SEALING LEAKING PONDS

BIOLOGY JOB SHEET TX-19 **JUNE 1995**

Excessive seepage in ponds is usually due to soils that are too permeable to hold water. Thorough investigation is advisable during site selection to avoid leaking problems . Natural Resources Conservation Service personnel should be consulted to assist in selecting the most suitable site. The following information familiarizes readers with the more common, reliable methods of sealing leaky ponds.

Sealing By Compacting Alone

Sealing by compaction alone is the least expensive method of sealing leaking ponds. It is limited to sites with soil material ranging from small gravel to fine sand containing more than 10 percent clay or silt.

Sealing by this method is relatively simple. Prepare the site by removing and stockpiling the surface 8 inches of soil material. Disk or rototill the remaining pond bottom to a depth of 8 inches. Roll pond bottom to dense, tight layer with several passes of sheepsfoot roller. Replace the stockpiled soil material and roll to tight, dense layer with sheepsfoot roller.

Clay Blankets

Pond areas containing high percentages of coarse-grained soils but lacking enough clay to prevent excessive seepage can frequently be sealed by blanketing with soil material containing at least 20 percent clay. Blanket the entire area over which water is to be impounded as well as the upstream slope of the embankment with a minimum thickness of 12 inches. Suitable blanketing material may have to be hauled from off-site, and hauling distance will determine affordability of this option.

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Bentonite

Bentonite is a fine-textured colloidal clay. When wet, it absorbs several times its own weight of water and will swell as much as 8 to 20 times its original volume. Mixed in correct proportion with coarse-grained material, thoroughly compacted and saturated with water, particles of bentonite swell until they fill the pores to the point that the mixture prevents leakage. Because bentonite loses its effectiveness upon drying, this method is not recommended for ponds with fluctuating water levels.

Spread bentonite carefully and uniformly over the area to be treated. The application rate is 1 to 3 pounds per square foot Soil material with some clay will require less; sand and small gravel will require higher rates.

Thoroughly mix bentonite in the pond bottom to a depth of 6 inches with rototiller or disk. Compact the bottom with several passes of a sheepsfoot roller.

Salt

Excessive seepage often occurs in fine-grained clay soils arranged in a porous, honeycomb structure. Small amounts of certain chemicals can disperse these porous clay structures. Silty clays, clay loams, silty clay loams and silt loams are most responsive to this treatment. Soils containing more than 1/2 percent soluble salts are less responsive. This method is less likely to be effective near the Gulf Coast and in West Texas.

Common salt (NaCl) in the granulated form is often used as a dispersing agent. Salt is applied at a rate of 20 to 33 pounds per 100 square feet

Mix salt with surface soil, and compact to form a blanket. The blanket thickness should be 12 inches. Drill or broadcast salt to insure uniform distribution. Mix with disk or rototiller, and compact with several passes of sheepsfoot roller.

Additional Treatments

Protect treated areas from hoof action of livestock by spreading a 1 to 1 1/2 foot blanket of gravel below the normal water line. Gravel blankets should be extended farther into pond basins where water levels are expected to fluctuate. Protect areas at points of concentrated surface water flow into the pond with rock riprap or other suitable material.