.2		130.85032
	7:00 PM	7.0%	18.2		149.05032
	8:00 PM	7.0%	18.2		167.25032
	9:00 PM	6.0%	15.6		182.85032
	10:00 PM	6.0%	15.6		198.45032
	11:00 PM	5.0%	13		211.45032
Thursday	12:00 AM		0	86.06871	125.38161
	1:00 AM		0		125.38161
	2:00 AM		0		125.38161
	3:00 AM		0		125.38161
	4:00 AM		0		125.38161
	5:00 AM		0		125.38161
	6:00 AM		0		125.38161
	7:00 AM		0		125.38161
	8:00 AM	5.0%	13	86.06871	52.3129
	9:00 AM	6.0%	15.6		67.9129
	10:00 AM	6.0%	15.6		83.5129
	11:00 AM	6.0%	15.6		99.1129
	12:00 PM	6.0%	15.6		114.7129

	1:00 PM	6.0%	15.6		130.3129
	2:00 PM	6.0%	15.6		145.9129
	3:00 PM	7.0%	18.2		164.1129
	4:00 PM	7.0%	18.2	86.06871	96.24419
	5:00 PM	7.0%	18.2		114.44419
	6:00 PM	7.0%	18.2		132.64419
	7:00 PM	7.0%	18.2		150.84419
	8:00 PM	7.0%	18.2		169.04419
	9:00 PM	6.0%	15.6		184.64419
	10:00 PM	6.0%	15.6		200.24419
	11:00 PM	5.0%	13		213.24419
Friday	12:00 AM		0	86.06871	127.17548
	1:00 AM		0		127.17548
	2:00 AM		0		127.17548
	3:00 AM		0		127.17548
	4:00 AM		0		127.17548
	5:00 AM		0		127.17548
	6:00 AM		0		127.17548
	7:00 AM		0		127.17548
	8:00 AM	5.0%	13	86.06871	54.10677
	9:00 AM	6.0%	15.6		69.70677
	10:00 AM	6.0%	15.6		85.30677
	11:00 AM	6.0%	15.6		100.90677
	12:00 PM	6.0%	15.6		116.50677
	1:00 PM	6.0%	15.6		132.10677
	2:00 PM	6.0%	15.6		147.70677
	3:00 PM	7.0%	18.2		165.90677
	4:00 PM	7.0%	18.2	86.06871	98.03806
	5:00 PM	7.0%	18.2		116.23806
	6:00 PM	7.0%	18.2		134.43806
	7:00 PM	7.0%	18.2		152.63806
	8:00 PM	7.0%	18.2		170.83806
	9:00 PM	6.0%	15.6		186.43806
	10:00 PM	6.0%	15.6		202.03806
	11:00 PM	5.0%	13		215.03806
Saturday	12:00 AM		0	86.06871	128.96935
	1:00 AM		0		128.96935
	2:00 AM		0		128.96935
	3:00 AM		0		128.96935
	4:00 AM		0		128.96935
	5:00 AM		0		128.96935
	6:00 AM		0		128.96935
	7:00 AM		0		128.96935
	8:00 AM	5.0%	13	86.06871	55.90064
	9:00 AM	6.0%	15.6		71.50064
	10:00 AM	6.0%	15.6		87.10064
	11:00 AM	6.0%	15.6		102.70064

	12:00 PM	6.0%	15.6		118.30064
	1:00 PM	6.0%	15.6		133.90064
	2:00 PM	6.0%	15.6		149.50064
	3:00 PM	7.0%	18.2		167.70064
	4:00 PM	7.0%	18.2	86.06871	99.83193
	5:00 PM	7.0%	18.2		118.03193
	6:00 PM	7.0%	18.2		136.23193
	7:00 PM	7.0%	18.2		154.43193
	8:00 PM	7.0%	18.2		172.63193
	9:00 PM	6.0%	15.6		188.23193
	10:00 PM	6.0%	15.6		203.83193
	11:00 PM	5.0%	13		216.83193
