Advanced Septic Consulting Inc.

Standard Gravity Flow Septic Design @ 11839 Lewis River Rd.

September 19, 2025

Project Number: 25-234

Customer: Chilton Inc. 1760 Down River Dr. Woodland, Washington 98674

Project Location: 11839 Lewis River Rd. Ariel, Washington 98603

Section: 24 Township: 6N Range: 3E

Parcel Number: EM2405006 Acres: 2.01 No. Bedrooms: 3

Type of Water Supply: Proposed Well Septic Tank Size: 1,050 gal.

Distribution Method: Equal Trench Width: 36” Lineal Feet of Drain Line: 200’

Minimum Trench Depth: 6” (Measured from the top of the native soil on the downhill side of the trench)

Maximum Trench Depth: 24” (Measured from the top of the native soil on the uphill side of the trench)

Chilton Inc is planning to sell the home at 11839 Lewis River Rd. With the age and approximate location of the existing drain field, they have decided they would like to replace the system with one meeting current state code.

WATER TREATMENT

Preliminary Draft

LICENSED DESIGNER
EXPIRES 11-17-2026

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Distance to Water Supply: Proposed Well 250'+ East of Proposed Septic Area

Site Characteristics:

The site is located within USDA-NRCS mapping unit 25 – Cinebar Silt Loam. Typical depth to the water table is more than 80 inches. The site is well drained in the septic areas with no mottling or restrictive layer noted to 56 inches or more. Typical slope ranges from 0 to 5%. The proposed septic area is on a relatively flat site with a slope ranging from 0 to 2%. Vegetation in the septic area mainly consists of grass and fruit trees.

Soil Evaluation:

	Depth	Soil	Type	Structure	Color	Roots	Mottling
Test Hole #1	0-10"	sL	4	3, m, gr	10yr3/2	m/f	None
	10-34"	sL	4	3, m, gr	7.5yr4/4	m/f	None
	34-60"	L	4	2, m, sbk	7.5yr4/4	c/f	None
Test Hole #2	0-10"	sL	4	3, m, gr	10yr3/2	m/f	None
	10-34"	sL	4	3, m, gr	7.5yr4/4	m/f	None
	34-60"	L	4	2, m, sbk	7.5yr4/4	c/f	None
Test Hole #3	0-14"	sL	4	3, m, gr	10yr3/2	m/f	None
	14-40"	sL	4	3, m, gr	7.5yr4/4	m/f	None
	40-60"	L	4	2, m, sbk	7.5yr4/4	c/f	None
Test Hole #4	0-14"	sL	4	3, m, gr	10yr3/2	m/f	None
	14-36"	sL	4	3, m, gr	7.5yr4/4	m/f	None
	36-56"	L	4	2, m, sbk	7.5yr4/4	c/f	None

Design Requirements:

Based upon the evaluation performed on October 26, 2022 it is my determination that the primary septic area is adequate for a Standard Gravity Flow system meeting Treatment Level E to service the on-site septic needs of the proposed home.

The primary area will require 600 sq. ft. of drain field and 1,500 sq. ft. of land area.

The reserve area has been designated for a Standard Gravity Flow system meeting Treatment Level E and will require 600 sq. ft. of drain field and 1,500 sq. ft. of land area.

Other comments or concerns:

Preliminary Draft

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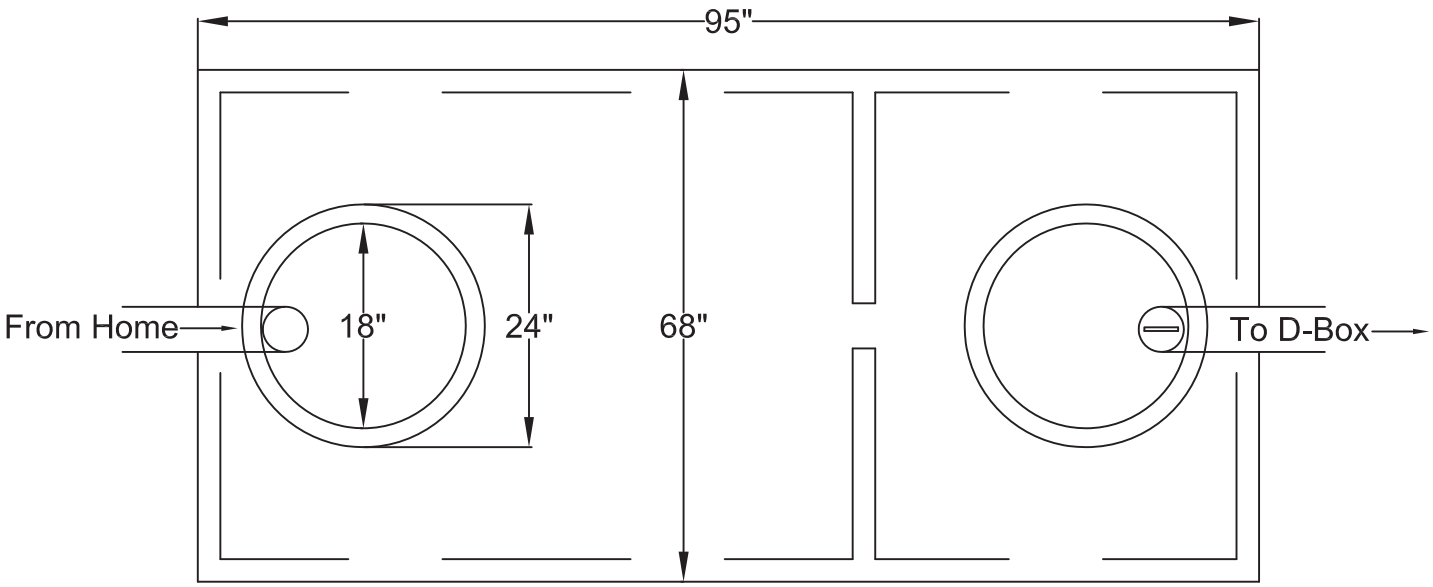
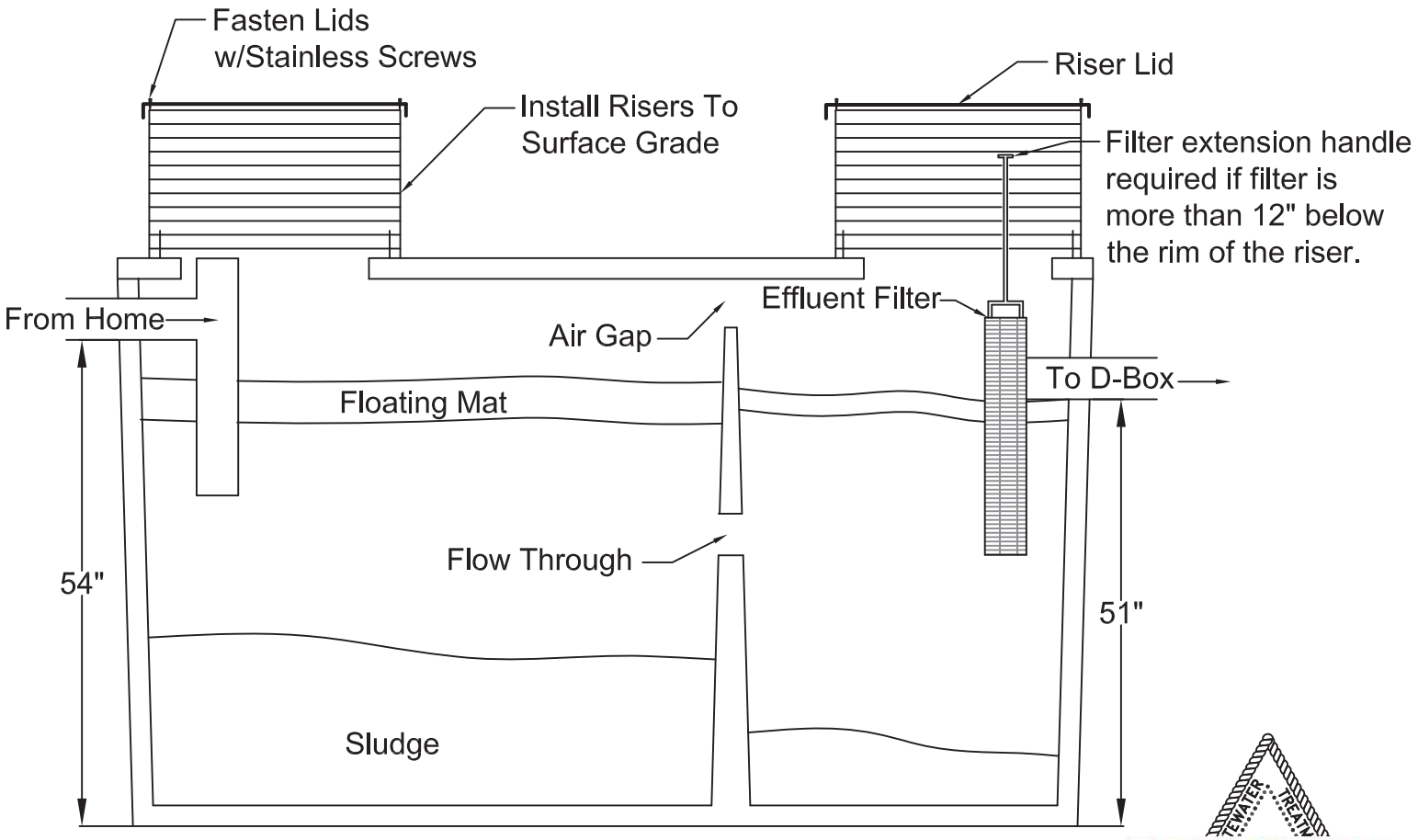
2 Compartment 1,050 gal. Septic Tank Detail

