Incorporated 1927

Town of Lake Lure

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Minutes of the Special Meeting of the
Zoning and Planning Board

Tuesday, March 3, 2009

Lake Lure Municipal Center

Chairman Washburn called the meeting to order at 9:37 a.m.

ROLL CALL

Present: Dick Washburn, Chairman
Tony Brodfuhrer
Paula Jordan
Donnie Samarotto
Russ Pitts, Council Liaison

Also Present: Shannon Baldwin, Community Development Director
Scott Bolyard, Landscape Architect
Clint Calhoun, Environmental Management Officer
Mike Egan, Legal Counsel
Sheila Spicer, Zoning Administrator, Recording Secretary

Absent: Bill Bush
Amos Gilliam, Planner/Subdivision Administrator

AGENDA

This special meeting was called to give the Board the opportunity to review suggested modifications to ordinance number 09-03-10B. This ordinance contains amendments to the Mountain & Hillside Development standards in the Zoning Regulations the Board recommended to Town Council at the February 17, 2009 Zoning & Planning Board meeting.

BUSINESS

Mr. Baldwin pointed out that the Board had been provided a copy of ordinance number 09-03-10B that Town Council has scheduled for a public hearing on March 10, 2009. He

stated the Board will be reviewing possible modifications to the allowable disturbed area calculations contained in the ordinance.

Mr. Egan mentioned that many of the public concerns with the Mountain and Hillside Development standards pertain to the maximum allowable disturbance limits being too strict. Due to these concerns he asked Mr. Bolyard, a landscape architect with Creative Development Solutions, to review the disturbance limits calculations and apply those standards to various sized lots to determine the impacts. He also asked Mr. Bolyard to research drip septic systems and provide sketches for suggested rooflines in the Protected Mountain Ridge Overlay Zone. Mr. Egan stated he would discuss possible modifications to the pending ordinance after Mr. Bolyard presents his findings to the Board.

Mr. Bolyard distributed copies of his findings and suggestions on the topics he was asked to research and discussed them with the Board. A copy of Mr. Bolyard's report is attached. He pointed out that his calculations showed it would not be feasible to place a typical 2000 square feet home on a ¼ acre lot with a steep slope in the allowable disturbed area limits. Mr. Brodfuhrer mentioned the Board has discussed the fact that ¼ acre lots are not suitable for septic systems in the past and that the Board is going to continue studying this. Mr. Bolyard stated his calculations show that a septic system on a ½ acre lot with a typical house would be feasible with the allowable disturbance limits and that a ¾ acre lot is much more suited to meet these requirements.

Commissioner Pitts asked if the Board and staff are still comfortable with the 30% threshold for defining a steep slope. Mr. Calhoun responded that, while he has not discussed this number with a geotechnical engineer, he is comfortable with that threshold. He pointed out that another factor that has to be remembered is the fact that Lake Lure has soil types that are poorly suited for development on areas that exceed certain slopes. He stated increasing the 30% slope criteria will increase the risk of slope failures on these poor soils during development. Mr. Egan agreed with Mr. Calhoun and stated 30% is a typical threshold for steep slope regulations. Mr. Bolyard mentioned that Buncombe County had recently lowered there steep slope threshold from 40% to 30%.

Mr. Egan distributed possible modifications he has proposed to ordinance number 09-03-10B. These modifications propose to do away with Table 2 in the Mountain and Hillside Development standards, and instead limit disturbance on an existing lot to 40% of the lot; however all lots will be allowed a minimum of 6000 square feet and a maximum of 15,000 square feet of disturbance. After a lengthy discussion, the Board chose to increase the maximum disturbance limit to 50% of an existing lot but not less than 7500 square feet or more than 15,000 square feet. These modifications also limit the maximum impervious surface on an existing lot to 6000 square feet.

Mr. Egan also stated section four of the ordinance would be modified to state that, in addition to section 92.207, existing lots of record must comply with paragraphs A; B; C; D; E; F; L; M; N; and O of section 92.206. Mr. Baldwin stated this would be good for staff as it makes it very clear what sections of the standards apply to existing lots of record. Mr. Bolyard asked if these standards would apply to existing lots that are to be

used for utility lots. Mr. Egan pointed out that utility lots would still be allowed a maximum of 7500 square feet of disturbance, which should be adequate.