Sunday	12:00 AM		0	86.06871	130.76322
	1:00 AM		0		130.76322
	2:00 AM		0		130.76322
	3:00 AM		0		130.76322
	4:00 AM		0		130.76322
	5:00 AM		0		130.76322
	6:00 AM		0		130.76322
	7:00 AM		0		130.76322
	8:00 AM	5.0%	13	86.06871	57.69451
	9:00 AM	6.0%	15.6		73.29451
	10:00 AM	6.0%	15.6		88.89451
	11:00 AM	6.0%	15.6		104.49451
	12:00 PM	6.0%	15.6		120.09451
	1:00 PM	6.0%	15.6		135.69451
	2:00 PM	6.0%	15.6		151.29451
	3:00 PM	7.0%	18.2		169.49451
	4:00 PM	7.0%	18.2	86.06871	101.6258
	5:00 PM	7.0%	18.2		119.8258
	6:00 PM	7.0%	18.2		138.0258
	7:00 PM	7.0%	18.2		156.2258
	8:00 PM	7.0%	18.2		174.4258
	9:00 PM	6.0%	15.6		190.0258
	10:00 PM	6.0%	15.6		205.6258
	11:00 PM	5.0%	13		218.6258
	12:00 AM		0	86.06871	132.55709

Week	Day	Hour	% of Flow	Inflow	Dose Volume	Storage
Week 2	Monday	1:00 AM		0		132.55709
		2:00 AM		0		132.55709
		3:00 AM		0		132.55709
		4:00 AM		0		132.55709
		5:00 AM		0		132.55709
		6:00 AM		0		132.55709
		7:00 AM		0		132.55709
		8:00 AM	5.0%	13	86.06871	59.48838
		9:00 AM	6.0%	15.6		75.08838
		10:00 AM	6.0%	15.6		90.68838
		11:00 AM	6.0%	15.6		106.28838
		12:00 PM	6.0%	15.6		121.88838
		1:00 PM	6.0%	15.6		137.48838
		2:00 PM	6.0%	15.6		153.08838
		3:00 PM	7.0%	18.2		171.28838
		4:00 PM	7.0%	18.2	86.06871	103.41967
		5:00 PM	7.0%	18.2		121.61967
		6:00 PM	7.0%	18.2		139.81967
		7:00 PM	7.0%	18.2		158.01967
		8:00 PM	7.0%	18.2		176.21967
		9:00 PM	6.0%	15.6		191.81967
		10:00 PM	6.0%	15.6		207.41967
		11:00 PM	5.0%	13		220.41967
	Tuesday	12:00 AM		0	86.06871	134.35096
		1:00 AM		0		134.35096
		2:00 AM		0		134.35096
		3:00 AM		0		134.35096
		4:00 AM		0		134.35096
		5:00 AM		0		134.35096
		6:00 AM		0		134.35096
		7:00 AM		0		134.35096
		8:00 AM	5.0%	13	86.06871	61.28225
		9:00 AM	6.0%	15.6		76.88225
		10:00 AM	6.0%	15.6		92.48225
		11:00 AM	6.0%	15.6		108.08225
		12:00 PM	6.0%	15.6		123.68225
		1:00 PM	6.0%	15.6		139.28225

	2:00 PM	6.0%	15.6		154.88225
	3:00 PM	7.0%	18.2		173.08225
	4:00 PM	7.0%	18.2	86.06871	105.21354
	5:00 PM	7.0%	18.2		123.41354
	6:00 PM	7.0%	18.2		141.61354
	7:00 PM	7.0%	18.2		159.81354
	8:00 PM	7.0%	18.2		178.01354
	9:00 PM	6.0%	15.6		193.61354
	10:00 PM	6.0%	15.6		209.21354
	11:00 PM	5.0%	13		222.21354
Wednesday	12:00 AM		0	86.06871	136.14483
