Beautiful Ponds

140 Triple Diamond Blvd. Suite G
Nokomis FL 34275

Russ@BeautifulPonds.com

(941) 284-0440 mobile
(941) 488-1942 office

Soil Loss Along Lake Banks

There are three types of soil loss that occur along lake banks. Any particular lake may experience one or more type, depending on site conditions.

Bank erosion

The first type of soil loss along lake banks is known as bank erosion. Bank erosion occurs only when water flowing down the steep banks of a lake removes (erodes) soil from the banks. The erosion will produce gullies where the flow of water down the banks becomes concentrated. In general, if gullies are not present, then erosion is not occurring and the loss of soil is due to one of the other two types of soil loss.

Fig. 1 An Example of Bank Erosion

The most common remedy for bank erosion involves stabilizing the lake banks with sod or some other type of ground cover. In areas where concentrated flow from swales or gutter downspouts is directed at lake banks, the installation of rip rap (large stones) over a layer of geotextile fabric may be required. Plants with robust root systems will hold the soil better than typical turf.

Bank Scour

The second type of soil loss along lake banks is known as bank scour. Bank scour is the result of wave action, and generally can occur only on lakes that are sufficiently long enough for wind to produce waves of significant height and duration. Because winds tend to originate from the same general direction most of the time, bank scour will usually be present only along the particular portion of the shoreline where waves are commonly produced.

Fig. 2 An Example of Bank Scour

In severe situations the most common remedy for bank scour is the installation of rip rap over a geotextile fabric and/or construction of a seawall (retaining wall). Nearly all shorelines are regulated by government agencies. Check with your local authorities before starting any projects.

In smaller lakes, such as stormwater ponds, the wave energy or action may be absorbed by aquatic plants. Aquatic plant stems act to dampen or dissipate the wave action so the wave doesn't scour the shore. In addition, the plants help keep the water calmer near the shore. Suspended sediment, such as fine sand drifts into this calm water and falls to the bottom, accumulating between the stems.

Bank Settlement

(Super saturated sandy soil settlement)

The third type of soil loss is also the most common, and is known as bank settlement. This type of soil loss is often incorrectly identified as either bank erosion or bank scour. Bank settlement is due to the long-term settlement of super-saturated sandy soils that form the banks of the lakes.

Fig. 3 An Example of Bank Settlement

Super-saturation occurs when soil is submerged for an extended period of time. Once the sandy soil of a lake bank becomes super-saturated, the soil becomes quick (as in "quicksand") and literally flows like a thick liquid to the lower area in the middle of the lake. The rate of settlement is directly related to the types of soils that form the banks. Soils with high clay content have good cohesion, and will settle at much slower rate than soils with low clay content. Because the banks of large lakes may be formed of soils with both high and low clay content, the rate of settlement can vary around the shoreline of the lake.

To help prevent (or at least, slow down) the loss of lawns due to bank settlement, it is recommended that a strip of grass 2 to 5 feet wide be left unmowed along the waterline around the lakes, forming a "Filter Zone". The taller grass will develop deeper roots and a denser root mat, which will help hold the soil in place and prevent the super-saturated soil from flowing out into the middle of the lake. The unmowed grass can be trimmed to a height of 12 to 18 inches if desired. Also, planting certain types of plants with deep root systems along the waterline will help hold the soil in place. It is recommended that the vegetation along the banks *never* be sprayed with herbicides for a "manicured" look.

Fig. 4 An Example of a "Filter Zone"
The filter zone pictured here is St. Augustine grass that has been "hedged" into a boxy shape. Other grasses such as Bahia do not grow as tall as St. Augustine and form a softer, lower edge. In addition, wildflowers can be planted in the filter zone to add color. A filter zone does not need to be as tall as pictured here.