Manufactured by Sound Placement Services



Top View



Side View

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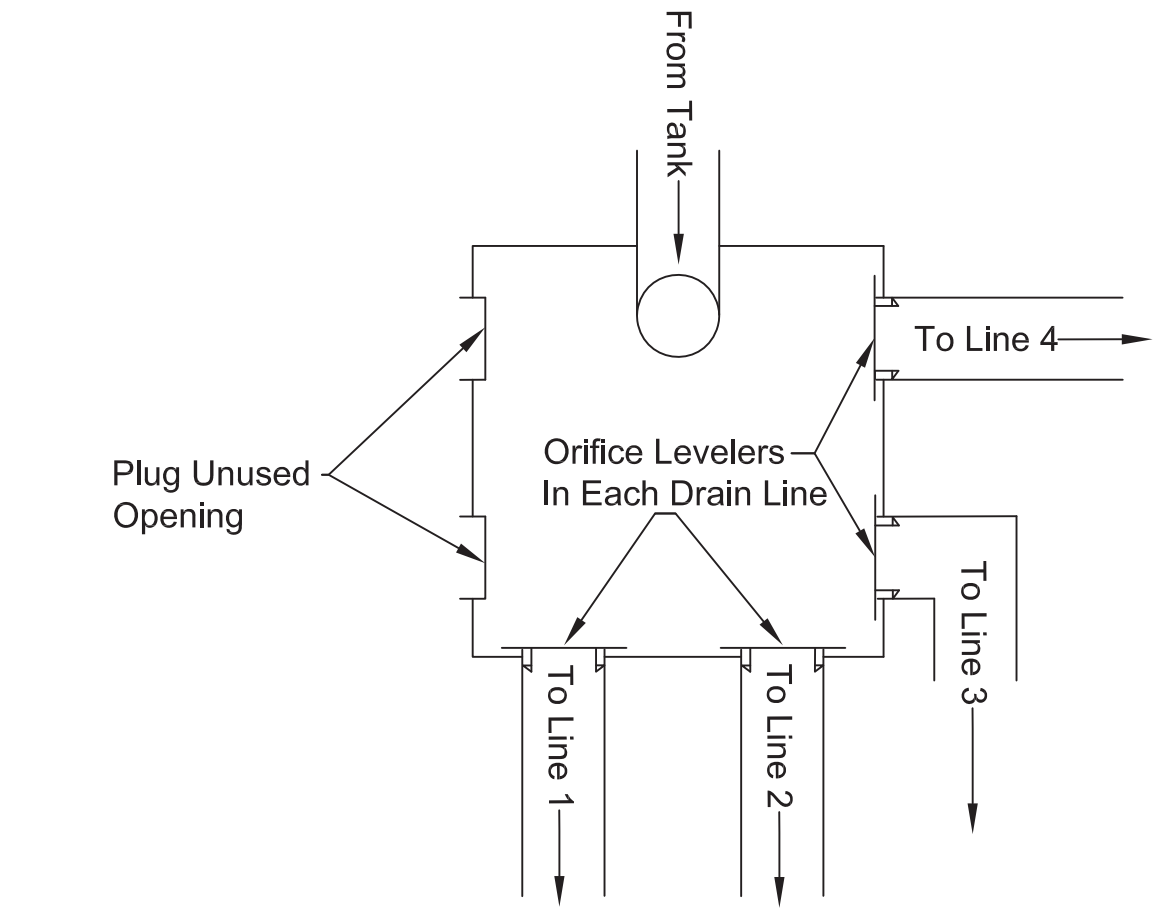
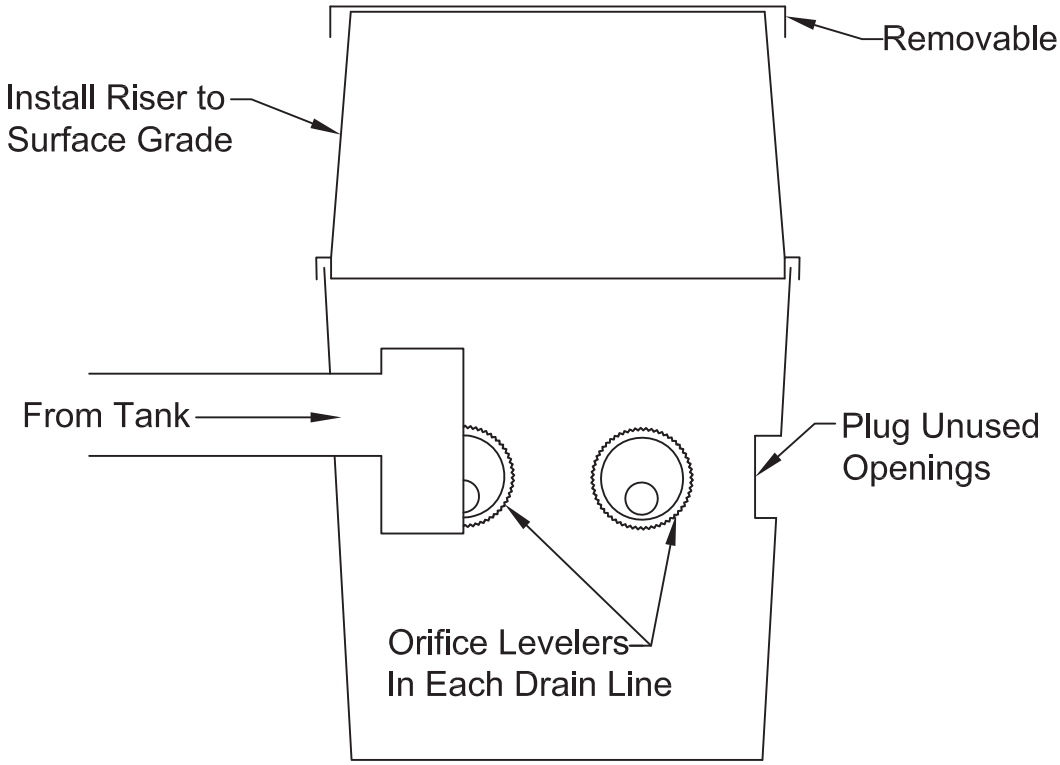
		Drawing: 1	NTS