	1:00 AM		0		136.14483
	2:00 AM		0		136.14483
	3:00 AM		0		136.14483
	4:00 AM		0		136.14483
	5:00 AM		0		136.14483
	6:00 AM		0		136.14483
	7:00 AM		0		136.14483
	8:00 AM	5.0%	13	86.06871	63.07612
	9:00 AM	6.0%	15.6		78.67612
	10:00 AM	6.0%	15.6		94.27612
	11:00 AM	6.0%	15.6		109.87612
	12:00 PM	6.0%	15.6		125.47612
	1:00 PM	6.0%	15.6		141.07612
	2:00 PM	6.0%	15.6		156.67612
	3:00 PM	7.0%	18.2		174.87612
	4:00 PM	7.0%	18.2	86.06871	107.00741
	5:00 PM	7.0%	18.2		125.20741
	6:00 PM	7.0%	18.2		143.40741
	7:00 PM	7.0%	18.2		161.60741
	8:00 PM	7.0%	18.2		179.80741
	9:00 PM	6.0%	15.6		195.40741
	10:00 PM	6.0%	15.6		211.00741
	11:00 PM	5.0%	13		224.00741
Thursday	12:00 AM		0	86.06871	137.9387
	1:00 AM		0		137.9387
	2:00 AM		0		137.9387
	3:00 AM		0		137.9387
	4:00 AM		0		137.9387
	5:00 AM		0		137.9387
	6:00 AM		0		137.9387
	7:00 AM		0		137.9387
	8:00 AM	5.0%	13	86.06871	64.86999
	9:00 AM	6.0%	15.6		80.46999
	10:00 AM	6.0%	15.6		96.06999
	11:00 AM	6.0%	15.6		111.66999
	12:00 PM	6.0%	15.6		127.26999

	1:00 PM	6.0%	15.6		142.86999
	2:00 PM	6.0%	15.6		158.46999
	3:00 PM	7.0%	18.2		176.66999
	4:00 PM	7.0%	18.2	86.06871	108.80128
	5:00 PM	7.0%	18.2		127.00128
	6:00 PM	7.0%	18.2		145.20128
	7:00 PM	7.0%	18.2		163.40128
	8:00 PM	7.0%	18.2		181.60128
	9:00 PM	6.0%	15.6		197.20128
	10:00 PM	6.0%	15.6		212.80128
	11:00 PM	5.0%	13		225.80128
Friday	12:00 AM		0	86.06871	139.73257
	1:00 AM		0		139.73257
	2:00 AM		0		139.73257
	3:00 AM		0		139.73257
	4:00 AM		0		139.73257
	5:00 AM		0		139.73257
	6:00 AM		0		139.73257
	7:00 AM		0		139.73257
	8:00 AM	5.0%	13	86.06871	66.66386
	9:00 AM	6.0%	15.6		82.26386
	10:00 AM	6.0%	15.6		97.86386
	11:00 AM	6.0%	15.6		113.46386
	12:00 PM	6.0%	15.6		129.06386
	1:00 PM	6.0%	15.6		144.66386
	2:00 PM	6.0%	15.6		160.26386
	3:00 PM	7.0%	18.2		178.46386
	4:00 PM	7.0%	18.2	86.06871	110.59515
	5:00 PM	7.0%	18.2		128.79515
	6:00 PM	7.0%	18.2		146.99515
	7:00 PM	7.0%	18.2		165.19515
	8:00 PM	7.0%	18.2		183.39515
	9:00 PM	6.0%	15.6		198.99515
	10:00 PM	6.0%	15.6		214.59515
	11:00 PM	5.0%	13		227.59515
Saturday	12:00 AM		0	86.06871	141.52644
	1:00 AM		0		141.52644
	2:00 AM		0		141.52644
	3:00 AM		0		141.52644
	4:00 AM		0		141.52644
	5:00 AM		0		141.52644
	6:00 AM		0		141.52644
	7:00 AM		0		141.52644
