HOMEOWNERS AND BUILDERS
ON-SITE WASTEWATER DISPOSAL

CRESCENT COMMUNITIES

North Carolina

SEPTIC SYSTEMS
INFORMATION FOR HOMEOWNERS AND BUILDERS

PREPARED BY: TCW WASTEWATER MANAGEMENT
REVISED: MAY, 2007

CRESCENT COMMUNITIES
ON-SITE WASTEWATER SYSTEM MANAGEMENT PROGRAM

Homeowner's User Guide and Builder Guidelines

INTRODUCTION

The sewage disposal systems have been master-planned to provide effective natural wastewater treatment without compromising any esthetic or environmental issues. Individual on-site systems will be used within Crescent Communities as the chosen method of waste disposal.

Each lot will have its own septic disposal system that has been thoroughly designed specifically for that site. Crescent Communities, has gone to great lengths to retain the services of professionals within the different fields to analyze the soils, design the layouts, specify guidelines for the installations, inspect installations and landscaping, and to provide on-going maintenance for the years to come. All of this is through an operation and management program, overseen by Crescent Communities, to provide on-site systems as reliable as a centralized sewer system.

DEVELOPMENT ANALYSIS

With Crescent Communities' extensive planning of the best utilization of the property, a land plan was developed to maximize the esthetics without compromising any of the ecological or environmental concerns. After extensive and thorough evaluations of available wastewater options, on-site systems proved to be the most viable option for Crescent Communities. On-site septic systems are less obtrusive to the natural topography thus securing values for the future.

ON-SITE SEPTIC SYSTEMS - HOW THEY WORK

Septic systems meet the wastewater management needs of more than fifty percent of North Carolina's households. Over 50,000 systems annually are permitted, more than any other state in the country per capita. Given appropriate site and soil conditions, septic systems can be the most effective for wastewater management because of their simplicity, treatment efficiency and stability.

The septic system consists of a septic tank and a below-ground absorption field, also called a drainfield or a nitrification field. The septic tank is a buried wastewater container commonly made of concrete and usually designed to hold 1,000 gallons or more.

The septic tank's job is to settle solids from wastewater and produce a liquid ready to be treated and disposed of in the drainfield. Although the septic tank removes some pollutants from wastewater, further treatment is required after the effluent leaves the tank.

Properly utilized, soil provides excellent treatment and safe disposal. As the wastewater leaves the septic tank it is distributed either by gravity or lifted by an effluent pump to several nitrification lines or ditches. The wastewater is absorbed into the soil and continues it's treatment, filtering through the soil it eventually "recharges" the groundwater or provides base flows in streams. The partially treated wastewater in a septic system should travel through several feet of soil to provide adequate removal of organisms and other pollutants.

The type of systems that release wastewater into soil is determined by the characteristics of the soil, slope, available space, soil depth over water tables or bedrock and other site-specific factors.

With the proper planning, oversight, installation, landscaping and maintenance these systems can give worry free reliable service.

PLANNING, INSTALLATION AND MAINTENANCE

Successful performance of the septic systems is directly related to the proper planning and installation of the systems and the appropriate periodic maintenance. Crescent Communities has retained TCW Wastewater Management (TCW) to formulate guidelines for the proper management of the septic systems. TCW specializes in on-site wastewater operations and management programs and will be coordinating the efforts of all parties involved in reference to septic systems for Crescent Communities. The septic system program for Crescent Communities is a custom designed program that will insure proper planning, installation and maintenance. Because of the strict guidelines, properly trained contractors are essential in the success of the program. TCW will be providing a continued updated list of "featured septic contractors" that have been certified by TCW to install within Crescent Communities. The purpose is not to exclude anyone from installing within the community but to provide a list for convenience to the builders. The "featured septic contractors" will be those that have been certified by TCW, are abreast of all installation specifications of the management program for Crescent Communities, and provide the required warranties of the "Featured" program.

The operation and maintenance of the septic systems is provided by TCW by an agreement with Crescent Communities Owners Association. Twenty-four hour emergency service will be provided along with educational materials to teach the homeowners how to protect their system performance and longevity. Bi-annual inspections will be made to monitor the performance of the system. A report of each inspection will be provided to the homeowner, Crescent Communities Owners Association, and the local County Environmental Health (where applicable). All of TCW's inspection services will be paid from the homeowner's septic maintenance dues administered by Crescent Communities Owners Association.

SYSTEM DESCRIPTIONS

Two of the most commonly used systems are a ***leaching chamber system and a polystyrene aggregate system***. The gravel-less chamber system has plastic drainfield chambers with open bottoms that provide a large storage area for surges of wastewater. The polystyrene aggregate provides good surface area for biological growth and a dust free aggregate that is commonly a problem with stone aggregate. Both system types have the same design criteria and offer a 25 percent reduction is size compared to that of a conventional stone aggregate system. One variation of these systems is a ***gravity-fed type*** (see figure 1.1) Effluent is received into a distribution box from the septic tank, by gravity flow, and then flows out to several gravel-less drainfield trenches via 3" pvc pipe. Another type is a ***pressurized manifold*** (see figure 1.2). This type consists of a large diameter pressure manifold, which receives effluent from a pump station and redistributes the liquid uniformly to individual field lines. Use of a pressure manifold ensures that each field line receives a predetermined volume of wastewater effluent. The distribution of the water flows via 3" PVC pipe to the gravel-less leaching trenches.

Basic components for a *gravity-fed system* include: a septic tank (1,000 – 1,500 gallons); a distribution box; 3" rigid PVC (for flow to the nitrification trenches); and, the plastic leaching chambers or the polystyrene aggregate for the drainfield trenches.

Basic components for a *pressurized manifold* system include: a septic tank (1,000 – 1,500 gallons); a pumping tank (same size of tank in clay soils); a high water alarm (which sounds if the effluent pump fails); 1/3 – 2 horse power submersible effluent pump; 3 – 6" manifold pipe with small diameter taps; and, 3" rigid pvc (for flow to the nitrification trenches); and the plastic leaching chambers or the polystyrene aggregate for the drainfield trenches.

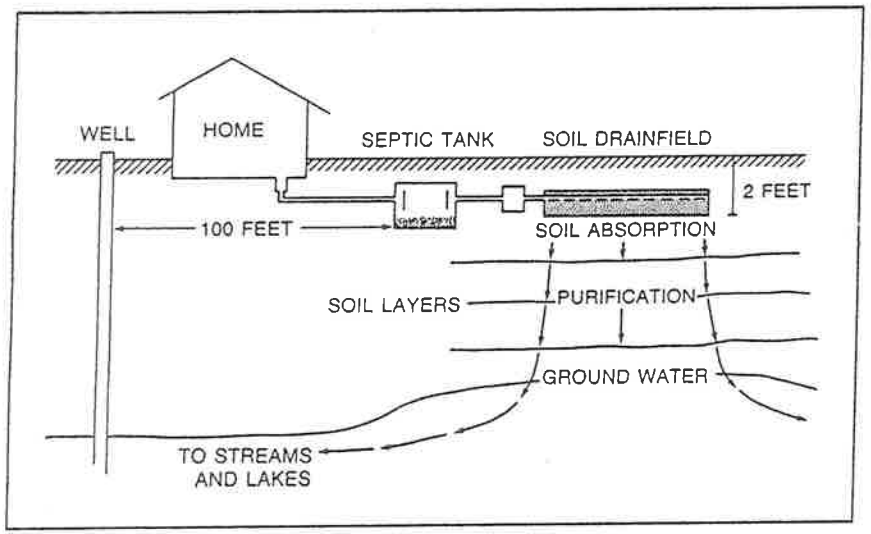
Another type of system that is widely used in Crescent Communities is a *pressure-fed prefabricated permeable block panel system* (see figure 1.3). These systems replace the conventional drainfield trenches with a series of panels of specially designed hollow concrete blocks in gravel-less trenches. Effluent is pumped in controlled doses from the pump tank and moved under pressure through small holes in the pipe to ensure uniform distribution throughout the absorption field. Effluent passes through the porous walls of the blocks and infiltrates into the adjacent sand. Panel block systems are commonly used in rural areas on sites where space is limited for conventional systems.

Basic components for a *block panel* system include: a septic tank (1,000-1,500 gallons); a pumping tank (same size as septic tank in clay soils); a high water alarm (which sounds if the effluent pump fails); 1/3 to ½ horse power submersible effluent pump; 1½ to 3 inch PVC manifold pipe with "Ts" and elbows; 1¼ to 1½ inch PVC laterals with 5/32 to ¼ inch holes usually at 5 ft. intervals; and porous block panels joined together in a three-foot wide trench system backfilled with sand.