Typical 7 Hole Distribution Box





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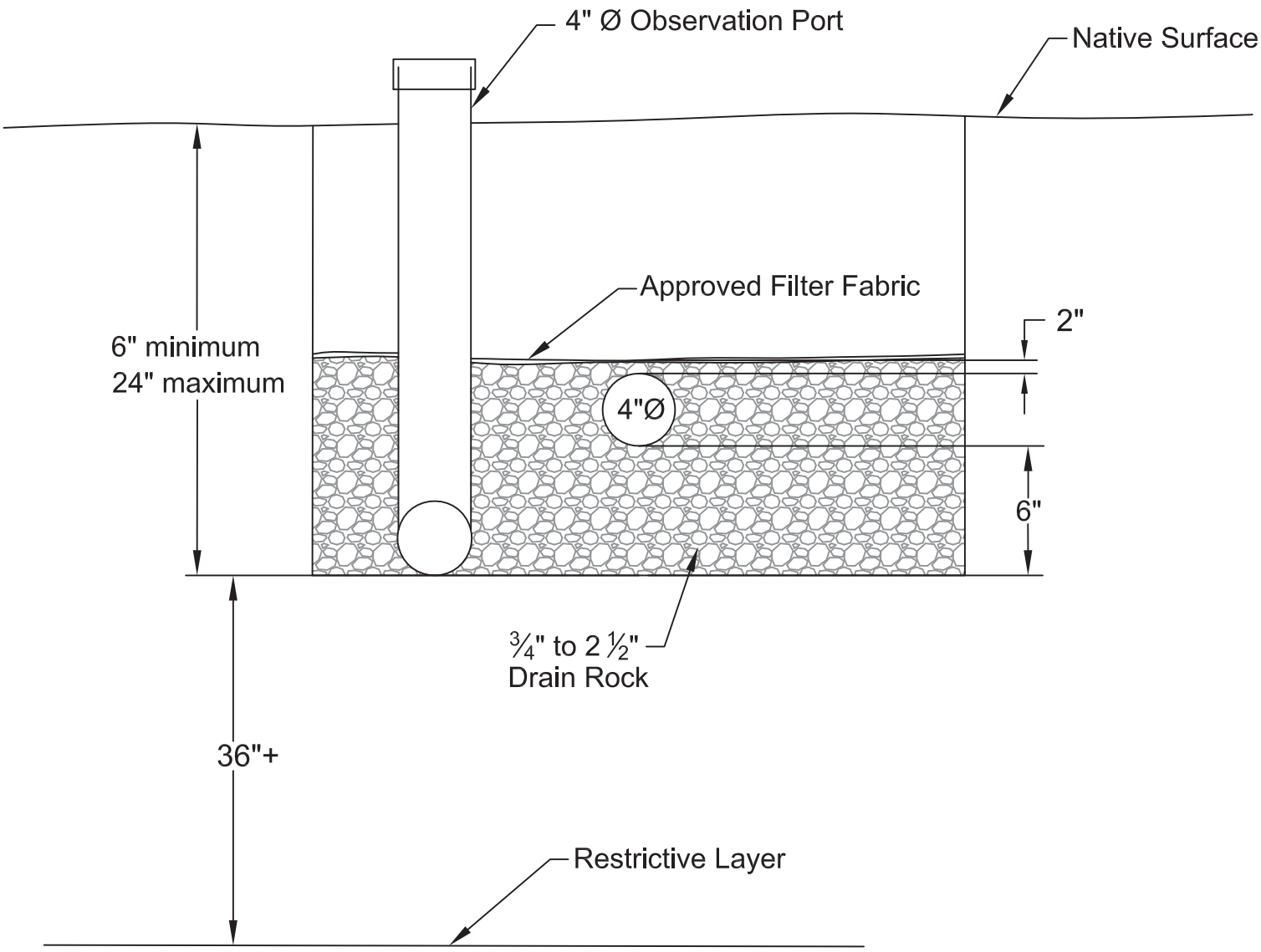
Pipe and Gravel Drain Line Cross Section