	8:00 AM	5.0%	13	86.06871	68.45773
	9:00 AM	6.0%	15.6		84.05773
	10:00 AM	6.0%	15.6		99.65773
	11:00 AM	6.0%	15.6		115.25773

	12:00 PM	6.0%	15.6		130.85773
	1:00 PM	6.0%	15.6		146.45773
	2:00 PM	6.0%	15.6		162.05773
	3:00 PM	7.0%	18.2		180.25773
	4:00 PM	7.0%	18.2	86.06871	112.38902
	5:00 PM	7.0%	18.2		130.58902
	6:00 PM	7.0%	18.2		148.78902
	7:00 PM	7.0%	18.2		166.98902
	8:00 PM	7.0%	18.2		185.18902
	9:00 PM	6.0%	15.6		200.78902
	10:00 PM	6.0%	15.6		216.38902
	11:00 PM	5.0%	13		229.38902
Sunday	12:00 AM		0	86.06871	143.32031
	1:00 AM		0		143.32031
	2:00 AM		0		143.32031
	3:00 AM		0		143.32031
	4:00 AM		0		143.32031
	5:00 AM		0		143.32031
	6:00 AM		0		143.32031
	7:00 AM		0		143.32031
	8:00 AM	5.0%	13	86.06871	70.2516
	9:00 AM	6.0%	15.6		85.8516
	10:00 AM	6.0%	15.6		101.4516
	11:00 AM	6.0%	15.6		117.0516
	12:00 PM	6.0%	15.6		132.6516
	1:00 PM	6.0%	15.6		148.2516
	2:00 PM	6.0%	15.6		163.8516
	3:00 PM	7.0%	18.2		182.0516
	4:00 PM	7.0%	18.2	86.06871	114.18289
	5:00 PM	7.0%	18.2		132.38289
	6:00 PM	7.0%	18.2		150.58289
	7:00 PM	7.0%	18.2		168.78289
	8:00 PM	7.0%	18.2		186.98289
	9:00 PM	6.0%	15.6		202.58289
	10:00 PM	6.0%	15.6		218.18289
	11:00 PM	5.0%	13		231.18289
	12:00 AM		0	86.06871	145.11418

Week	Day	Hour	% of Flow	Inflow	Dose Volume	Storage
Week 3	Monday	1:00 AM		0		145.11418
		2:00 AM		0		145.11418
		3:00 AM		0		145.11418
		4:00 AM		0		145.11418
		5:00 AM		0		145.11418
		6:00 AM		0		145.11418
		7:00 AM		0		145.11418
		8:00 AM	5.0%	13	86.06871	72.04547
		9:00 AM	6.0%	15.6		87.64547
		10:00 AM	6.0%	15.6		103.24547
		11:00 AM	6.0%	15.6		118.84547
		12:00 PM	6.0%	15.6		134.44547
		1:00 PM	6.0%	15.6		150.04547
		2:00 PM	6.0%	15.6		165.64547
		3:00 PM	7.0%	18.2		183.84547
		4:00 PM	7.0%	18.2	86.06871	115.97676
		5:00 PM	7.0%	18.2		134.17676
		6:00 PM	7.0%	18.2		152.37676
		7:00 PM	7.0%	18.2		170.57676
		8:00 PM	7.0%	18.2		188.77676
		9:00 PM	6.0%	15.6		204.37676
		10:00 PM	6.0%	15.6		219.97676
		11:00 PM	5.0%	13		232.97676
	Tuesday	12:00 AM		0	86.06871	146.90805
		1:00 AM		0		146.90805
		2:00 AM		0		146.90805
		3:00 AM		0		146.90805
		4:00 AM		0		146.90805
		5:00 AM		0		146.90805
		6:00 AM		0		146.90805
		7:00 AM		0		146.90805
		8:00 AM	5.0%	13	86.06871	73.83934
		9:00 AM	6.0%	15.6		89.43934
