



Answers to questions about structures, ventilation, soil, water, waste, energy, machinery and safety.

Compaction key to pond seal

A pond can be a valuable asset to a farm or suburban landowner. A well-planned and built pond can provide livestock water, fishing opportunities, soil erosion control, fire protection, and a nice place to relax. Too often, however, landowners take the lowest construction bid to "push up" a new pond and then wonder why it doesn't hold water.

Probably the most common reason a pond in the Ozarks leaks is because the wrong soil was used for sealing it or because the right soil was improperly compacted. A soil survey book, available free through the federal Natural Resources Conservation Service ([NRCS](#)) office serving your county, will help identify good pond building sites and soil properties at depth.

Some folks think a bulldozer does a good job of compaction. While the dozer is big and heavy, the weight is spread over the large "footprint" of the tracks, resulting in a ground pressure no greater than a person just standing on the ground. Better compaction is achieved using a wheel tractor or similar means that presses the weight down over a small area (See Table 1).

Table 1. Compaction Pressure in Pounds per Square Inch (psi)

Man	8-12
Bulldozer: D5 Cat	7-9
D7 Cat	8-10
D8 Cat	10-13
Agricultural Tractor Tires: Rear	15-20
Agricultural Tractor Tires: Front	35-45
Rubber-Tire Scraper	40-60
Sheepsfoot Roller	300+
Woman in high heels	±860

The rules of good compaction hold true for building animal and household waste lagoons as well. Because average rainfall (42" annually) exceeds evaporation (30" annually) in the Ozarks, these earthen basins should slowly fill up even with no waste going into them. If they don't, they're leaking...and causing a potential pollution risk to our groundwater.

Soil moisture is a critical element in the compaction process. Many of the blocky red and yellow clay Ozarks soils are quite leaky in their natural state. But add enough water to make them sticky, pulverize the soil with a disk, recompact the soil in several 6" layers with heavy ground pressure, keep the compacted seal moist after construction, and most ponds will hold water.

For further details on reducing pond seepage, see MU Extension publication G1555, [Reducing Pond Seepage](#).