Please Note: Laterals are to be installed level and on contour. Trenches are to be level to within ½" along the entire lateral. The maximum trench depth is measured from the native surface down to the bottom of the drain line trench at the highest point in the drain line installation. The minimum trench depth is measured from the native surface down to the bottom of the drain line trench at the lowest point in the drain line installation. A minimum of 12" of cover must be over the drain lines upon backfill of the system.

WATER TREA

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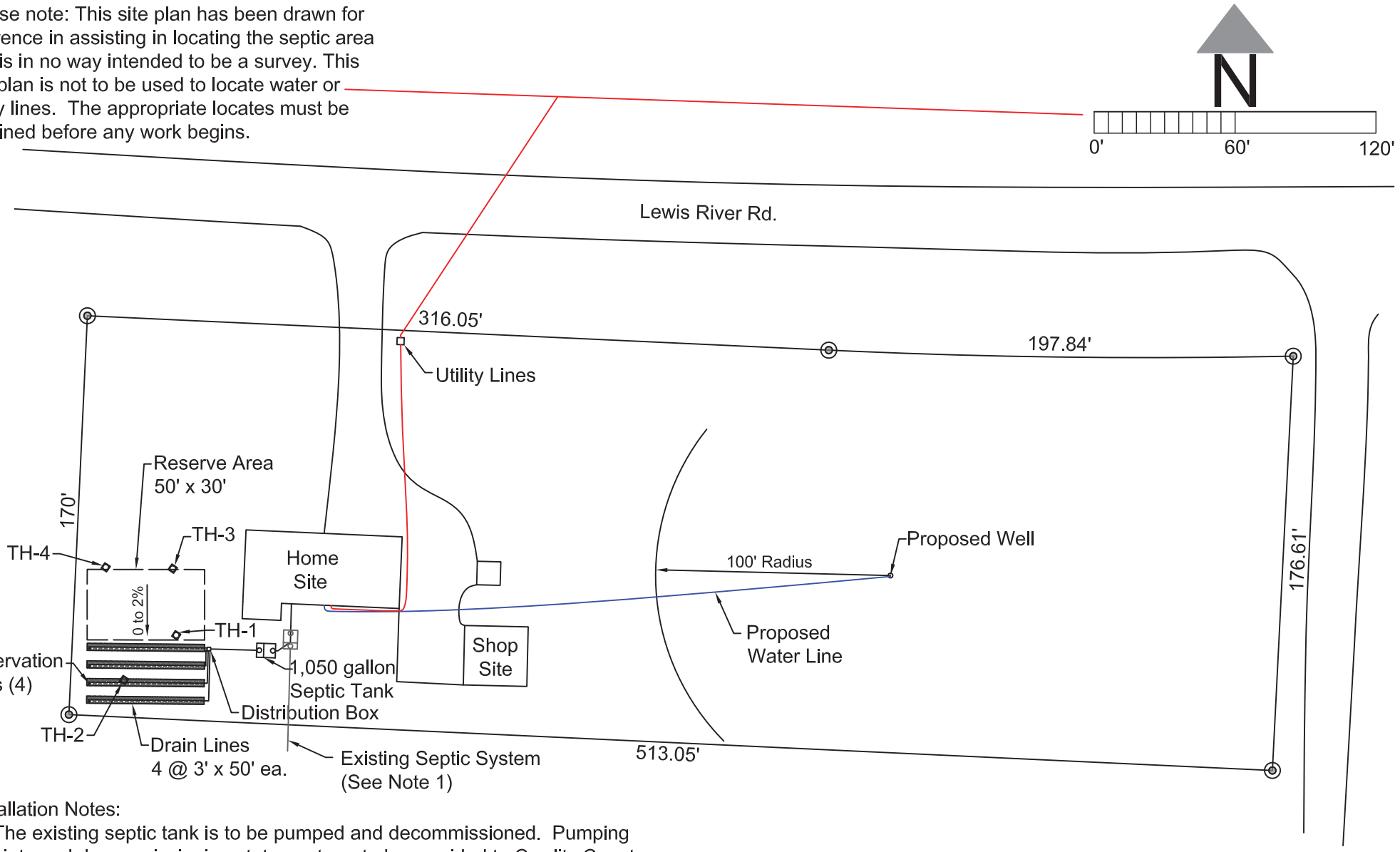
		Drawing: 3	NTS

Please note: This site plan has been drawn for reference in assisting in locating the septic area and is in no way intended to be a survey. This site plan is not to be used to locate water or utility lines. The appropriate locates must be obtained before any work begins.