		10:00 AM	6.0%	15.6		105.03934
		11:00 AM	6.0%	15.6		120.63934
		12:00 PM	6.0%	15.6		136.23934
		1:00 PM	6.0%	15.6		151.83934

	2:00 PM	6.0%	15.6		167.43934
	3:00 PM	7.0%	18.2		185.63934
	4:00 PM	7.0%	18.2	86.06871	117.77063
	5:00 PM	7.0%	18.2		135.97063
	6:00 PM	7.0%	18.2		154.17063
	7:00 PM	7.0%	18.2		172.37063
	8:00 PM	7.0%	18.2		190.57063
	9:00 PM	6.0%	15.6		206.17063
	10:00 PM	6.0%	15.6		221.77063
	11:00 PM	5.0%	13		234.77063
Wednesday	12:00 AM		0	86.06871	148.70192
	1:00 AM		0		148.70192
	2:00 AM		0		148.70192
	3:00 AM		0		148.70192
	4:00 AM		0		148.70192
	5:00 AM		0		148.70192
	6:00 AM		0		148.70192
	7:00 AM		0		148.70192
	8:00 AM	5.0%	13	86.06871	75.63321
	9:00 AM	6.0%	15.6		91.23321
	10:00 AM	6.0%	15.6		106.83321
	11:00 AM	6.0%	15.6		122.43321
	12:00 PM	6.0%	15.6		138.03321
	1:00 PM	6.0%	15.6		153.63321
	2:00 PM	6.0%	15.6		169.23321
	3:00 PM	7.0%	18.2		187.43321
	4:00 PM	7.0%	18.2	86.06871	119.5645
	5:00 PM	7.0%	18.2		137.7645
	6:00 PM	7.0%	18.2		155.9645
	7:00 PM	7.0%	18.2		174.1645
	8:00 PM	7.0%	18.2		192.3645
	9:00 PM	6.0%	15.6		207.9645
	10:00 PM	6.0%	15.6		223.5645
	11:00 PM	5.0%	13		236.5645
Thursday	12:00 AM		0	86.06871	150.49579
	1:00 AM		0		150.49579
	2:00 AM		0		150.49579
	3:00 AM		0		150.49579
	4:00 AM		0		150.49579
	5:00 AM		0		150.49579
	6:00 AM		0		150.49579
	7:00 AM		0		150.49579
	8:00 AM	5.0%	13	86.06871	77.42708
	9:00 AM	6.0%	15.6		93.02708
	10:00 AM	6.0%	15.6		108.62708
	11:00 AM	6.0%	15.6		124.22708
	12:00 PM	6.0%	15.6		139.82708

	1:00 PM	6.0%	15.6		155.42708
	2:00 PM	6.0%	15.6		171.02708
	3:00 PM	7.0%	18.2		189.22708
	4:00 PM	7.0%	18.2	86.06871	121.35837
	5:00 PM	7.0%	18.2		139.55837
	6:00 PM	7.0%	18.2		157.75837
	7:00 PM	7.0%	18.2		175.95837
	8:00 PM	7.0%	18.2		194.15837
	9:00 PM	6.0%	15.6		209.75837
	10:00 PM	6.0%	15.6		225.35837
	11:00 PM	5.0%	13		238.35837
Friday	12:00 AM		0	86.06871	152.28966
	1:00 AM		0		152.28966
	2:00 AM		0		152.28966
	3:00 AM		0		152.28966
	4:00 AM		0		152.28966
	5:00 AM		0		152.28966
	6:00 AM		0		152.28966
	7:00 AM		0		152.28966
	8:00 AM	5.0%	13	86.06871	79.22095
	9:00 AM	6.0%	15.6		94.82095
	10:00 AM	6.0%	15.6		110.42095
	11:00 AM	6.0%	15.6		126.02095
	12:00 PM	6.0%	15.6		141.62095
	1:00 PM	6.0%	15.6		157.22095