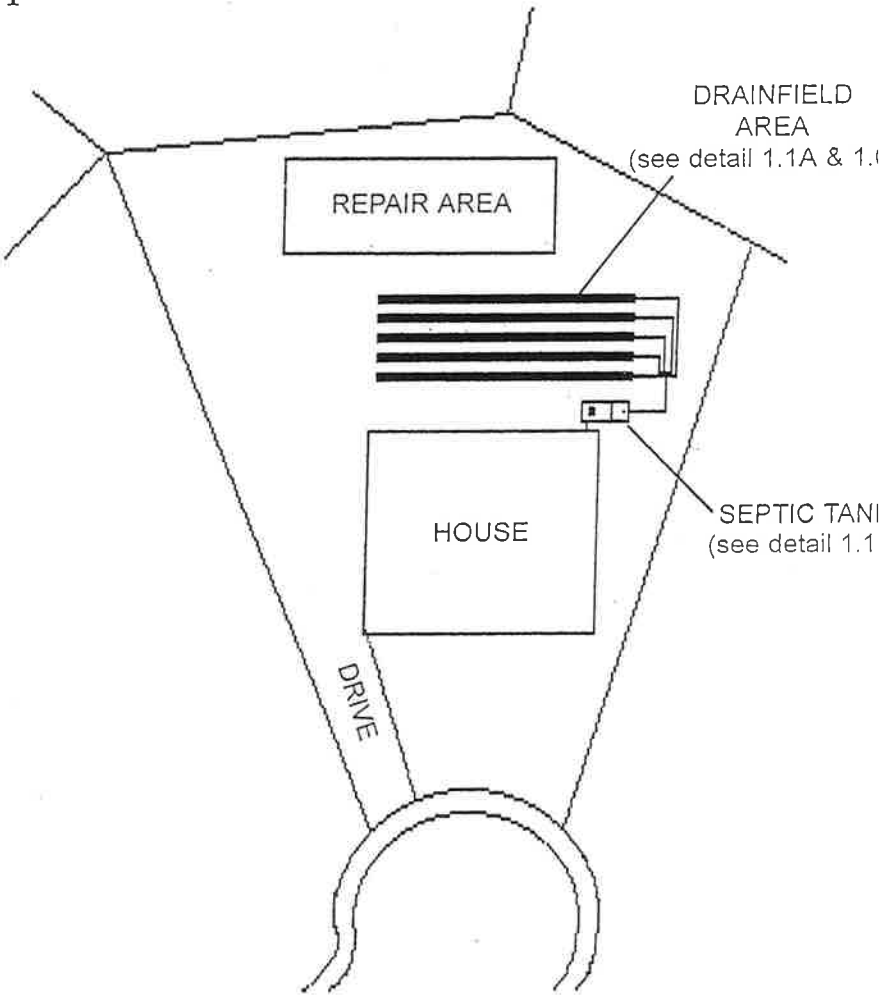
Porous block panels filter out suspended matter before the effluent contacts the soil. Based upon the premise that pretreatment is affected, system size is reduced by 50 percent compared to a standard gravel conventional system under the current state rules.

TYPICAL INTERIOR LOT
SYSTEM TYPE: GRAVITY FED LEACHING CHAMBER AND EZY FLOW POLYSTYRENE

FIGURE 1.1

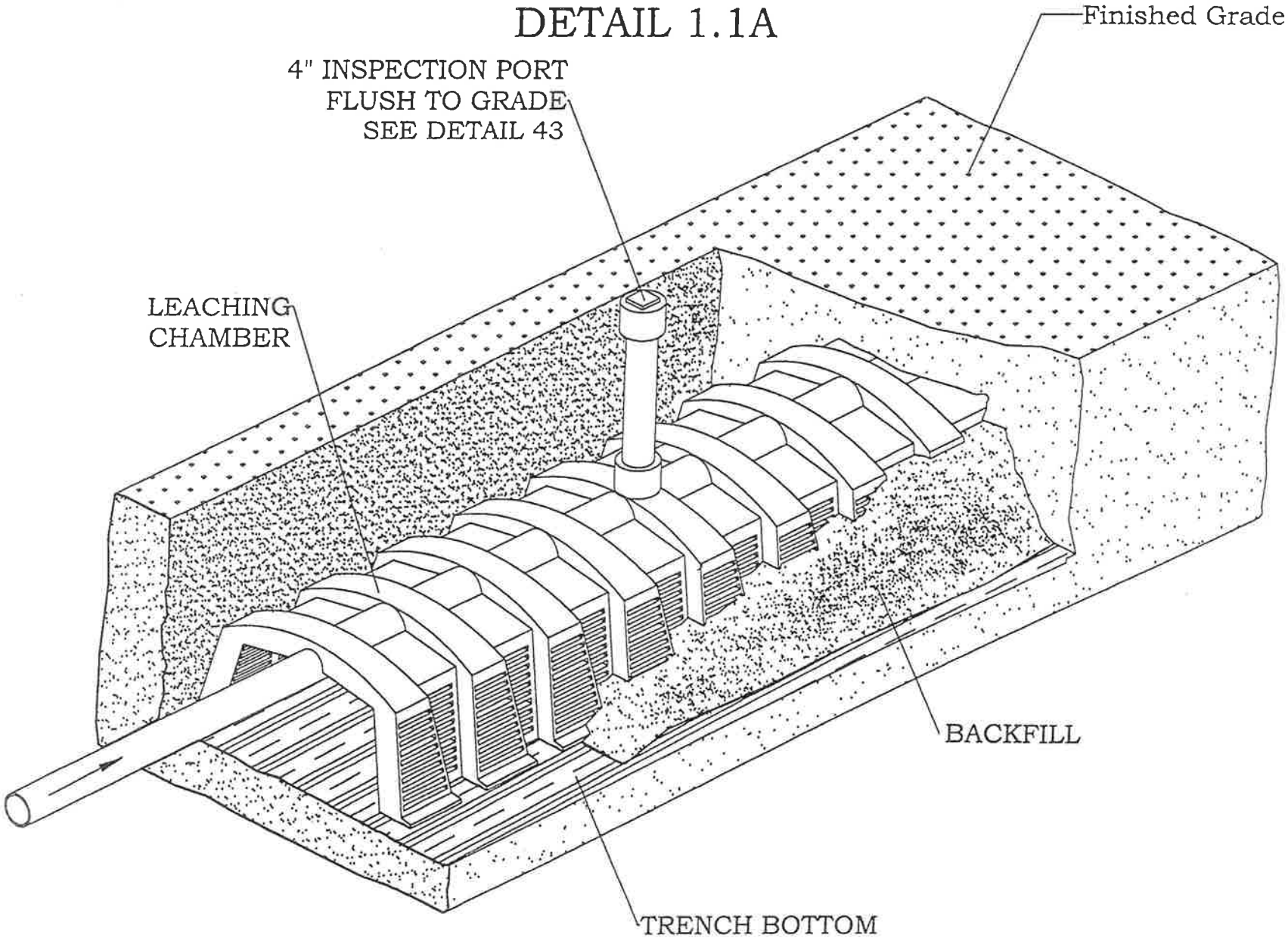


This is an illustration showing the basic wastewater treatment and disposal in the soil. It does not represent the actual placement of any of the system components.