Installation Notes:

1.) The existing septic tank is to be pumped and decommissioned. Pumping receipts and decommissioning statement are to be provided to Cowlitz County EHU prior to final approval. The existing drain lines are to be abandoned in place.
2.) Maintain a minimum 5' setback from foundations to septic tank.
3.) Maintain a minimum 10' setback from drain lines to building foundation.
4.) Install drain lines on 7.5' centers (6.5' minimum) and running with contour.
5.) Cleanouts are to be placed on the sewer lateral at the edge of the foundation.
6.) Maintain a minimum 5' setback from property lines with all septic components.

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		Drawing: 4	Scale: 1" = 60'

WASTEWATER TREATMENT

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O & M Section

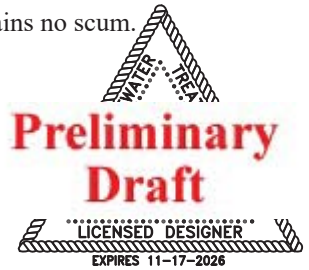
It is essential that your OSS be inspected and maintained on a regular basis. This will catch most problems before they harm the system. Recent amendments to the state and county OSS regulations require periodic system monitoring. On a conventional Gravity Flow system this is a requirement to be performed at least once every 3 years.

Septic Tank Pumping

Wastewater from all plumbing fixtures drains into the septic tank. Heavy solids settle to the bottom where bacterial action produces digested sludge and gases. Lighter solids that float, such as grease, fats, and oils, rise to the top and form a scum layer. Sludge and solids that are not decomposed remain in the septic tank. These solids must be removed periodically by pumping the tank. Septic tank pumping is only one aspect of OSS maintenance, but it is the first line of defense for your OSS and should not be neglected. The average pumping service interval recommended by the Health Department is 3-5 years. However, this interval depends on a number of factors that can vary greatly from home to home. So this frequency schedule can vary a great deal and is not applicable to all homeowners. A more frequent pumping schedule may be necessary depending on your family's garbage disposal use and cooking and cleaning (especially dish washing) habits. **Inspecting the sludge and scum accumulation annually is the only sure way to determine whether a tank needs to be pumped.** As sludge and scum gradually accumulate, less and less room is available for the sewage coming into the tank. This results in the sewage passing through the tank more and more quickly, allowing less time for scum and solids to separate from the sewage before it leaves the tank, as “effluent”. Therefore the tank becomes decreasingly effective in protecting the down stream components from contaminants. **Tank Pumping is recommended if the total sludge and scum occupy between 25 to 33% of the total tank volume.** Once your characteristic sludge accumulation rate is known, pumping frequency can be adjusted accordingly. The Health Department can supply you with a brochure including information on how to measure accumulated scum and sludge. Measuring the sludge and scum levels can be an awkward process. OSS maintainers or septic tank pumpers can do this for you if you prefer. Making sure your risers remain at surface grade will save time and money when it is time to have them checked or pumped. Current code requires that newly installed tanks have access lids at the surface. You should check your riser seals for any sign of ground water or runoff intrusion if this is present it must be sealed to prevent overloading of the system. Also, you can locate your septic tank by referring to your OSS as-built drawing. If you chose to have this inspection performed contact the Health Department for a list of tank pumpers currently certified to operate in your County. You may want to call several, because prices and details of the service provided may vary. **When the septic tank is pumped, make sure that both septic tank compartments are pumped and the effluent filter is cleaned.**

Tank Baffles

Septic tank baffles are devices within the septic tank that are essential to keep the solids in the tank, where they belong. Baffles also separate the floating scum layer from the liquid layer, promote settling of solids to the bottom of the tank, and allow only clarified liquid to leave the tank. There are two baffles located in a two-compartment septic tank -- one on the inlet, where the sewage enters the tank and one on the outlet, where the effluent leaves the tank. Tank baffles should be inspected whenever the sludge and scum levels are measured. To thoroughly inspect the baffles, it is sometimes necessary to pump the tank. A broken outlet baffle can allow floating scum to leave the tank through its outlet, so that the tank retains no scum.



This defeats the purpose of the tank and makes it appear that it does not require pumping. Sewage scum entering a drain field can ruin it. Baffles must be replaced if they are in poor condition or missing. **The outlet baffle must contain a filter** to keep any solids larger than 1/8th inch from passing out of the tank. This filter will need periodic checking and cleaning. If the filter clogs, plumbing drains may drain slowly or sewage may backup in the house. The filter baffle should be checked, and generally cleaned, annually, e.g., as part of your annual septic tank inspection, which you can do yourself. No water should be used inside the house while the filter is removed for checking and cleaning. This will minimize the escape of sludge and scum from the septic tank. Cleaning the filter generally involves simply removing it and hosing it off into the access for the inlet compartment of the tank.