The Board discussed Mr. Bolyard's findings when he researched drip septic systems. Mr. Egan pointed out that there are a lot of positive aspects to these types of systems. The potential drawbacks include the fact that there is the potential for the lines to freeze during long periods of cold weather as well as the fact that these systems can cost as much as four times more than a traditional system. Commissioner Pitts asked if Mr. Bolyard had found any negative impacts due to the odor of the wastewater from these systems. Mr. Bolyard responded that the wastewater is treated, and stated none of his research indicated there is an odor from these systems. The Board also expressed concerns about who would ensure that the biannual inspections of these systems were carried out. Luther Smith, a landscape architect member of the audience, cautioned against encouraging a specific type of septic system in the regulations because it may discourage better technology that could develop at a later date. Mr. Egan pointed out that, if these systems do not create disturbance, they would not be calculated in the disturbance limits. Increasing the allowable disturbance limits to 50% of the lot will allow extra room for septic systems; therefore, Mr. Egan will add language to the ordinance that states alternative septic systems that limit disturbance will be reviewed on a case by case basis on whether to include them in the building and grading envelope.

Mr. Egan discussed the possibility of adding a provision that would allow the Zoning Administrator to vary the requirements of section 92.207 for existing lots under certain conditions. Ms. Spicer stated she was not comfortable with regulations that allow for variations without specific criteria on when the standards can be varied. Mr. Baldwin concurred and stated staff needs clear guidelines when applying the regulations. Ms. Jordan suggested leaving the variance responsibilities with the Board of Adjustment. She stated the regulations could be reviewed at a later date if the Board of Adjustment is overwhelmed with a high number of variance requests. (Mr. Brodfuhrer left at 11:00 a.m.) The rest of the Board agreed, as did Mr. Egan who pointed out that the need for a variance will be lessened with the increased allowable disturbance limits.

Mr. Bolyard referenced the illustrations for acceptable rooflines included in his report. He asked the Board if these illustrations accurately portray the types of rooflines the Board intended to encourage. The Board agreed that they do and asked that the illustrations be included in the ordinance. There was a brief discussion on the second sentence of section 92.041 (G) which states "The slope angle of roof pitch shall be at or below the angle of the natural hillside slope." After discussion, the consensus of the Board was to recommend this sentence be removed from the regulations.

Ms. Jordan made a motion to amend ordinance number 09-03-10B to include the modifications discussed. Mr. Samarotto seconded the motion and all were in favor.

ADJOURNMENT

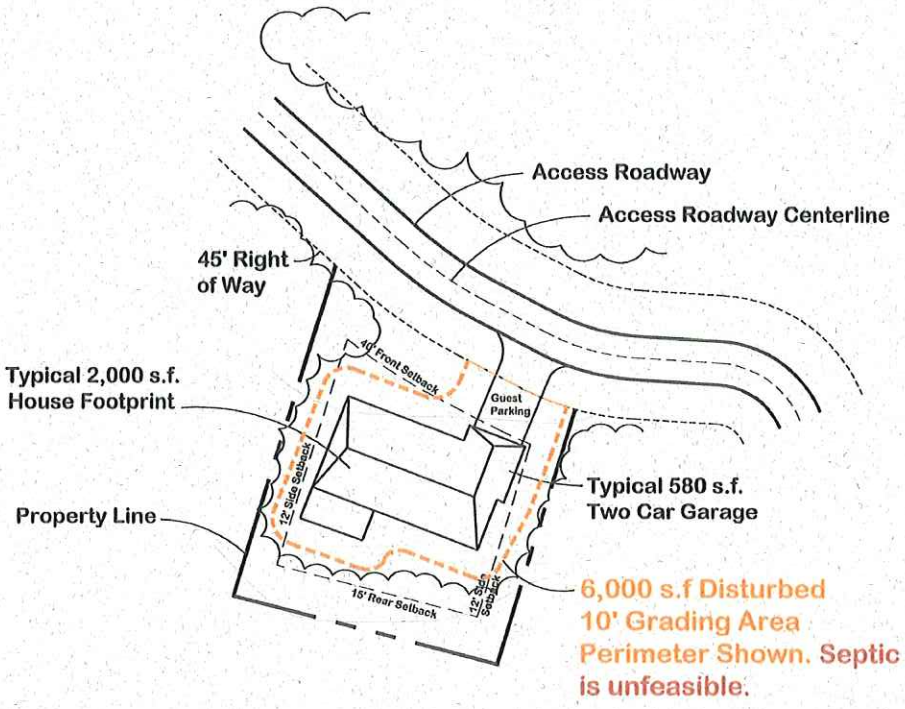
Ms. Jordan made a motion seconded by Mr. Samarotto to adjourn the meeting. The motion passed unanimously.