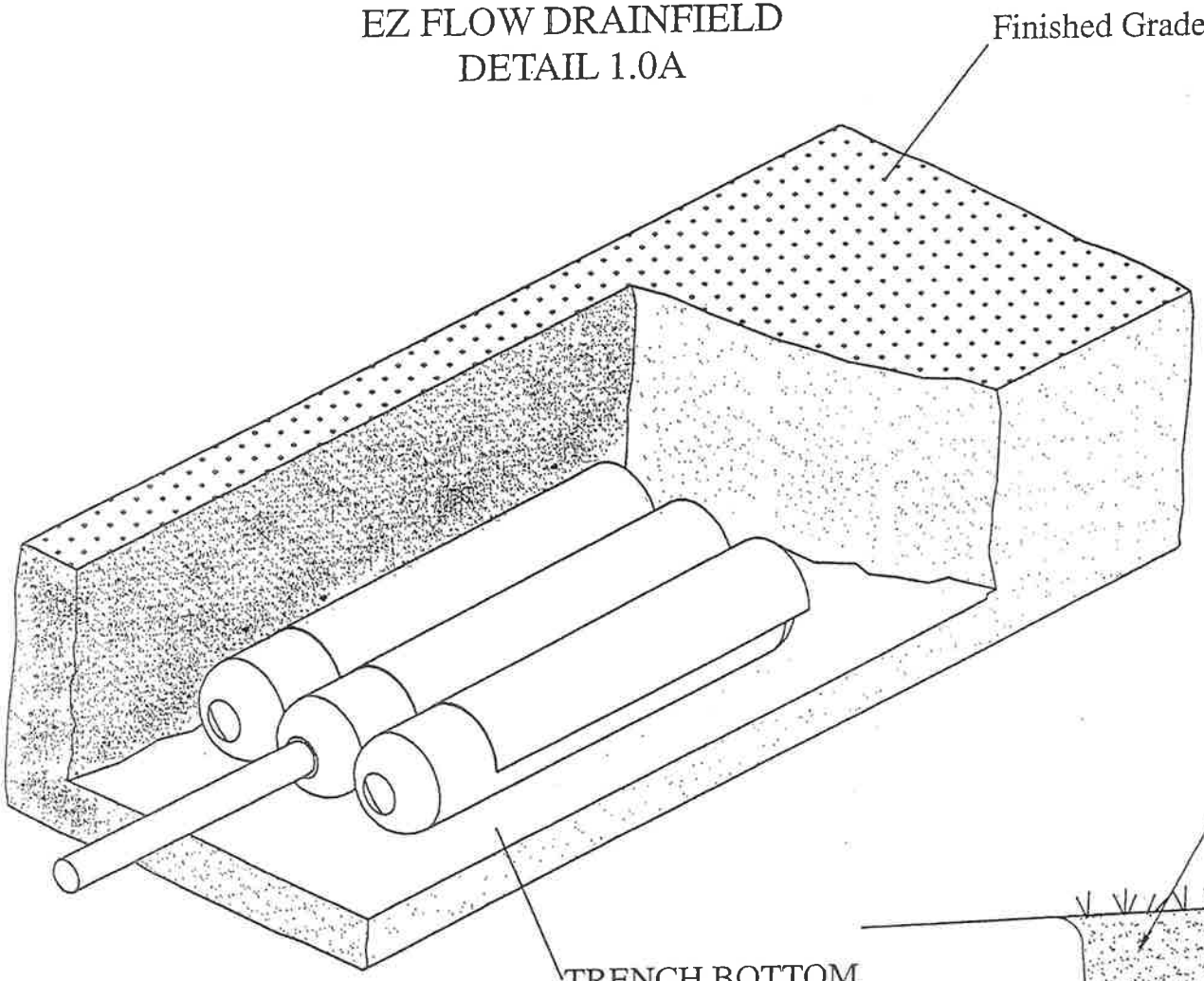


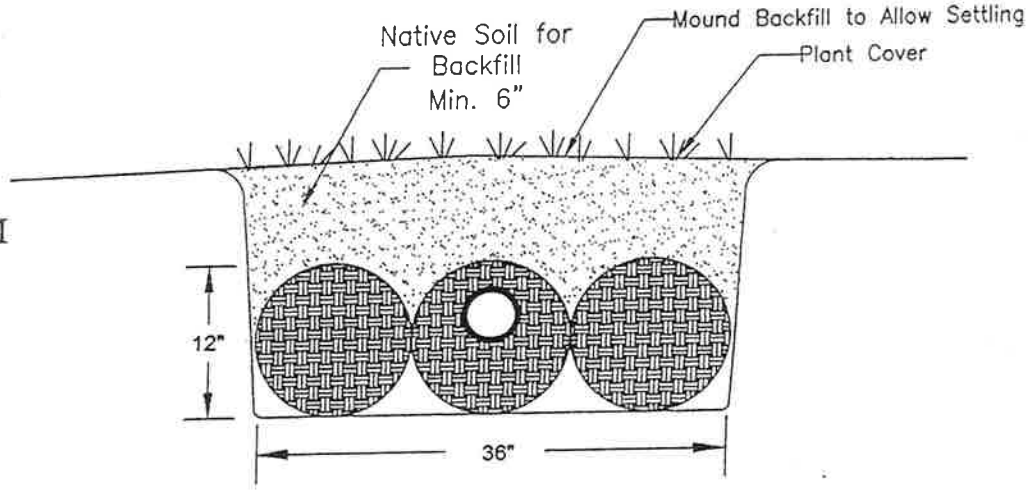
This illustration does not represent all systems on Interior Lots.
The type of system will be determined by t County Health Dept. and the community's soil scientist.