Distribution Box

The Distribution Box is the next component in line with the tank. This is where the effluent is sent to the drainlines. The Distribution Box lids are required to have risers to surface grade. This is necessary for proper inspections and future adjustments. Inside the Distribution Box there are adjustable Weirs located in each of the outlet pipes. These are used to balance and regulate flow to the drainlines. To properly adjust a Distribution Box you twist the Weirs to a point that all outlets are receiving effluent at the same levels. As the system ages you must open the observation ports on the drain lines and inspect the ponding levels in the drainlines. If some lines have standing water in them (ponding) you can rotate the Weirs in the distribution box to limit the flow to the drainline and allow it time to rest. Once the ponding is no longer present rebalance the Distribution Box.

Observation Ports

The observation ports are located at the ends of the drain lines and are used to monitor ponding levels in the drain lines. To do this remove the lids from the stand pipes and use a measuring stick inserted in the port to determine the amount of standing water. These ports are critical maintenance tools and must remain at surface grade and in good working condition.

The following is practical advice concerning how to extend the operating life of the OSS.

Additives

The Health Department recommends against the use of septic tank additives of any type. Septic tank additives will not reduce the need for septic tank pumping. Some additives may actually cause solids to be carried out of the septic tank and into a drain field. This will begin plugging the laterals in the drain field gradually causing it to fail. Other additives may pass into the soil and pollute the groundwater. In Washington State persons may not use, sell, or distribute any septic system additive unless the Washington State Department of Health (DOH) has reviewed the additive for safety. DOH approval indicates only that an additive is not known to be harmful, not that it is known to be useful. DOH evaluation of additives does not include investigation of the validity of performance claims by manufacturers. Manufacturers' use of the word "approved" is prohibited, but a product may be advertised as "complying with Washington laws regarding harm to public health and water quality."

What Can and Can Not Go Down the Drain

Your OSS is for treatment of typical kitchen, bathroom, and laundry wastewater and should not be used as a disposal site for other types of waste. Any materials that do not readily biodegrade within the septic tank should not be flushed down a toilet or poured down a drain. This would include sanitary napkins, tampons, coffee grounds, grease or oils of any kind, hair, "disposable" diapers, cigarette butts, paper towels, paper napkins, newspaper, dental floss, all paints (**latex paint is very bad for filter, baffles, sand filter, sand mound, drain field**), solvents, degreasers, pesticides, or any toxins. Large quantities of disinfectants (e.g., bleach) should also be kept out of your septic tank. Normally spaced clothes washing or household-cleaning chores should not pose a threat to your system. Avoid putting products labeled “Danger” down the drain. This includes caustic oven cleaners and caustic drain cleaners. Drains can often be cleaned using a mix of baking soda and vinegar, followed by boiling water. Prolonged routine use of some types of prescription drugs, such as chemotherapy drugs or antibiotics, may be harmful to your system. If you suspect that drugs might be disrupting your OSS your system maintainer can arrange for sample collection and testing of the system effluent. S/he can check your OSS and determine whether problems are occurring. Early detection will prevent permanent harm. There is also evidence that the repeated, frequent purging associated with the eating disorder bulimia can damage an OSS by making the sewage very acidic, killing bacteria required for normal OSS operation.

Garbage Disposals

It is recommended that a garbage disposal not be used. If you must use it, do so very sparingly. Garbage disposals, by design, use large volumes of water and pass significant quantities of suspended solids into the septic tank. Garbage disposals very commonly overload OSSs. If you use the disposal you will need to have the septic tank pumped much more frequently. Regardless of the frequency of septic tank pumping, garbage disposals will increase the waste concentration. When you consider the total cost associated with operating a garbage disposal, it might be the most expensive appliance in your home.

How Much Water Can the System Handle?

Each OSS is designed based upon a residence's anticipated wastewater production, called the “loading rate”. Loading rate projections are based on the expected maximum number of people that will reside in a house (usually considered to be two people per bedroom) with an average daily wastewater production per bedroom of about 60-75 gallons per day. Designs are performed based on a peak flow of 120 gallons per bedroom per day. Exceeding the expected loading rate can seriously damage the OSS. The normal average monthly water use, as indicated by your water bills (if available), should be no more than about two-thirds of the system’s design loading rate. This will allow for occasional higher peak flows without damaging the OSS. If your water bill indicates that you have been using excessive water, the source of the excess water could be either a leaking plumbing fixture (toilet or faucet). A check of all indoor plumbing fixtures (e.g., toilet tanks) can rule them out as the source. Also, sometimes surface water or ground water leaking into the septic tank can overload a drain field. Surface runoff should always be diverted away from the tank. Groundwater intrusion is a more difficult problem, suggesting tank or piping damage, and you should consult the system designer or installer or an OSS maintenance firm to help with diagnosis and corrective measures. Tank leaks are most common during winter months, when sites are wettest and sealing mastics harden and fail. A test for the level of dissolved oxygen in the septic tank wastewater can often reveal the presence of water leaking into a tank. Ground and surface water typically contain more dissolved oxygen than sewage.