The meeting was adjourned at 11:35 a.m. The next regular meeting is scheduled for Tuesday, March 17, 2009 at 9:30 a.m. at the Lake Lure Municipal Center.

ATTEST

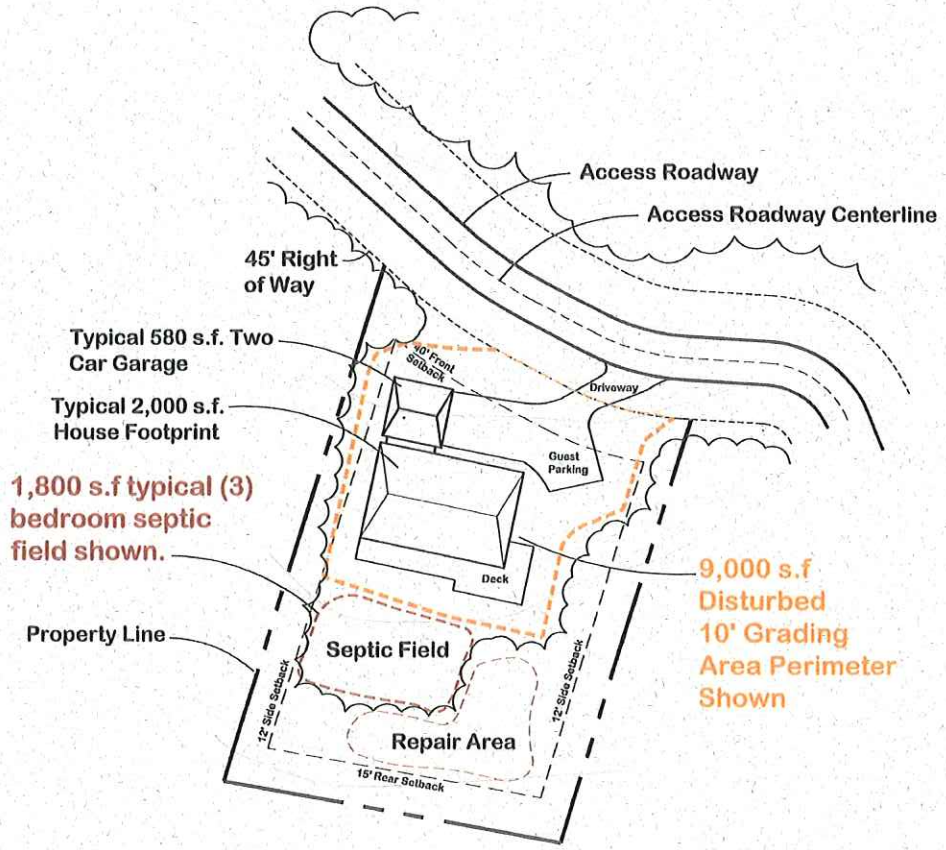
Richard Washburn, Chairman

Sheila Spicer, Recording Secretary



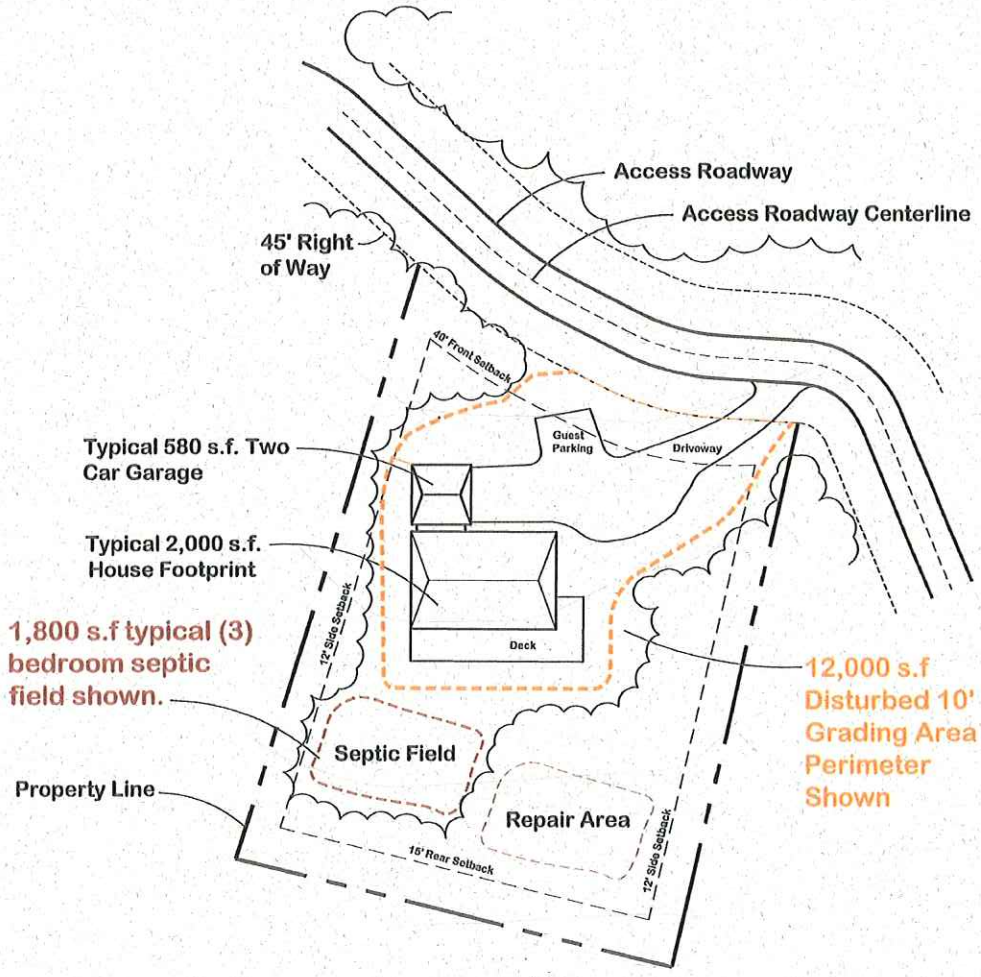