GRAVITY FED
LEACHING CHAMBER
DETAIL 1.1A

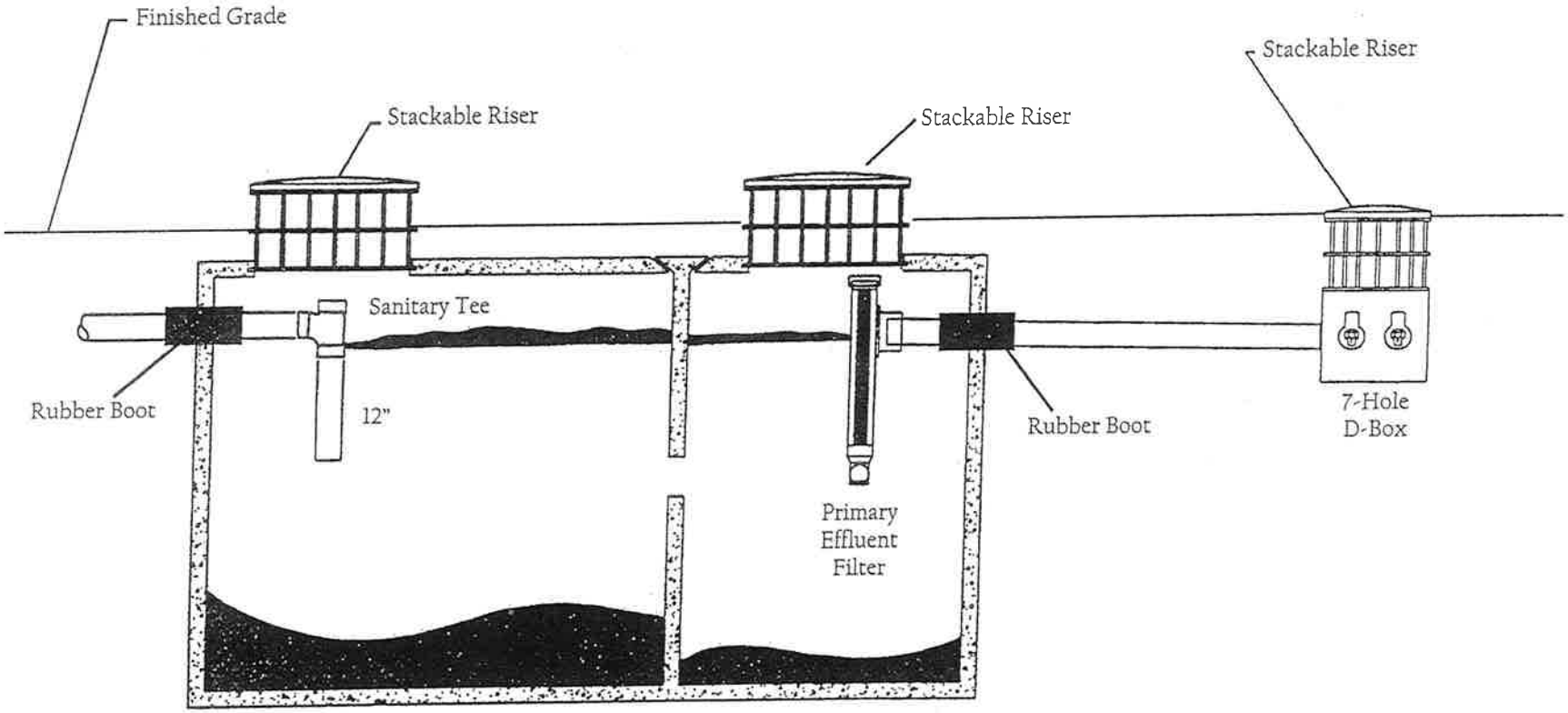


GRAVITY FED
EZ FLOW DRAINFIELD
DETAIL 1.0A





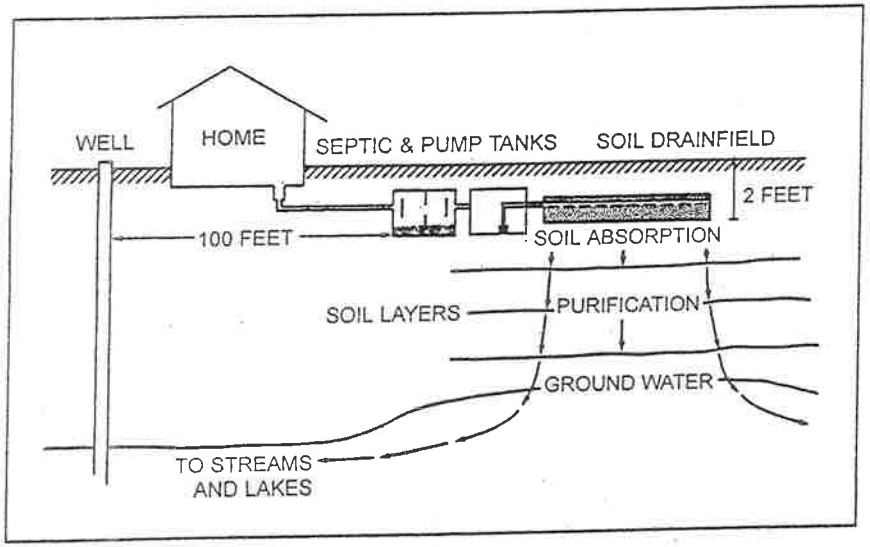
GRAVITY FED
SEPTIC TANK AND DISTRIBUTION BOX
DETAIL 1.1B



A two-compartment septic tank
1500 gallon typical

TYPICAL LAKE FRONT LOT
SYSTEM TYPE: GRAVITY FED LEACHING CHAMBER AND EZY FLOW POLYSTYRENE FED BY PRESSURE MANIFOLD

FIGURE 1.2



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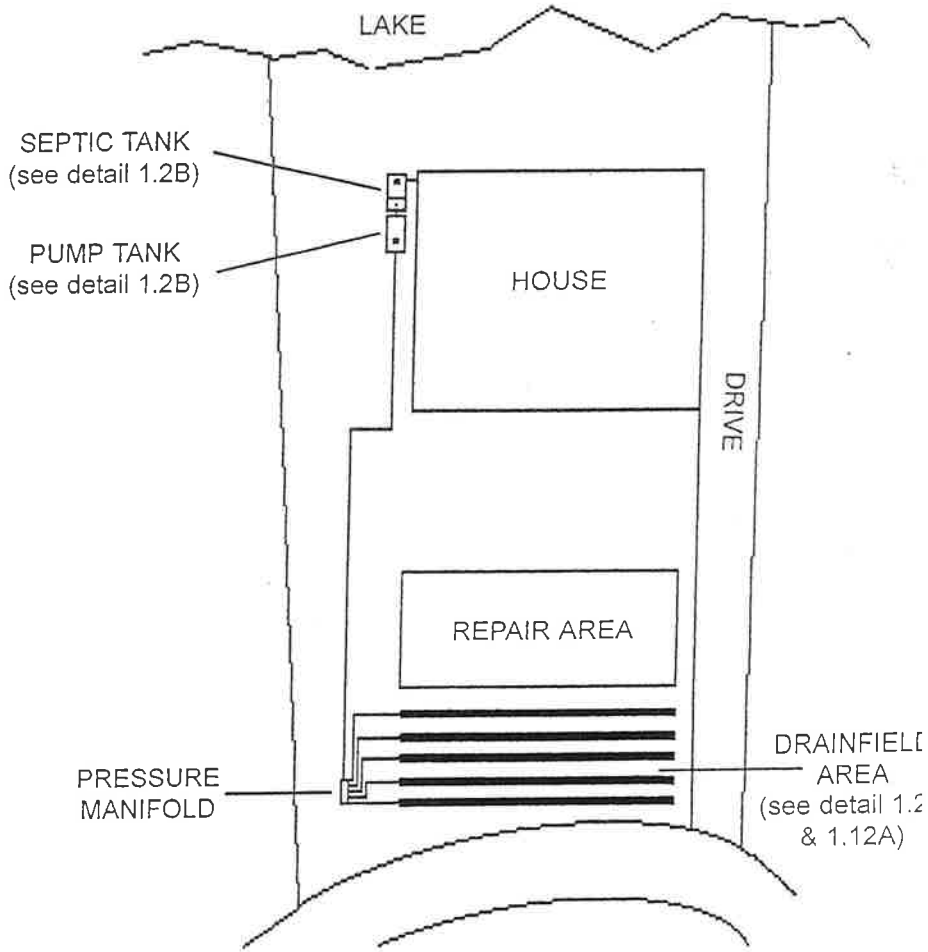
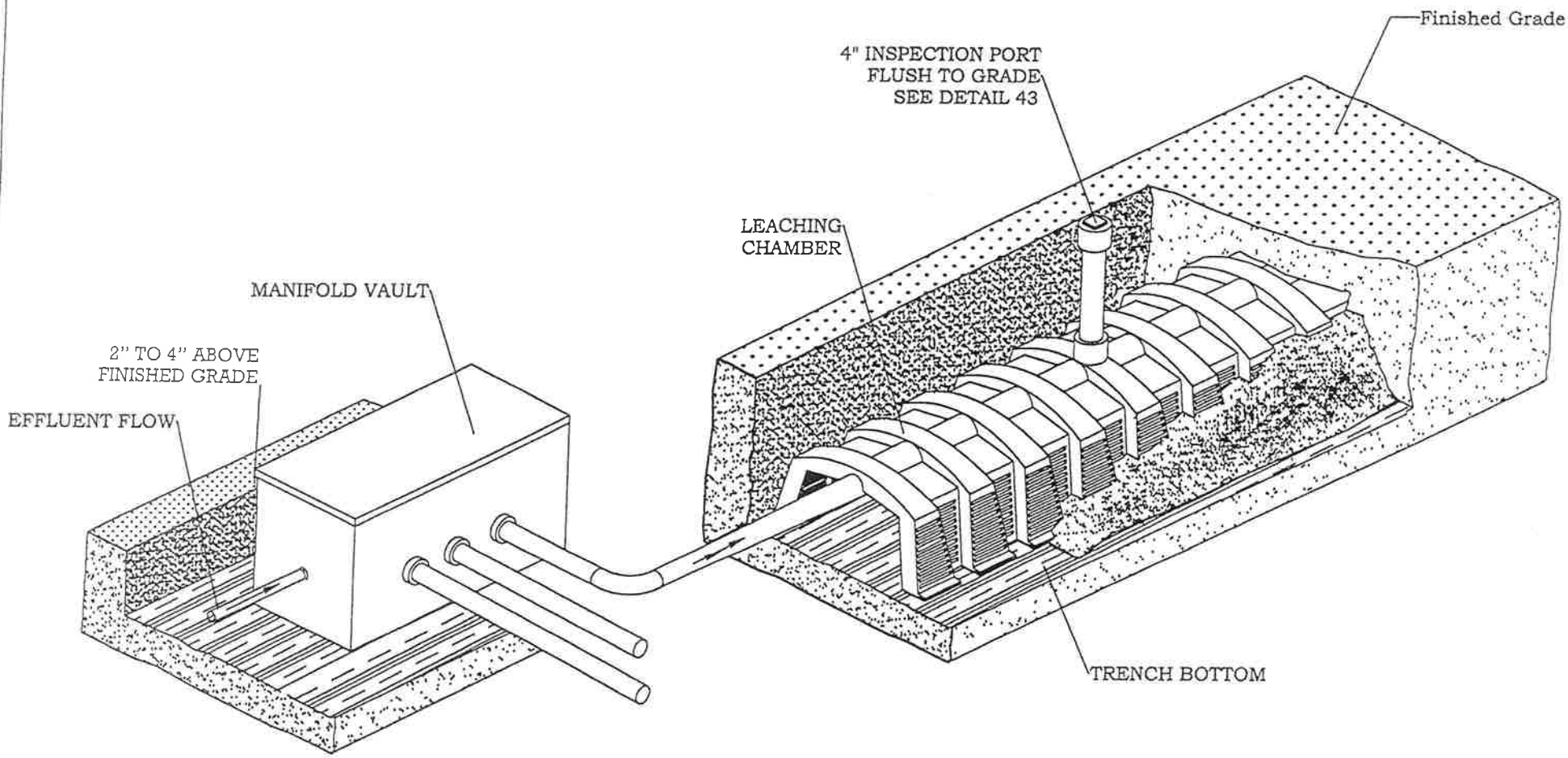
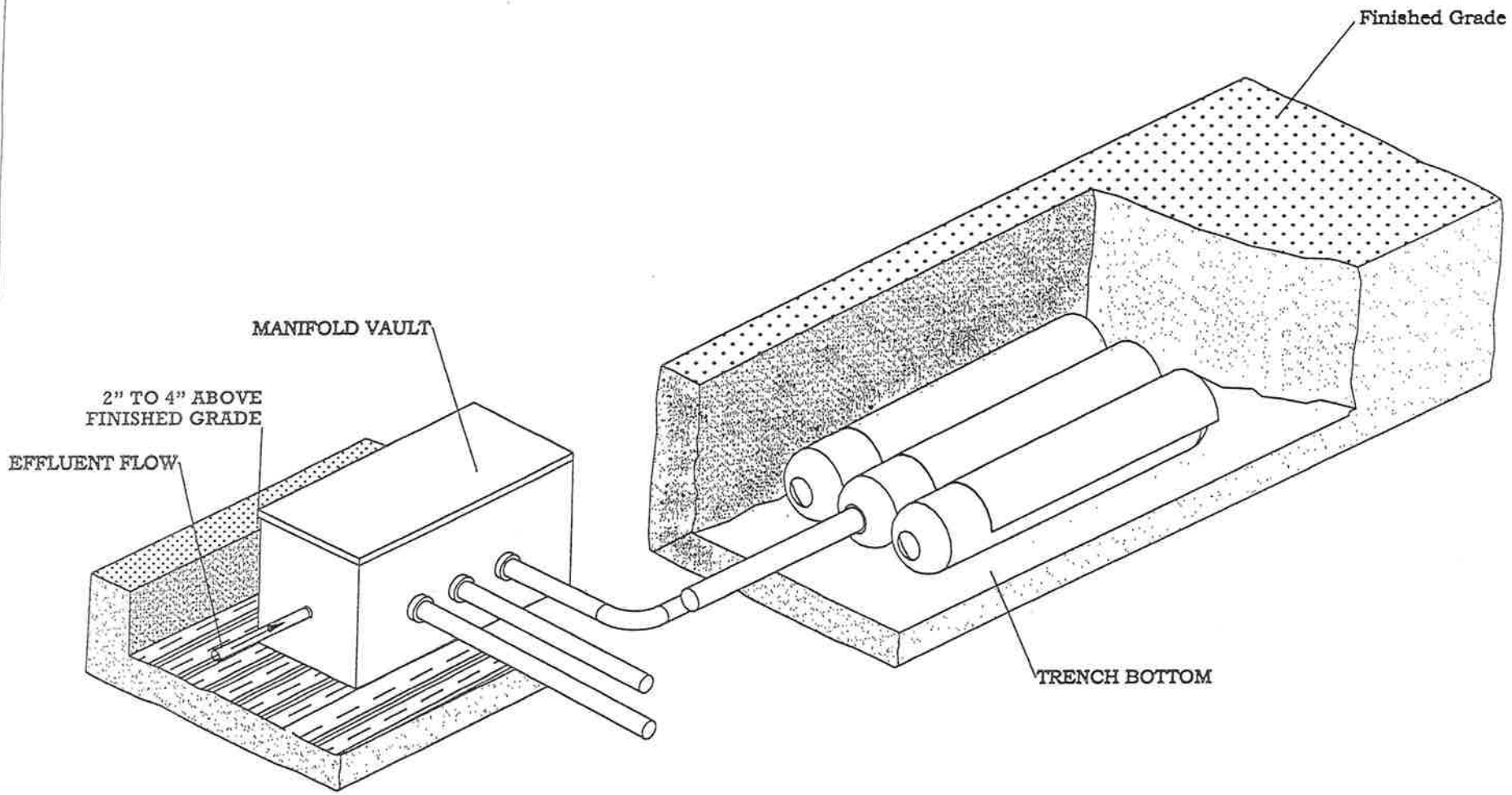


This illustration does not represent all systems on Interior Lots.
The type of system will be determined by t unty Health Dept. and the community's soil scientist.