The system will not continue to operate properly at a loading rate higher than that for which it is designed. **The expected average daily flow for your system is expected to be between 180 and 225 gallons per day with a maximum designed loading rate of 360 gallons per day for your OSS.**

A common cause of periodic overloading is saving a number of wastewater generating activities for the weekend, when the laundry, dishwasher, bathtub and shower are used heavily. This overloads the system on weekends while a lower loading rate occurs during the weekdays. These peak load spikes should be avoided by spreading wastewater-producing activities (e.g., clothes washing) evenly throughout the week. **In many cases life styles may need to be adjusted to accommodate living within the limitations of an OSS**. Remember that all OSSs have a limited capacity to treat and dispose of wastewater. Monitoring your family's water use habits will help you to estimate how you are impacting your OSS. This will be especially useful if your home has no water meter. The following are some typical water use figures for various household activities. These figures will help you calculate your families OSS loading rate.

1. Showers (typical) - 25 gallons of water.
2. Clothes washing per load - 40 gallons. (Front loading washers and the new spray-rinse washers use much less.)
3. Dishwasher - 9 gallons per load.
4. Toilet flushing - 1.6 gallons-per-flush toilets are now the standard for new construction.
5. Garbage disposal - 2+ gallons per use.

Water Conservation

It is important that you practice good water use habits to get the maximum life span from your OSS. Laundry washing should be spaced throughout the week and not all done on a single day. Wash only full loads of laundry or dishes. Low flow plumbing fixtures (toilets, faucet aerators, and showerheads) should be installed if not already present in the house. (Low flow fixtures will be present in homes built since 1993.) Water-conserving appliances, such as front-loading clothes washers or the new spray-rinse washers, should be chosen when replacing your appliances. Any water-generating activity should be thought of in terms of its impact on the OSS.

NOTE: You can obtain water conservation pamphlets from the Health Department.

Activities Near the System

You should not build on, excavate, pave, drive over, or allow livestock on any parts of the system, including the reserve area. Particularly critical to a drain field on a sloping site is the area within 30 feet down slope from the drain field. This is the area where most of the treated wastewater will travel as it is absorbed into the native soils. For drain fields on relatively flat, level sites it is important not to compact the soils or alter the site within 30 feet in any direction from the drain field. It is very important that this area remain undisturbed. Homeowners should protect the septic system and drain field and surrounding area and inspect them on a regular basis. Wet spots on or near the system or drain field are potential indicators of advanced problems or OSS failure.

WATER TREAT
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Landscaping and Soil Protection

Grass or vegetation with shallow non-penetrating roots is the best cover for your system and drain field. The grass should be of a shallow rooted but drought resistance type. Perennial rye mixed 50/50 with tall or fine fescue, "Northwest Mix", is a readily available good choice. New blends, which include these grasses along with clover and other broadleaf plants, will stay greener in the summer without watering and fertilizer.

Eco-lawn and *Fleur de Lawn* are two available brands. Since the native, natural soil is required for completing the treatment process, it must not be disturbed or altered. Digging through it or compacting it, e.g., by driving over it, destroys the structure of the soil and greatly reduces its ability to provide sewage treatment. Anyone who has dug a hole and then tried to refill it has witnessed the destruction of soil structure. That is why there rarely seems to be enough dirt left to refill the hole. Sprinkler systems should not be installed in or within about 10 feet from the OSS for three reasons:

(1) Damage to the system by digging into it to install the sprinkler;
(2) The additional water load to the system, especially drain field and/or sand filter, sand mound if applicable
(3) The crossing of sewer and water lines is generally not permitted due to the potential for direct contamination of drinking water with sewage.

With lawn care equipment, such as riding lawn mowers or tractors, be careful not to travel on a drain field when the soil is saturated, as during wet wintertime. Winter landscape work on a drain field should be avoided to minimize frost penetration or compaction. Any landscaping you choose to do must not adversely alter or disturb your drain field or the soils around them. You should not place more than 2' of fill soils over a drain field, or the ground around them. This is measured from the top of your drainlines not your surface grade before the addition of the soil. This will block airflow into a drain field and greatly reduce their effectiveness and shorten their operating lives. Placing concrete or asphalt sections or plastic sheets over a drain field also reduces the supply of oxygen necessary for the sewage treatment process. Placing a vegetable garden over the drain field is not recommended.
IMPORTANT: Do not allow any surface runoff to be directed onto or around a sand filter, sand mound, drain field, or the reserve area. Equally important, do not allow any construction or ground compaction in the reserve area or within 30 feet down slope from the drain field.

In the unlikely event of a failure or malfunction contact Cowlitz County EHU (360-414-5599 x 1-6426), Advanced Septic Consulting Inc. (360-433-5476) and your installer for appropriate actions.

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