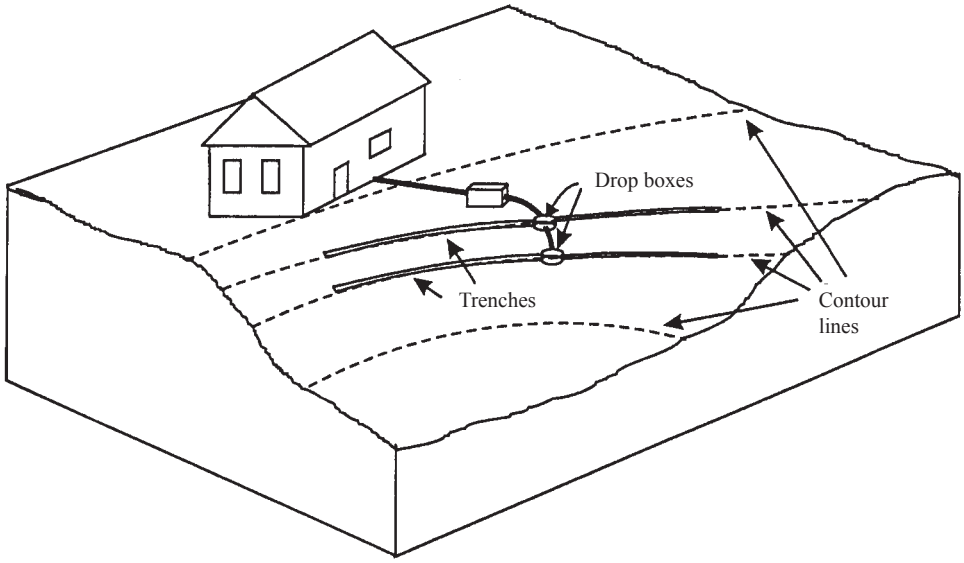

Figure 1. Drainfield trenches on contour.

local codes; they may be more stringent. Maintaining setback distances will reduce the possibility of contaminating groundwater and surface water. In addition, following setback distances between a drainfield and buildings will help prevent rainwater off a roof from inundating and overtaxing the drainfield.

Consider the placement of the house, water supply well, onsite wastewater treatment system, and reserve area, as well as where neighbors have, or might place, these features. Thought should be given to potential areas for a driveway, garage, swimming pool, and other improvements.

Soil Characteristics

Soil plays a very important role in determining the type of wastewater treatment system best suited for a site. The county soil survey report is a valuable starting point for evaluating soil at a site. The survey report shows soil characteristics such as soil type, soil permeability, depth to bedrock, or seasonal high groundwater table; slope; and limitation ratings for drainfields. Soil survey reports may be available at local UNL Extension or NRCS offices, at CSD within the UNL School of Natural Resources or on the Internet. See the NebGuide *Residential Onsite Wastewater Treatment Systems: The Role*

Table I. State minimum setback distances (local codes may be more stringent).

Item	*Tanks*	*Effluent Treatment Systems (Drainfields, etc.)*	*Lagoons*
Surface water	50 ft	50 ft	50 ft
Private drinking water wells	50 ft	100 ft	100 ft
Public drinking water wells:			
Noncommunity system	50 ft	100 ft	100 ft
Community system	500 ft	500 ft	500 ft
Water lines:			
Pressure-main	10 ft	25 ft	25 ft
Pressure service connection	10 ft	25 ft	25 ft
Suction lines	50 ft	100 ft	100 ft
Trees:	No Setback	No Setback	50 ft
Property lines:	5 ft	5 ft	50 ft
Building foundations:			
Class 1 foundations	15 ft	30 ft	100 ft
Class 2 foundations	10 ft	20 ft	100 ft
Class 3 foundations	7 ft	10 ft	50 ft
Neighbors' building foundations:			
Class 1 foundations	25 ft	40 ft	200 ft
Class 2 foundations	20 ft	30 ft	200 ft
Class 3 foundations	15 ft	20 ft	100 ft

Class 1 foundations: Full basements or nonbasement footing foundations and slab on grade for living quarters that are lower in elevation than the onsite wastewater treatment system.
Class 2 foundations: Nonbasement footing foundations, trailer houses, and slab on grade living quarters that are higher in elevation than the onsite wastewater treatment system.
Class 3 foundations: Structures using slab on grade construction and are not used as living quarters.