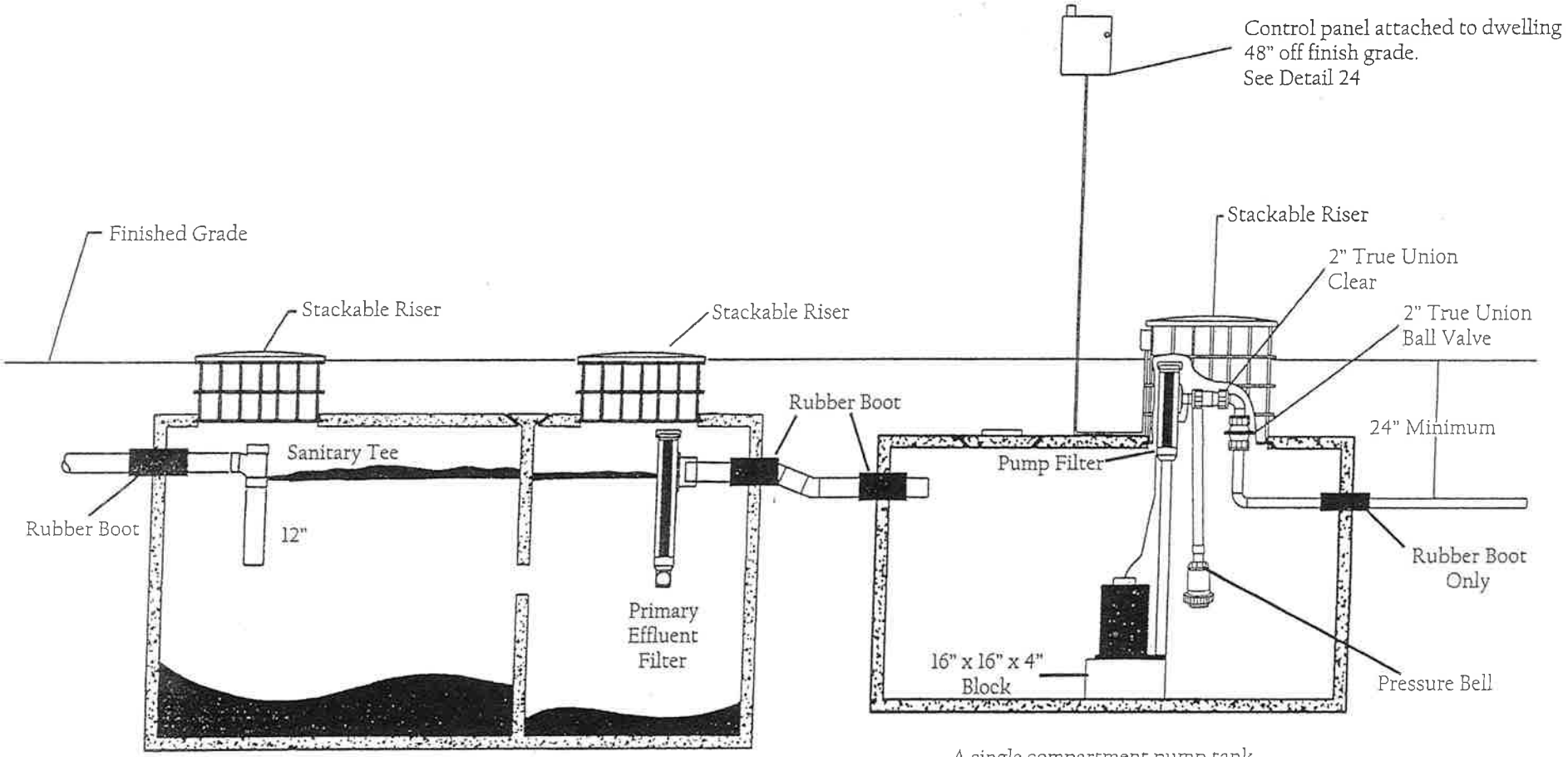
GRAVITY FED LEACHING CHAMBER
FED BY PRESSURE MANIFOLD
DETAIL 1.2A



GRAVITY FED EZ FLOW POLYSTYRENE
BY PRESSURE MANIFOLD
DETAIL 1.12A



GRAVITY FED LEACHING CHAMBER AND EZY FLOW POLYSTYRENE FED BY PRESSURE MANIFOLD DETAIL 1.2B

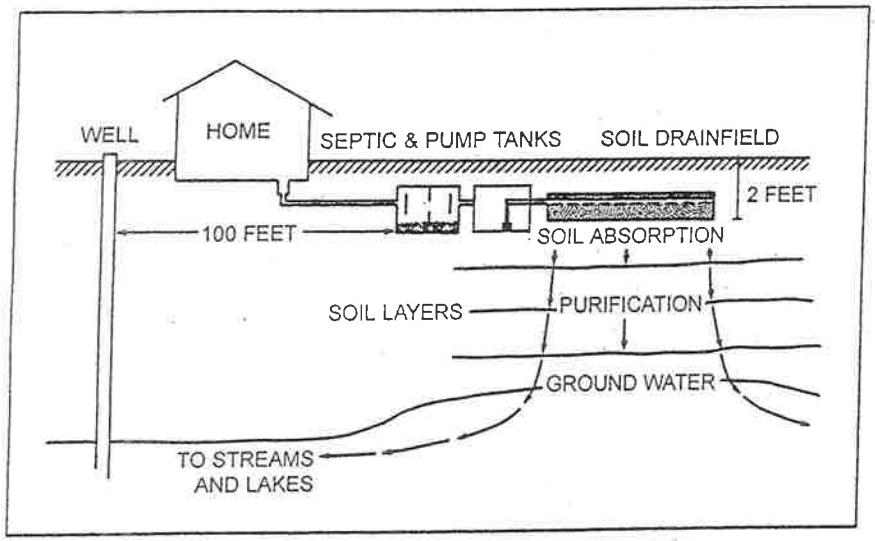


A two-compartment septic tank
1500 gallon

A single compartment pump tank
1000 gallon

TYPICAL LOT
SYSTEM TYPE: PRESSURE DOSED PREFABRICATED PERMEABLE BLOCK PANEL

FIGURE 1.3



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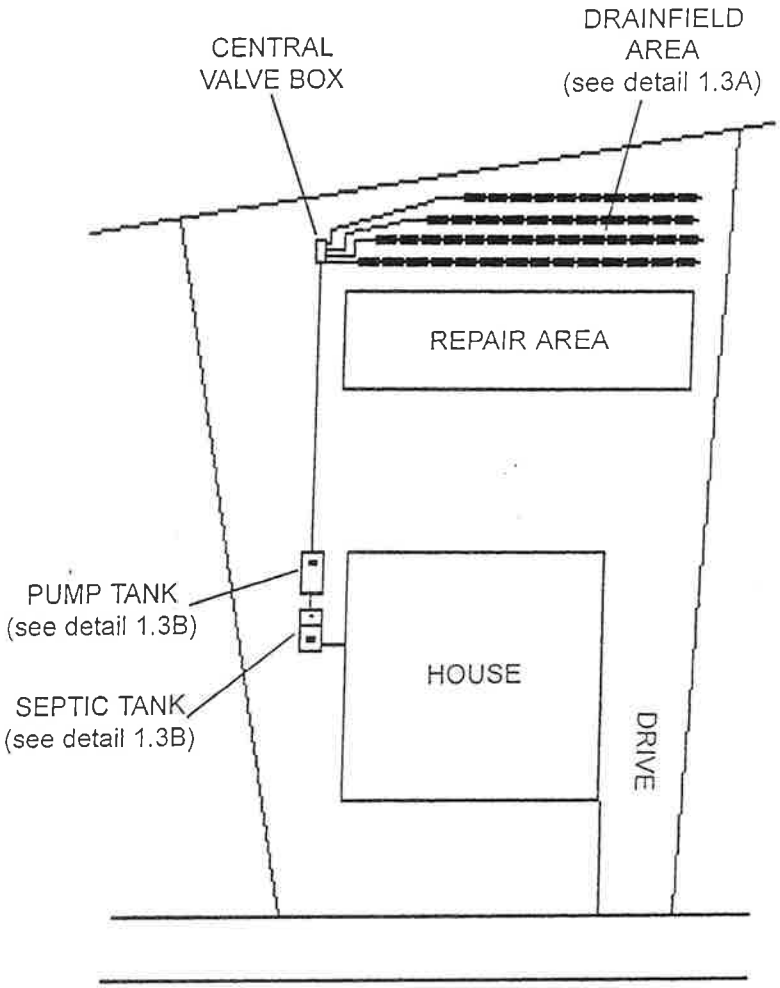