Typical 1/4 Acre Lot and Construction Conditions

Lot Size Area - 10,890 s.f. Total
Lot Dimensions - 100' x 110'
Buildable Area in Setbacks - 5,721 s.f.



Typical 1/2 Acre Lot and Construction Conditions

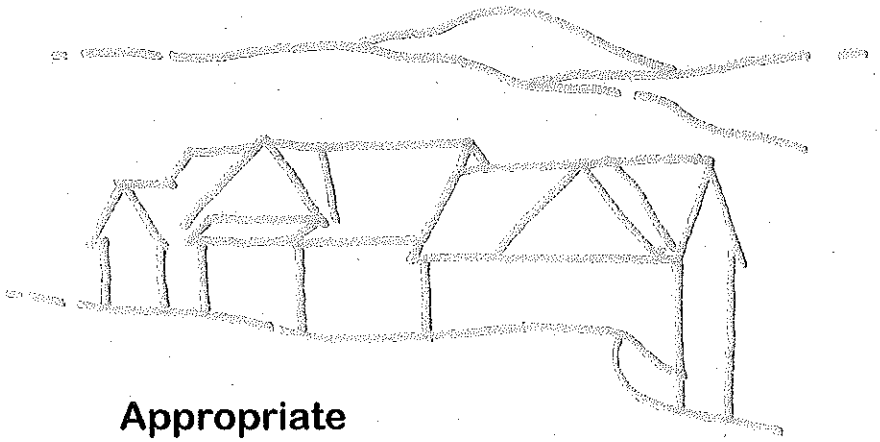
Lot Size Area - 21,780 s.f. Total
Lot Dimensions - 125' x 170'
Buildable Area in Setbacks - 14,150 s.f.