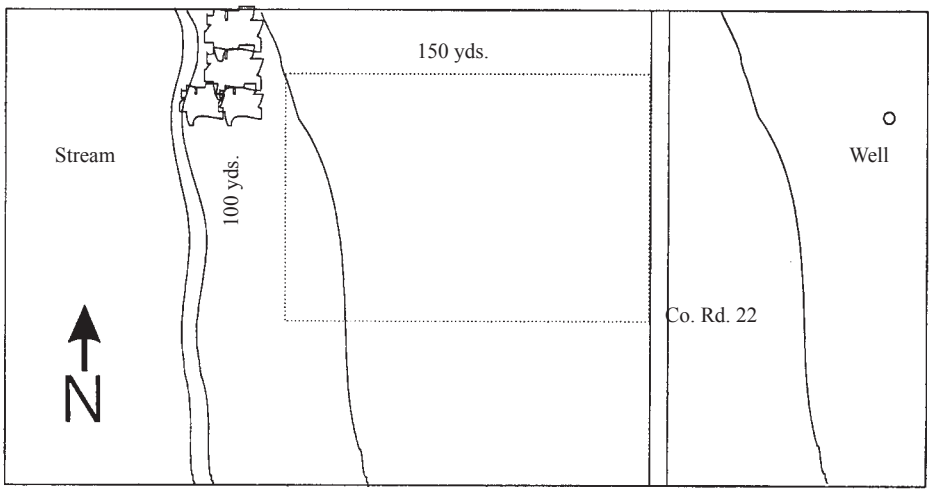

Figure 2. Sketch of a site showing property lines and other features.

of Soil (G1468) for more detailed information on soils and the soil survey report.

Site Evaluation — Initial Evaluation at the Site

When preliminary information on slope, soils, and existing improvements has been collected, an onsite evaluation can be done. Begin with a scaled sketch of the site showing property lines and other features (*Figure 2*). The property owner should be present to discuss options and issues. Following is information on two important aspects of the site evaluation — looking at vegetation and the soil.

Vegetation

Vegetation can provide clues about soil drainage and soil type. For example, cattails, reeds, and willows indicate wet soil areas. Record these on your sketch or map of the site.

Soil

An initial soil evaluation should provide information on soil characteristics, including seasonal high groundwater level. Alternate saturation and drying of soil results in discoloration or staining that is not part of the dominant soil color. These various shades of gray, brown, red, or yellow are called mottling. They show that groundwater has, at some point, been at that elevation, and remained long enough to cause a chemical reaction, changing the soil color. The highest groundwater elevation is assumed to be the highest point at which mottling is observed, regardless of whether water is present at the time of observation.

One method, or a combination of several can be used for an initial soil evaluation at the site. These include probing, augering, or digging a pit.

- **Probing —** A soil probe is a hollow tube that, when pushed into the soil and extracted, gives an undisturbed column of soil for viewing. Probes vary in length and diameter. Usually extensions can be added to probe deeper into the soil. It is the quickest method of looking at soil, and also allows you to detect faint soil mottling or cemented layers. Disadvantages are the relatively small diameter of the sample and inability to penetrate soil in rocky areas or under very dry conditions.
- **Augering —** Like a probe, an auger provides a column of soil for viewing when extracted. However, unlike a probe, an auger will disturb the soil sample. Auger diameters are typically larger than probes, and extensions can be added to access deeper into the soil. An auger produces larger samples and is more effective in rocky areas than a probe, although it still may be difficult to use due to rocks. Some disadvantages are that the auger is slower and more labor intensive, and the disturbed nature of the sample may not reveal faint mottles, cemented layers, or structure.
- **Soil Pit —** A pit is a dug-out area near the perimeter of an expected drainfield area. Do not dig a pit within the proposed drainfield area, as soil can settle after the system has been installed, disrupting the distribution lines. Sunshine should reach the sidewall during the observation period so subtle differences in soil color will be most visible. Soil pits provide the best method for viewing both undisturbed soil and how soil varies over the depth of the pit. Pits may be the only reliable method to determine depth to bedrock. However, digging a pit requires considerable manual labor or a backhoe, which can be costly. Safety is another consideration. Pits are especially hazardous in sandy soil or if excavated below the current water table depth. When digging, construct walls with a step-type configuration for safe entry and exit. Take appropriate safety precautions when working around the hole to prevent a cave-in, especially if sidewall soil is unstable or sandy. Heavy equipment or large objects such as boulders should not be allowed to rest on the surface immediately next to the pit sidewalls. Pits should be fenced to avoid falls or unauthorized entry, and backfilled as quickly as possible after use.