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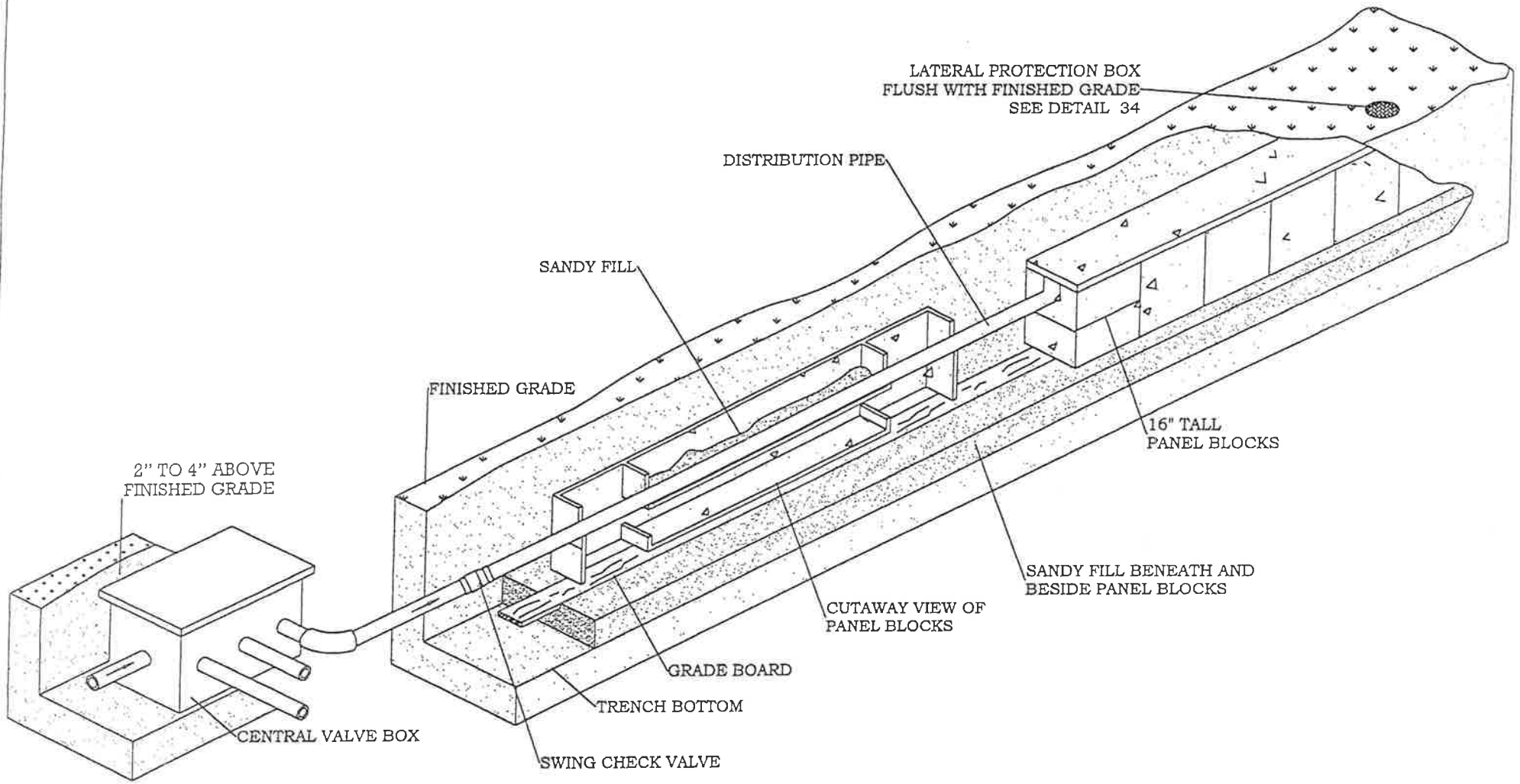
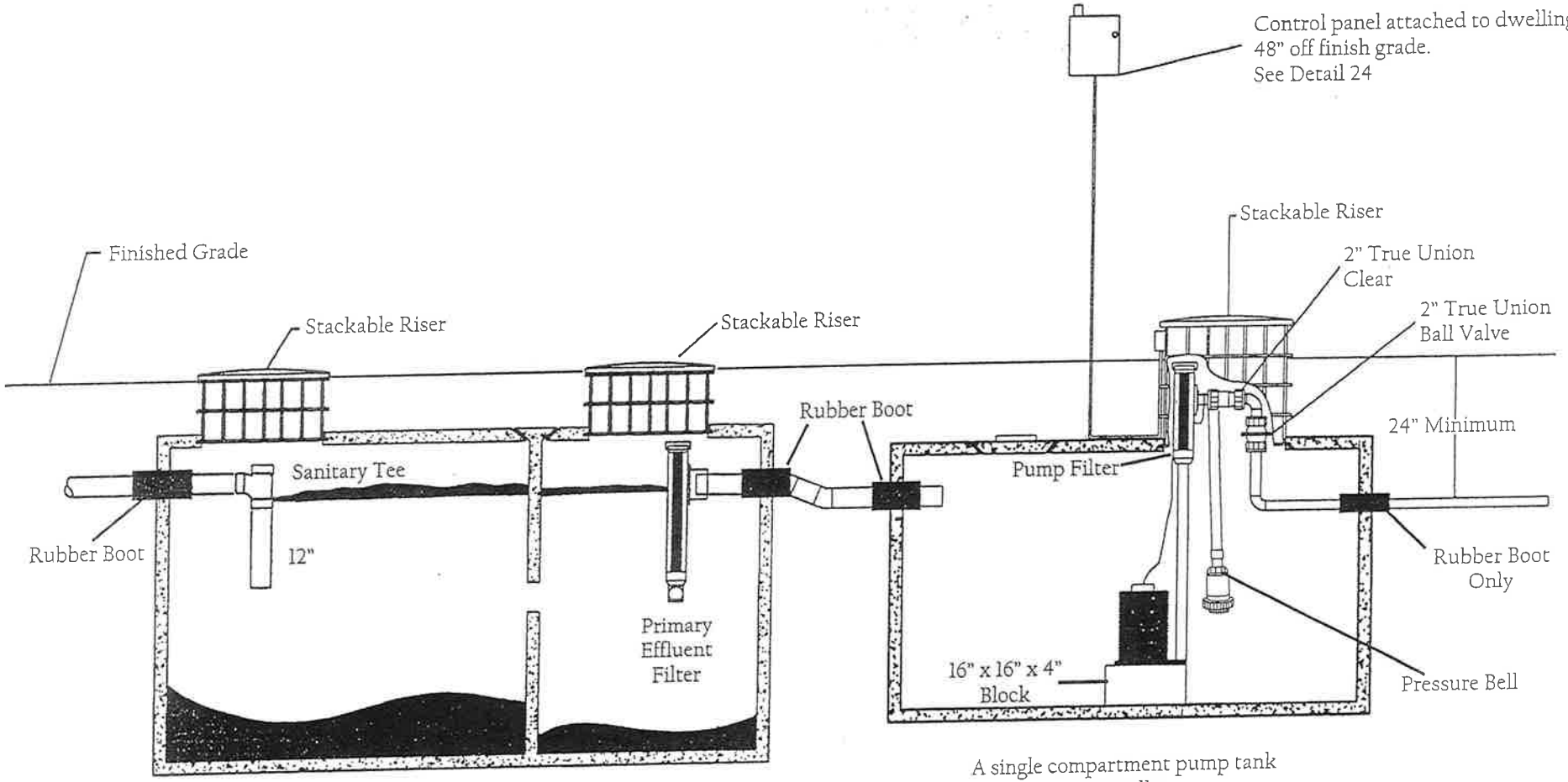
PREFABRICATED PERMEABLE BLOCK PANEL
DETAIL 1.3A



PPBPS-PRESSURE DOSED
DETAIL 1.3B



A two-compartment septic tank
1500 gallon

A single compartment pump tank
1000 gallon

HOMEOWNER RESPONSIBILITIES AND RECOMMENDATIONS

The following responsibilities are established by TCW Wastewater Management (TCW) for Crescent Communities, and the Architectural Control Committee (ACC) for the Community. Amendments to the provisions defined herein will only be made by the ACC with TCW being consulted on any and all matters.

1. Familiarize yourself with the location, layout, and the basic functions of your septic system.
2. Familiarize yourself with the landscaping guidelines for the community. Pay close attention to all matters concerning your septic system components.
3. Participate in the community maintenance and inspection program as described within the master declarations of the Owners Association.
4. Grant the rights of ingress, egress, and regress over and across the property to effectively and properly conduct periodic inspections of the septic system and its components. These rights are granted to the agent designated by the Owners Association qualified to perform the necessary inspections.
5. Always use your best efforts in water conservation measures. Know your system's capacity and look at your "water usage" figure on your monthly water bill to compare. You should always be using less than the designed capacity. The average water use per person per day is 50 gallons. Multiply this by the number of people in your household and then by the number of days in the month to get your household's monthly targeted consumption. Compare this figure to your monthly water bill usage figure. If you are using more than this targeted number, you will be in jeopardy of causing your system to fail by overloading.
6. Be familiar with the Do's and Don'ts of avoiding septic system troubles as outlined on a separate document contained herein.
7. Know your irrigation system. Make sure your irrigation "run times" are set properly. If your irrigation zones are set to run more than needed, you are not only wasting a precious resource but very well may be hydraulically overloading the septic area resulting in a system failure. TCW will assist you in determining the proper run times and calculations that will meet your irrigation needs.
8. Do not build a structure or install a pool without knowing the Environmental Health rules pertaining to set backs to your septic system. Contact TCW before starting to help ensure that you have met all the rules around your septic system.

Do's HOMEOWNERS Dont's

Preventive Maintenance for Homes with Onsite Wastewater Collection and Treatment Systems

DO'S AND DON'TS FOR INSIDE THE HOUSE

Do keep a record of pumping inspections and other maintenance.

Do check the labels of the home-care products you normally use. Many products used in most homes every day will destroy bacteria. Bacteria must be present to digest and liquify the scum. If not digested, the scum will accumulate until it overflows, clogging the soil absorption area. Labels carrying any of the following warnings will kill bacteria.

- Harmful or fatal if swallowed
- Avoid contact with the skin
- Do not get in open cuts or sores
- If comes in contact with eyes call a physician immediately.

Do use substitutes for household hazardous waste. Replace the following hazardous products with products that are less environmentally harmful. The hazardous cleaners are listed below, followed by the suggested substitute.

Ammonia-based cleaners: Sprinkle baking soda on a damp sponge. For windows, use a solution of 2 tbs. white vinegar to 1 qt. water. Place the mixture into a spray bottle.

Disinfectants: Use borax: 1/2 cup in a gallon of water; deodorizes also.

Drain decloggers: Use a plunger or metal snake, or remove and clean trap.

Scouring cleaners & powders: Sprinkle baking soda on a damp sponge or add 4 tbs. baking soda to 1 qt. warm water. Or use Bon Ami; it's cheaper and won't scratch.