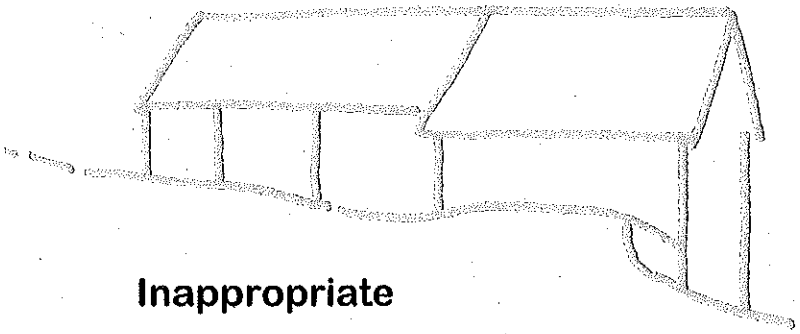
Typical 3/4 Acre Lot and Construction Conditions

Lot Size Area - 32,670 s.f. Total
Lot Dimensions - 150' x 215'
Buildable Area in Setbacks - 23,200 s.f.

"*Roofs*. Roof forms and roof lines for new structures shall be broken into a series of smaller building components to reflect the irregular forms of the surrounding mountain or hillside. The slope angle of roof pitch shall be at or below the angle of the natural hillside slope. The slope of the roof shall be oriented in the same direction as the natural slope of the lot. Only nonreflective roofing materials shall be used."



Appropriate



Inappropriate

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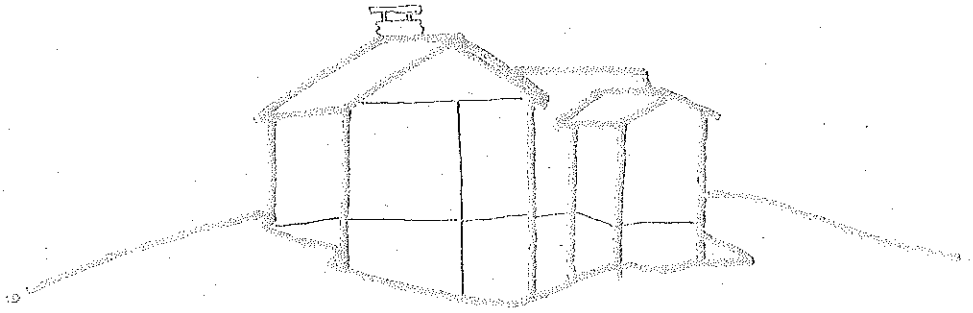

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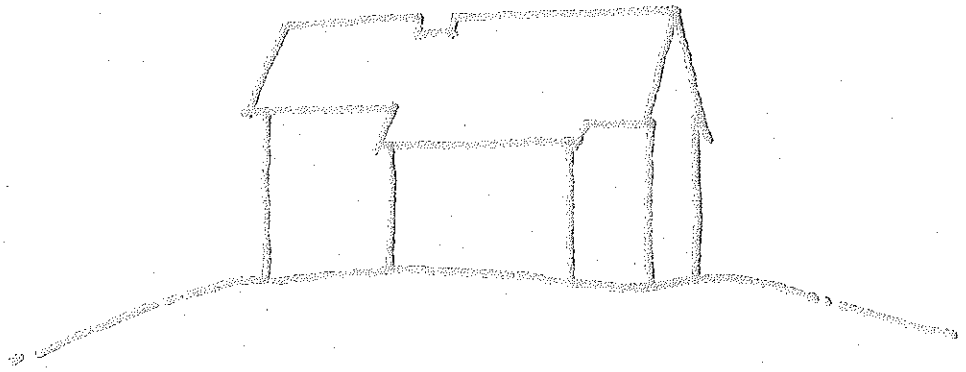

Inappropriate

Summary:

Drip septic systems are widely accepted in the western North Carolina region for sites with steep slopes, poor soils, and sites with exposed bedrock close to the surface.