	2:00 PM	6.0%	15.6		172.82095
	3:00 PM	7.0%	18.2		191.02095
	4:00 PM	7.0%	18.2	86.06871	123.15224
	5:00 PM	7.0%	18.2		141.35224
	6:00 PM	7.0%	18.2		159.55224
	7:00 PM	7.0%	18.2		177.75224
	8:00 PM	7.0%	18.2		195.95224
	9:00 PM	6.0%	15.6		211.55224
	10:00 PM	6.0%	15.6		227.15224
	11:00 PM	5.0%	13		240.15224
Saturday	12:00 AM		0	86.06871	154.08353
	1:00 AM		0		154.08353
	2:00 AM		0		154.08353
	3:00 AM		0		154.08353
	4:00 AM		0		154.08353
	5:00 AM		0		154.08353
	6:00 AM		0		154.08353
	7:00 AM		0		154.08353
	8:00 AM	5.0%	13	86.06871	81.01482
	9:00 AM	6.0%	15.6		96.61482
	10:00 AM	6.0%	15.6		112.21482
	11:00 AM	6.0%	15.6		127.81482

	12:00 PM	6.0%	15.6		143.41482
	1:00 PM	6.0%	15.6		159.01482
	2:00 PM	6.0%	15.6		174.61482
	3:00 PM	7.0%	18.2		192.81482
	4:00 PM	7.0%	18.2	86.06871	124.94611
	5:00 PM	7.0%	18.2		143.14611
	6:00 PM	7.0%	18.2		161.34611
	7:00 PM	7.0%	18.2		179.54611
	8:00 PM	7.0%	18.2		197.74611
	9:00 PM	6.0%	15.6		213.34611
	10:00 PM	6.0%	15.6		228.94611
	11:00 PM	5.0%	13		241.94611
Sunday	12:00 AM		0	86.06871	155.8774
	1:00 AM		0		155.8774
	2:00 AM		0		155.8774
	3:00 AM		0		155.8774
	4:00 AM		0		155.8774
	5:00 AM		0		155.8774
	6:00 AM		0		155.8774
	7:00 AM		0		155.8774
	8:00 AM	5.0%	13	86.06871	82.80869
	9:00 AM	6.0%	15.6		98.40869
	10:00 AM	6.0%	15.6		114.00869
	11:00 AM	6.0%	15.6		129.60869
	12:00 PM	6.0%	15.6		145.20869
	1:00 PM	6.0%	15.6		160.80869
	2:00 PM	6.0%	15.6		176.40869
	3:00 PM	7.0%	18.2		194.60869
	4:00 PM	7.0%	18.2	86.06871	126.73998
	5:00 PM	7.0%	18.2		144.93998
	6:00 PM	7.0%	18.2		163.13998
	7:00 PM	7.0%	18.2		181.33998
	8:00 PM	7.0%	18.2		199.53998
	9:00 PM	6.0%	15.6		215.13998
	10:00 PM	6.0%	15.6		230.73998
	11:00 PM	5.0%	13		243.73998
	12:00 AM		0	86.06871	157.67127

Week	Day	Hour	% of Flow	Inflow	Dose Volume	Storage
Week 4	Monday	1:00 AM		0		157.67127
		2:00 AM		0		157.67127
		3:00 AM		0		157.67127
		4:00 AM		0		157.67127
		5:00 AM		0		157.67127
		6:00 AM		0		157.67127
		7:00 AM		0		157.67127
		8:00 AM	5.0%	13	86.06871	84.60256
		9:00 AM	6.0%	15.6		100.20256
		10:00 AM	6.0%	15.6		115.80256
		11:00 AM	6.0%	15.6		131.40256
		12:00 PM	6.0%	15.6		147.00256
		1:00 PM	6.0%	15.6		162.60256
		2:00 PM	6.0%	15.6		178.20256
		3:00 PM	7.0%	18.2		196.40256