Carpet/upholstery cleaners: Sprinkle dry cornstarch or baking soda on, then vacuum. For tougher stains, blot with white vinegar in soapy water.

Toilet cleaners: Sprinkle on baking soda or Bon Ami, then scrub with a toilet brush.

Laundry detergents: Choose one with a zero phosphate content or use soap flakes with 1/3 cup of washing soda. (Before switching, wash clothes in pure washing soda to remove residues.)

Furniture/floor polishes: To clean, use oil soap and warm water. Dry with soft cloth. Polish with 1 part lemon juice and 2 parts oil (any kind), or use natural products with lemon oil or beeswax in mineral oil.

Metal cleaners: Brass and copper: scrub with a used half of lemon dipped in salt. Stainless steel: use scouring pad and soapy water. Silver: rub gently with toothpaste and soft wet cloth.

Oven cleaners: Quickly sprinkle salt on drips, then scrub. Use baking soda and scouring pads on older spills.

Don't use special additives that are touted to enhance the performance of your tank or system. Additives can cause major damage to your drainfield and other areas in the collection system. The natural microorganisms that grow in your system generate their own enzymes that are sufficient for breaking down and digesting nutrients in the wastewater. TCW will provide natural microbials if the system is depleted of active organisms.

Don't flush dangerous and damaging substances into your wastewater treatment system. (Please refer to the "Substitutes for Household Hazardous Waste," o page 4) Specifically, do not flush . . .

- Excessive amounts of bath or body oils
- Water softener backwash
- Flammable or toxic products
- Household cleaners, especially floor wax and rug cleaners
- Chlorine bleach, chlorides, and pool or spa products
- Pesticides, herbicides, or agricultural chemicals or fertilizers
- Paints, varnishes, thinners, waste oils, photographic chemicals

Do use your trash can to dispose of non-degradable substances that cause maintenance problems and/or increase the need for septage pumping. Dispose of the following with your trash:

- Egg shells, kitty litter, coffee grounds, tea bags, bones, cigarette butts, chewing tobacco
- Paper towels, newspapers, sanitary napkins, diapers, gum, candy wrappers, facial tissue, tampons, condoms
- Cooking grease
- Rags, large amounts of hair, plastics

Do collect grease in a container and ' pose with your trash. Avoid using garb disposals excessively. Compost scraps or dispose with your trash. Food byproducts accelerate the need for septage pumping and increase maintenance.

Don't leave interior faucets on to protect water lines during cold spells. A running faucet can easily increase your wastewater flow by 1,000 to 3,000 gallons per day and hydraulically overload your system. Instead, properly insulate or heat your faucets and plumbing.

Don't use excessive amounts of water. (50 gallons per person per day is typical. If your household does not practice any of the "water conserving tips" below, you may be using too much water.)

Do conserve water:

- Take shorter showers or baths with a partially filled tub.
- Don't let water run unnecessarily while washing hands, food, teeth, dishes, etc.
- Wash dishes and clothes when you have a full load.
- When possible, avoid doing several loads in one day.
- Use water saving devices on faucets and showerheads.
- When replacing old toilets, buy low-flush models.

Do keep lint out of your wastewater treatment system by cleaning the lint filters on your washing machine and dryer before every load. Installing a supplemental lint filter on lyour washing machine would be a good precautionary measure. (This normally takes just a few minutes. Lint and other such materials can make an extreme difference in the frequency and cost of pumping out your primary treatment tank.) Contact TCW for pricing and installation of a lint filter for your washing machine.

Don't ignore leaky plumbing fixtures; repair them. A leaky toilet can waste up to 2,000 gallons of water in a single day. That's 10-20 times more water than a household's typical daily usage. Leaky plumbing fixtures increase your water bill, waste natural resources, and overload your system. A leaky toilet may not always be heard. Contact TCW for die test strips for proper checking.

DO'S AND DON'TS FOR OUTSIDE THE HOUSE

Do learn the location of your septic system and drainfield.

Don't dig without knowing the location of your wastewater treatment system. As much as possible, plan landscaping and permanent outdoor structures before installation. But easily removable items, such as bird baths and picnic tables, are OK to place on top of your system. Contact TCW with any questions about locating structures in the drainfield area.

Do divert roof drains and surface water from driveways and hillsides away from the septic system.

Don't drive over your tank or any buried components in your system, unless it's been equipped with a special traffic lid. If the system is subject to possible traffic, put up a barricade or a row of shrubs. The area over the drainfield should be left undisturbed with only a mowed grass cover.

Don't enter your tank. Any work to the tank should be done from the outside. Gases that can be generated in the tank and/or oxygen depletion can be fatal.

Don't dump RV waste into your wastewater treatment system and tanks. It will increase the frequency of required septage pumping. When dumped directly into the pumping vault, RV waste clogs or fouls equipment, causing undue maintenance and repair costs. (Some RV waste may contain chemicals that are toxic or that may retard the biological digestion occurring within the tank.)

Don't ever connect rain gutters or storm drains to the sewer or allow surface water to drain into it. The additional water will increase costs, reduce the capacity of the collection and treatment systems, and flood the drainfield.

TRI-COUNTY WASTEWATER
FOR
CRESCENT COMMUNITIES

CUSTOMIZED SEPTIC SYSTEM MAINTENANCE & INSPECTION PLAN

LEVEL OF SERVICE: *TIER II FULL SERVICE*

PERFORMANCE DUTIES:

- Inspections and services that exceed state requirements, i.e., inspections of all systems using an itemized check list, monitoring of all "septic tanks" to insure proper operation, and make adjustments of imbalances to systems through the distribution devices.
- Inspections performed bi-annually during renewal years; a minimum of three inspections the initial year.
- Inspection report copies are sent to the Health Department and homeowner bi-annually.
- A quarterly inspection summary is provided to the Homeowners Association.
- All non-compliant systems will be reported to the Homeowners Association.
- Emergency service calls at no additional "trip" charge. For septic system matters only. Plumbing issues within the house are not covered or included.
- 24 hour availability in case of emergencies
- Parts and labor costs included for minor repairs. "Minor repairs" is defined as a repair or part needed that the total cost (parts and labor) does not exceed $50.00. These repairs are to be due to normal wear and tear to the system. If a larger repair is needed, a $50.00 credit is issued against the cost of the repair. Repairs caused by abuse or repeated neglect to the system will not be included under this benefit. Plumbing issues within the house are not covered or included.
- The addition of a bacterial product into the individual septic tank as needed to maintain the proper level of culture.
- Recommendations of "time to pump" the septic tank and or the pump tank will be given based on measurements performed at set inspection intervals.

BUILDER RESPONSIBILITIES

The following responsibilities are established by TCW Wastewater Management (TCW) for Crescent Communities, and the Architectural Control Committee (ACC) for the community. Amendments to the provisions defined herein will only be made by the ACC with TCW being consulted on any and all matters.

1. Be responsible for the septic system installer's, electrician's, and landscaper's work. Insure that they follow the set forth guidelines and specifications pertinent to the septic system. Occupancy of any dwelling will only be approved by the ACC if the septic system complies with Crescent Communities "Septic System Installation and Landscaping Specifications".
2. All "Featured Installers" will be required to provide a three year warranty on their workmanship. If a builder chooses not to use a "Featured Installer" the builder will then be required to carry this warranty of workmanship for the "Non-Featured Installer" for the period of three years.
3. After the final landscaping has been done on the lot the builder is responsible to get with his installer and go over the system components to make sure everything is in good condition and all specifications have been met for the community and is ready for TCW to inspect. This includes, but not limited to, cutting down any inspection ports and covering with the proper protection buckets, check access risers for damage and security screws, control panel wiring and telephone connections are made, and all valve boxes are above grade and clearly accessible.
4. A dedicated 3" septic vent is required in certain Crescent Communities. Contact TCW for a listing of the communities this specification may be required in and any specific details of the installation.
5. Furnish a copy of the septic system "Installation Permit" (Authorization to Construct) to TCW upon receipt of the permit from the local County Environmental Health Department.
6. No changes will be made, in respect to the drainfield placement or system type, to any septic system "Installation Permit" (Authorization to Construct) without the review and approval of the Crescent Communities's designated North Carolina licensed soil scientist. The builder shall provide copies of any changes to TCW that alter the original "Installation Permit" within 48 hours of receipt by the builder.
7. The on site supervisor shall meet with their septic installer or the environmental health specialist to review system design and component layout prior to installation. Any changes to the location of the tankage should be addressed at this time. Insure that the desired location of the tankage is not within a path of storm water run off and it is in the most esthetically pleasing location. Provide any changes in writing to TCW that alter the original "Installation Permit" within 48 hours of the change being made.
8. Provide sufficient supervision over the lot clearing, allowing only the septic system installer to clear the drainfield envelope area. Minimal disruption of the natural state is desired and absolutely no heavy equipment upon the envelope under wet or moist soil conditions. Do not allow any fills or cuts to the drainfield

envelope unless approved by the appropriate soil scientist and the local County Environmental Health Department.

