

## How to Use a Soil Survey

A SOIL SURVEY is a booklet that describes the location and expanse of soil types throughout a given county. It indicates soil types and names, wet spots, drainage patterns, steep slopes, and other good information. To obtain a county soil survey, stop by the local soil and water conservation district or cooperative extension office. You can get a copy of the information or purchase the entire survey. If you are not familiar with soil surveys or how to use the information they contain, talk to a soil and water conservation district technician or county cooperative extension educator.

In the soil survey, locate the potential pond site using the locator map and map numbers. Use your knowledge of roadways and streams to pinpoint the proposed location. Read and make

a note of which soil survey symbols (VoB, Ar, Sc, CaB, and so on) correspond to the proposed site. At the beginning of the map section, there will be a chart that matches the soil symbol to the name of the soil. Write down the names and locations of these soils on a map of your property, showing their general location.

In the text portion of the soil survey, you will find a complete description of the soil and its quality. The description will explain whether it is well-drained, whether it is especially wet during the spring, and its limitations for construction, pond development, farming, and other activities. All of this information will lead to a much better understanding of the integrity and water impounding nature of the pond site.

the soil on your property has developed certain fixed characteristics. The size of mineral soil particles ranges from very coarse gravel to ultra-fine clay. Although the differences are not usually observable to an unaided eye, the combined effect of soil particle size greatly affects the flow of water and pond embankment stability due to mechanical and chemical reactions.

The soil in the basin area for pond development should have low permeability and good compaction. Typically, this means having high clay content (more than 20 percent) and relatively low organic content. Soils described as gravelly or sandy are usually unsuitable for pond basin construction without special materials like clay, bentonite, or synthetic liners. Loam soils do not preclude pond basin development, but they are not as favorable as silty-clay soils. Embankments are best constructed with a mix of fine and coarse particles determined by a technician to be suitable for strength and low permeability. Again, *Ponds—Planning, Design, and Construction* provides important details about soil composition for basins, dam foundations, and fill for pond embankments.

The NRCS, in *Ponds—Planning, Design, Construction*, classifies soils into four groups according to how water flows through the soil when it is undisturbed. These

categories are usually used to assess runoff potential, but they are described here to illustrate the nature of potential pond soil permeability:

*Class A* soils have a high infiltration rate. They are chiefly deep, well-drained, and sandy or gravelly. The runoff potential is low. Pond construction will not be feasible without special liners or soil additives.

*Class B* soils have a moderate infiltration rate when thoroughly wet. They are moderately deep, well-drained soils of moderately fine to moderately coarse texture. Pond construction will require special attention to compaction and minimizing seepage.

*Class C* soils have a slow infiltration rate when wet. These moderately fine to fine texture soils have a layer that impedes the downward movement of water. With adequate compaction, these soils will support a pond.

*Class D* soils have a very slow infiltration rate. They are chiefly clay soils that have a high swelling potential, soils with a permanent high water table, soils with an impermeable hardpan layer at or near the surface, and shallow soils over nearly impervious material. The