		4:00 PM	7.0%	18.2	86.06871	128.53385
		5:00 PM	7.0%	18.2		146.73385
		6:00 PM	7.0%	18.2		164.93385
		7:00 PM	7.0%	18.2		183.13385
		8:00 PM	7.0%	18.2		201.33385
		9:00 PM	6.0%	15.6		216.93385
		10:00 PM	6.0%	15.6		232.53385
		11:00 PM	5.0%	13		245.53385
	Tuesday	12:00 AM		0	86.06871	159.46514
		1:00 AM		0		159.46514
		2:00 AM		0		159.46514
		3:00 AM		0		159.46514
		4:00 AM		0		159.46514
		5:00 AM		0		159.46514
		6:00 AM		0		159.46514
		7:00 AM		0		159.46514
		8:00 AM	5.0%	13	86.06871	86.39643
		9:00 AM	6.0%	15.6		101.99643
		10:00 AM	6.0%	15.6		117.59643
		11:00 AM	6.0%	15.6		133.19643
		12:00 PM	6.0%	15.6		148.79643
		1:00 PM	6.0%	15.6		164.39643

	2:00 PM	6.0%	15.6		179.99643
	3:00 PM	7.0%	18.2		198.19643
	4:00 PM	7.0%	18.2	86.06871	130.32772
	5:00 PM	7.0%	18.2		148.52772
	6:00 PM	7.0%	18.2		166.72772
	7:00 PM	7.0%	18.2		184.92772
	8:00 PM	7.0%	18.2		203.12772
	9:00 PM	6.0%	15.6		218.72772
	10:00 PM	6.0%	15.6		234.32772
	11:00 PM	5.0%	13		247.32772
Wednesday	12:00 AM		0	86.06871	161.25901
	1:00 AM		0		161.25901
	2:00 AM		0		161.25901
	3:00 AM		0		161.25901
	4:00 AM		0		161.25901
	5:00 AM		0		161.25901
	6:00 AM		0		161.25901
	7:00 AM		0		161.25901
	8:00 AM	5.0%	13	86.06871	88.1903
	9:00 AM	6.0%	15.6		103.7903
	10:00 AM	6.0%	15.6		119.3903
	11:00 AM	6.0%	15.6		134.9903
	12:00 PM	6.0%	15.6		150.5903
	1:00 PM	6.0%	15.6		166.1903
	2:00 PM	6.0%	15.6		181.7903
	3:00 PM	7.0%	18.2		199.9903
	4:00 PM	7.0%	18.2	86.06871	132.12159
	5:00 PM	7.0%	18.2		150.32159
	6:00 PM	7.0%	18.2		168.52159
	7:00 PM	7.0%	18.2		186.72159
	8:00 PM	7.0%	18.2		204.92159
	9:00 PM	6.0%	15.6		220.52159
	10:00 PM	6.0%	15.6		236.12159
	11:00 PM	5.0%	13		249.12159
Thursday	12:00 AM		0	86.06871	163.05288
	1:00 AM		0		163.05288
	2:00 AM		0		163.05288
	3:00 AM		0		163.05288
	4:00 AM		0		163.05288
	5:00 AM		0		163.05288
	6:00 AM		0		163.05288
	7:00 AM		0		163.05288
	8:00 AM	5.0%	13	86.06871	89.98417
	9:00 AM	6.0%	15.6		105.58417
	10:00 AM	6.0%	15.6		121.18417
	11:00 AM	6.0%	15.6		136.78417
	12:00 PM	6.0%	15.6		152.38417

	1:00 PM	6.0%	15.6		167.98417
	2:00 PM	6.0%	15.6		183.58417
	3:00 PM	7.0%	18.2		201.78417
	4:00 PM	7.0%	18.2	86.06871	133.91546
	5:00 PM	7.0%	18.2		152.11546
	6:00 PM	7.0%	18.2		170.31546
	7:00 PM	7.0%	18.2		188.51546