9. Provide sufficient supervision to properly control sub-contractor traffic on each building site. Specifically the septic system components and drainfield envelope shall not have any vehicular traffic infringement except from the septic system installer or the landscaper. No material stock piling is allowed on the drainfield such as lumber, stone, dirt, mulch, etc.
10. Cause appropriate fencing to be erected around the perimeter of the drainfield envelope. This is to be done as soon as the lot has been cleared and the drainfield identified. The fencing shall remain in place until the final landscaping has been done. Only allow temporary removal during the septic system installation process.
11. Provide sufficient supervision over the installation of the septic system. Absolutely no construction of the drainfield allowed under wet or moist conditions. Insure that no drainfield trench is left "open" when rainfall is predicted during installation time.
12. A Final inspection is to be performed by TCW after the landscaping is performed. The builder must notify our office immediately after landscaping is completed where TCW will then schedule a "Final" inspection to ensure that all is "ready" for move in of the homeowner. This will provide time for any "punch list" items to be corrected prior to move in. This is fee based (see rate schedule).
13. Call to have septic system construction inspections performed by TCW – your installer must call TCW at the beginning of the installation and call again at the end of the installation to arrange the inspection. *This is in addition to any coun required inspection*. This is fee based (see rate schedule).
14. A Pre-Clearing inspection by the ACC is required prior to the grading or clearing of the site. This is to insure that the septic system drainfield envelope and repair area has been identified and properly protected from vehicular infringement.
15. A Final Landscaping / Drainage review and inspection the ACC is required. The community Landscape Architect will inspect to insure that all guidelines have been adhered to as set forth by Crescent Communities.
16. Utility lines are not to be allowed in the drainfield envelopes or over tankage. Make sure these items are clearly protected and marked in order to keep these utilities out of these areas.
17. Fines may be imposed at the discretion of the ACC or Crescent Communities for not adhering to any of the aforementioned responsibilities.

SEPTIC SYSTEM INSPECTIONS

1. Pre-Clearing A Pre-Clearing inspection by the ACC is required prior to the grading or clearing of the site. This is to insure that the septic system drainfield envelope and repair area has been identified and properly protected from vehicular infringement. It is important for the ACC to meet with the on-site superintendent to emphasize the importance of protecting the septic system areas. The builder will have the drainfield envelope and the repair area fenced off and shall be verified by the ACC.

2.Pre-Installation A pre-installation septic system inspection or call shall be performed by TCW Wastewater Management (TCW) with the proper notification. *This is in addition to any county or state required inspection*. At this inspection soil conditions are examined to ensure favorable conditions for the installation of the system. The septic installer can not dig in moist or wet soil. This is a frequent problem during the winter months and sufficient time should be allowed for scheduling the installation of the system. If digging is done in wet conditions, the system will most likely fail. TCW also can meet the on-site superintendent again to make sure the tank placement is at the most esthetically pleasing location without compromising any state or local regulatory guidelines. This is fee based from TCW (see rate schedule).

3.Final Installation A final septic system inspection shall be performed by TCW Wastewater Management (TCW) with the proper notification. *This is in addition to any county or state required inspection*. At this inspection the adherence of the design and use of the component specifications will be verified by TCW. These specifications are under separate cover titled "Crescent Communities Septic System Installation Specifications". Strict adherence to these specifications is necessary for uniformity, serviceability and long term performance. This is fee based from TCW (see rate schedule).

4.Drainage Plan The proper drainage is an integral part of the long term performance of the septic system. A drainage plan shall be submitted to the ACC for each site for review. The community Landscape Architect and TCW will review this plan for impact considerations upon the septic system. This is fee based from TCW (see rate schedule).

5.Final Landscaping / Drainage A Final Landscaping / Drainage review and inspection by the ACC and TCW is required. The community Landscape Architect will inspect to insure that all guidelines have been adhered to as set forth by Crescent Communities. TCW will inspect all septic system components and areas for correctness. This may be done in conjunction with the "Final Installation" inspection.

LANDSCAPING /DRAINAGE GUIDELINES

The following guidelines are established by TCW Wastewater Management (TCW) for Crescent Communities, and the Architectural Control Committee (ACC) for the community. Amendments to the provisions defined herein will only be made by the ACC with TCW being consulted on any and all matters.

These guidelines address concerns pertaining to the integrity of the on-site septic systems. They are in addition to the specific requirements set forth by Crescent Communities and the ACC in the Declaration and Architectural Guidelines.

These guidelines shall apply to all lot owners, builders and their respective subcontractors. They are applicable for both new construction and future improvements.

1. All dwelling downspouts shall be piped underground away from the dwelling and "daylighted" on the downslope side of any septic system component. The piping shall not come within 24" (twenty-four inches) vertically and 10' (ten feet) horizontally of any system component during a run. The pipe used cannot be of a perforated type; only solid wall shall be used, such as the black corrugated bendable plastic.

2. Swales for storm water drainage shall be used when applicable to protect excessive water runoff moving over the drainfield areas. Water runoff will not be allowed to encroach on the drainfield "envelope" of any individual lot from adjacent lots. If the natural slopes drain the storm water across multiple lots, swales shall be cut to intercept and redirect the water around the "drainfield envelopes". In addition, if within an individual lot, water runoff from any area greater than 10% of the total lot size drains onto or over the "drainfield envelope", a swales will be cut to direct the runoff away from the envelope of the drainfield. Swales shall not be cut within the "drainfield envelope".

3. Berms for the purpose of redirecting water runoff can be used as long as they do not "hold" the water as a dam resulting in subsurface saturation and possible horizontal flows that could encroach the "drainfield envelope". This effect could cause premature septic failures from overloading of the drainlines. Berms can be used where complex topography situations occur in order to redirect a section of runoff to avoid the "drainfield envelope".

4. The final grade over all system components shall contain slight mounding or sloping to properly shed rainwater. Do not allow ponding to occur as would happen with "flat" topography.

5. Having accessibility to the system components is necessary for scheduled preventative maintenance and regular service. The planting of shrubbery and decorative landscaping items shall not be placed within a 4' radius of any system component that extends out of the ground. All planting and decorating must be approved by the ACC.

6. The septic system electrical control panels associated with certain system types will be attached to the side of the dwelling. No landscaping items will be allowed within a 4' radius from the box to allow for service without obstruction.

7. The planting of trees within the area of the septic systems should be performed carefully and very selectively. Only with the approval of the ACC will certain trees be allowed to be planted within the "drainfield envelope" or in the tankage area. No tree of any type shall be planted within 4' of any system component; e.g., tankage, distribution devices or drainlines.

8. The placement of any permanent coverings such as driveways or walkways are generally prohibited by the ACC where they would cover any system components. Plans must be submitted to the ACC for septic system impact consideration if the covering is intended for placement within 4' of any system component.

9. The "drainfield envelope" shall have sufficient vegetative covering of the type identified by the ACC. Mulching is generally disallowed over the drainfield area. If the landscaping design shows mulching extending into the "envelope" and covering more than 10% of the "envelope" area; approval will be at the discretion of the ACC. In addition, if mulching is desired over the tankage or distribution device areas, detailed plans including septic system component locations must be submitted to the ACC for approval.

10. **Absolutely no utility lines** are to be installed within the "drainfield envelopes" or over tankage. All utility contractors should be made aware of the system locations and must locate their services outside the perimeter of ALL system components. **ALL utilities are to be located at least 10ft from all designated boundries of the system.**

11. Grading and clearing the area for the placement of the septic system is very critical to its long-term integrity and performance. No equipment will be allowed on the "drainfield envelope" areas under wet conditions which will cause soil compaction. Even in dry conditions careful limits should be considered when heavy equipment is used in removing debris from the drainfield areas. The natural topography is also essential to the proper performance of the systems. Artificial fills or cuts are prohibited without the approval of the ACC. This applies to all reserved repair areas also.

12. The removal of trees should be done selectively within the "drainfield

envelopes". Only those with adverse effects should be removed from the areas. The areas should remain in as natural a state as possible. When removing any tree cut the tree at grade level, and if desired, grind the stump. Do not pull any trees ou of the ground.

13. Structures such as fences, decks, pools, and spas must not be placed within 15' (fifteen feet) of any component of the septic system. Approvals for the placement of such structures will be obtained from the ACC prior to the construction.

14. Satellite dishes and play ground equipment placement shall be reviewed and approved by the ACC if they are to be placed within the "drainfield envelope" or over any tankage area. Absolutely no concrete footings or anchoring will be allowed within these same areas without the approval of the ACC.

15. All future remodeling and structural additions must be submitted to the ACC. These shall consist of accurate "as built" drawings of the entire septic system. Authorization will generally not be granted for placement of a structure within 10' of any septic system component.

16. Condensation drains from HVAC units can dispose considerable water during their operation times. Their drain tubes shall be piped away from any septic system component and "daylighted" downslope of the system.

17. Protective fencing shall be in place, around the perimeter of the primary "drainfield envelope" and the repair area from the time of clearing the site to the time that final landscaping is performed. Silt fencing or approved measures will provide protection from possible damage to the soil or system integrity from erosion or construction traffic.

18. All critical areas such as the septic tank, pump tank (if applicable), distribution devices, valving (if applicable), and turn-ups (if applicable) shall be hand worked to finish grade. They will be properly marked or identifiable by the septic system installer. **NO GRADING OR VEHICULAR LANDSCAPING EQUIPMENT IS PERMITTED TO TRAVEL WITHIN 3' OF ANY OF THESE AFOREMENTIONED COMPONENTS OF THE SEPTIC SYSTEM.** Careful attention is to be given to these areas and it is not intended for any item brought up to grade or above grade to be covered with soil. If any component is unclear to whether or not it can be covered with a material or soil contact the builder for clarity. If any components are covered with any material through negligence of the landscaper, they will be required to return and make any corrections necessary or pay the cost for the septic installer to correct.

19. No irrigation systems are allowed within the septic drainfields. No piping of any kind shall be placed in the drainfield. Irrigation can be installed outside the perimeter of the drainfield and sprayed onto the field provided it is a separate zone and can be turned off or adjusted from a central control panel.

20. Fines for unapproved landscaping / drainage construction can and will be applied to the responsible party at the discretion of the ACC if any of the aforementioned guidelines are not adhered to.