Drip systems often result in saving the existing trees when carefully sited due to light excavation requirements.

They are environmentally superior to standard septic systems and when properly engineered result in 'drinking water' post treatment standards.

Some local areas and regions do not permit them locally and require a N.C. State permitting and approval from Raleigh; which can add six months to the permit process.

Drip septic systems are expensive. Drip systems can easily cost $25,000 when compared to a standard septic system cost of $6,000 on steep slopes.

Maintenance of a drip system is critical. Permitting usually requires a bi-annual sub surface operator inspection and agreement.

Freezing conditions have resulted in malfunctions of drip septic systems. The Lake Lure climate would rarely see weather conditions cold enough to result in problems. Some freezing instances have been reported in Blowing Rock within deep coves and northern aspects.

Drip septic systems are permittable as far north as Minnesota.

Drip Septic System Information (from the Minnesota Environment and Natural Resources)

A drip septic system releases small amounts or "drips" of wastewater at regular intervals, maximizing the treatment of sewage and minimizing the risk of untreated wastewater quickly flowing through the soil. **Drip septic systems are often used on steep slopes, forested areas and other places where trenches are difficult to install.** They are also used in places such as golf courses and resorts that only operate during the warmer months of the year. Drip septic systems are often used in conjunction with pretreatment systems such as aerobic septic systems and sand filters.

There are three main components to a drip septic system:
1. The septic tank
2. The lift tank, which contains a pump and filter. The pump and lift station distribute the wastewater evenly through the tubing and the soil.
3. The dispersal unit, which consists of a supply and return line. It contains perforated tubing, which carries the wastewater to the soil. The perforations or orifices are called "drip emitters" and are placed at intervals of 12-24 inches, allowing the wastewater to seep into the soil. The tubing is connected to a feed line on one end and a return line on the other, which allows the system to be automatically back flushed on a regular basis.

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Drip septic Systems (cont'd)

There is also a control panel, which monitors pressure changes, temperature, pump performance and daily wastewater flow. The control panels can sometimes help alert homeowners and professionals to potential problems.

How to maintain your drip septic system
It is extremely important to clean the septic tank periodically to remove accumulated sludge and scum. This is important in any system with a septic tank, but even more critical with a drip septic system. Drip septic systems contain several filters that can get plugged with solids, and the drip tubing itself has small holes which can get plugged.
Other key components which require maintenance are:
1. the filters need to be cleaned manually or changed once a year
2. The holes in the drip tubing can get plugged with solids. The system back flushes the tubing automatically on a regular basis to help prevent this problem. However, if they still get plugged in spite of this, they may need to be manually back-flushed.
3. The tubing itself may need to be replaced.

Because the water lines in a drip distribution system are placed at a shallow depth, they may freeze during the winter. As a result, thermocouples (which measure soil temperature) are placed next to the lines to warn the homeowner when a freeze is imminent.

Treatment Effectiveness

In experimental studies in northern Minnesota, drip-distribution systems have been shown to provide consistent, effective treatment of domestic wastewater. Regular monitoring, particularly of the temperature of the system, was also done to determine how well the system operated during cold weather. Although the monitored temperatures in the soil surrounding the drip tube have never gone below 32F, the system did have freezing problems in the first year of operation. The problem may have occurred due to compaction of the snow covering the system. During the

Placement

Location of the system depends on soil conditions, including depth of soil to bedrock or zone of saturation, texture, and temperature. The tubing type dictates siting requirements. These may include equal length runs, a level distribution field, equal distance from the pump, and equal manifold heights. Pressure compensating tubing has the fewest siting restrictions; in particular, a level field is not required and the system-dosing controller allows for different lengths of tubing runs.

Since most product development occurs in warm climates, freezing can be a problem in cold climates. In the initial operation of a drip system near Duluth, Minnesota, parts of the system (most notably the filters) worked well in the winter, while other parts froze. The filter portion must be both well insulated and heated. Depth of placement is an important consideration. Systems used only during the summer (at camps) often have tubing placed six inches deep. A minimum depth of twelve inches is recommended for all other systems in Minnesota. A research site near Hastings had freezing problems attributed to compaction of snow cover by foot traffic over the area. Repeated walking or driving over the system reduces the insulating ability of the snow.