	8:00 PM	7.0%	18.2		206.71546
	9:00 PM	6.0%	15.6		222.31546
	10:00 PM	6.0%	15.6		237.91546
	11:00 PM	5.0%	13		250.91546
Friday	12:00 AM		0	86.06871	164.84675
	1:00 AM		0		164.84675
	2:00 AM		0		164.84675
	3:00 AM		0		164.84675
	4:00 AM		0		164.84675
	5:00 AM		0		164.84675
	6:00 AM		0		164.84675
	7:00 AM		0		164.84675
	8:00 AM	5.0%	13	86.06871	91.77804
	9:00 AM	6.0%	15.6		107.37804
	10:00 AM	6.0%	15.6		122.97804
	11:00 AM	6.0%	15.6		138.57804
	12:00 PM	6.0%	15.6		154.17804
	1:00 PM	6.0%	15.6		169.77804
	2:00 PM	6.0%	15.6		185.37804
	3:00 PM	7.0%	18.2		203.57804
	4:00 PM	7.0%	18.2	86.06871	135.70933
	5:00 PM	7.0%	18.2		153.90933
	6:00 PM	7.0%	18.2		172.10933
	7:00 PM	7.0%	18.2		190.30933
	8:00 PM	7.0%	18.2		208.50933
	9:00 PM	6.0%	15.6		224.10933
	10:00 PM	6.0%	15.6		239.70933
	11:00 PM	5.0%	13		252.70933
Saturday	12:00 AM		0	86.06871	166.64062
	1:00 AM		0		166.64062
	2:00 AM		0		166.64062
	3:00 AM		0		166.64062
	4:00 AM		0		166.64062
	5:00 AM		0		166.64062
	6:00 AM		0		166.64062
	7:00 AM		0		166.64062
	8:00 AM	5.0%	13	86.06871	93.57191
	9:00 AM	6.0%	15.6		109.17191
	10:00 AM	6.0%	15.6		124.77191
	11:00 AM	6.0%	15.6		140.37191

	12:00 PM	6.0%	15.6		155.97191
	1:00 PM	6.0%	15.6		171.57191
	2:00 PM	6.0%	15.6		187.17191
	3:00 PM	7.0%	18.2		205.37191
	4:00 PM	7.0%	18.2	86.06871	137.5032
	5:00 PM	7.0%	18.2		155.7032
	6:00 PM	7.0%	18.2		173.9032
	7:00 PM	7.0%	18.2		192.1032
	8:00 PM	7.0%	18.2		210.3032
	9:00 PM	6.0%	15.6		225.9032
	10:00 PM	6.0%	15.6		241.5032
	11:00 PM	5.0%	13		254.5032
Sunday	12:00 AM		0	86.06871	168.43449
	1:00 AM		0		168.43449
	2:00 AM		0		168.43449
	3:00 AM		0		168.43449
	4:00 AM		0		168.43449
	5:00 AM		0		168.43449
	6:00 AM		0		168.43449
	7:00 AM		0		168.43449
	8:00 AM	5.0%	13	86.06871	95.36578
	9:00 AM	6.0%	15.6		110.96578
	10:00 AM	6.0%	15.6		126.56578
	11:00 AM	6.0%	15.6		142.16578
	12:00 PM	6.0%	15.6		157.76578
	1:00 PM	6.0%	15.6		173.36578
	2:00 PM	6.0%	15.6		188.96578
	3:00 PM	7.0%	18.2		207.16578
	4:00 PM	7.0%	18.2	86.06871	139.29707
	5:00 PM	7.0%	18.2		157.49707
	6:00 PM	7.0%	18.2		175.69707
	7:00 PM	7.0%	18.2		193.89707
	8:00 PM	7.0%	18.2		212.09707
	9:00 PM	6.0%	15.6		227.69707
	10:00 PM	6.0%	15.6		243.29707
	11:00 PM	5.0%	13		256.29707
	12:00 AM		0	86.06871	170.22836