Drip septic Systems (cont'd)

System Classification

There is debate about the necessary depth of separation from bedrock or saturated soil. Current Minnesota standards require three feet of separation for a standard soil treatment system. Use of drip distribution automatically makes this system a nonstandard system. If three feet of separation to the limiting layer are present below the tubing, the system is classified as "another system" and required to have a monitoring and mitigation plan and a flow meter installed. If three feet of separation does not exist, the system is classified as "performance" and only allowed by local governmental permitting agencies that have adopted performance standards. These systems must have a monitoring and mitigation plan, a flow meter, and an operating permit.

Maintenance and Operation

All routine operation and maintenance practices suggested for any onsite treatment system apply to drip distribution systems. (See *Septic System Owner's Guide,* PC-06583, for details.)

Maintenance should be done annually (or ideally, quarterly) and the entire system must be examined. First, pressure gauges should be checked for changes in pressure, which would signal clogging or leaks. Second, walking around the application area while the effluent is applied can uncover obvious leaks. Third, the air relief valve must be checked to make sure the unit is not wearing down or operating improperly. If the air relief valve malfunctions, soil particles can be sucked into the emitters and cause a problem that is very difficult to fix. The flow meter should be checked to measure actual wastewater application. This tells homeowners if the amount of effluent is above the design level. Finally, the tubing and filters may have to be flushed.

Daily running costs for drip distribution are based on the operation of a small submersible pump and average less than a dollar per month for an individual home. Maintenance costs range from $200-$500 per year, which includes a periodic pump-out of the septic tank, electricity, and maintenance visits.

Summary

Drip distribution can be an effective option in areas with forests or steep slopes, but must be properly designed, installed, and maintained. Particular care must be taken to prevent freezing.

Visit our Web site at www.bae.umn.edu/septic/ for additional information.

Funding provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative Commission of Minnesota Resources

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cds | Creative Development Solutions

landscape architecture | land planning | community and resort design

Standard Septic System: Typical Sizes

Soil Class	**Soil Type**: take a soil sample 3 to 4 feet below grade in the drainfield area by digging a pit	*2 Bedroom House*	*3 Bedroom House*	*4 Bedroom House*
# 1	Coarse Sand	**200** sq ft gravel or **10** six ft vaults or **16** four ft vaults	**300** sq ft gravel or **14** six ft vaults or **22** four ft vaults	**400** sq ft gravel or **18** six ft vaults or **28** four ft vaults
# 2	Medium Sand	**240** sq ft gravel or **12** six ft vaults or **20** four ft vaults	**360** sq ft gravel or **16** six ft vaults or **25** four ft vaults	**480** sq ft gravel or **21** six ft vaults or **33** four ft vaults
# 3	Fine Sand - Loamy Coarse Sand - Loamy Med Sand	**300** sq ft gravel or **10** six ft vaults or **16** four ft vaults	**450** sq ft gravel or **15** six ft vaults or **24** four ft vaults	**600** sq ft gravel or **20** six ft vaults or **32** four ft vaults
# 4	Very Fine Sand - Loamy Fine Sand - All Loams	**400** sq ft gravel or **14** six ft vaults or **22** four ft vaults	**600** sq ft gravel or **20** six ft vaults or **32** four ft vaults	**800** sq ft gravel or **26** six ft vaults or **42** four ft vaults
# 5	All Silt Loams of Good Structure	**540** sq ft gravel or **18** six ft vaults or **28** four ft vaults	**800** sq ft gravel or **26** six ft vaults or **42** four ft vaults	**1070** sq ft gravel or **35** six ft vaults or **55** four ft vaults
# 6	Other Silt Loams - All Clay Loams - All Clays	**1200** sq ft gravel or **39** six ft vaults or **62** four ft vaults	**1800** sq ft gravel or **60** six ft vaults or **94** four ft vaults	**2400** sq ft gravel or **78** six ft vaults or **122** four ft vaults

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