

Arkansas Pond Bulletin

May 2023

Quick Hit: Pond Construction Basics

Permits: Construction sites that discharge runoff into “waters of the state” require permits from the Arkansas Department of Energy and Environment, Division of Environmental Quality. This should be completed before excavation/construction of a new pond begins. Have clients with permitting questions contact DEQ at 501-682-0640. Dams that are 25 or more feet tall, or impound 50 acre-feet or more water must obtain construction and operation permits from the Arkansas Department of Agriculture Natural Resources Commission. The application is reviewed to ensure the dam’s design is sufficient to handle the anticipated water volume and the site will be inspected for compliance. Permitting fees are based on the size of the project. Clients can contact ANRC at 501-628-3969 for questions relating to dam permits.

General Tips: The Natural Resources Conservation Service offers site visits, guidance, and cost-share programs for certain pond construction projects. When possible, clients should speak with county NRCS conservationists about design, construction, and repair of ponds especially if they are used for agricultural or livestock purposes. The NRCS publication, “*Ponds - Planning, Design, Construction*” is a comprehensive guide to the construction of ponds, dams, and drainage structures. While a great deal of emphasis is focused on the dam and drainage structures during construction, rightfully so, the often overlooked step of clearing trees and topsoil from the pond basin can doom the project. Removing topsoil can expose hidden rock veins, limestone, and permeable sand or gravel layers. These potentially permeable substrates can cause rapid water loss preventing the pond from fully filling or staying full. Sometimes small areas of permeable substrate can be excavated until a clay-based soil remains. In situations where the questionable substrate cannot be removed, such as bedrock formations or permeable substrates covering most of the basin, installing a clay blanket over the suspect area or the entire basin is the next step. Clay blankets are made of well-graded soil with at least 20% clay. Sourcing the soil from another point on the property or a nearby supplier will reduce hauling costs. The minimum recommended compacted thickness of the blanket is 12 inches, with a 2 inch increase in blanket thickness for every one foot of water over 10 feet deep to be impounded. As with dams, the blanket should be laid in lifts of 6-8 inches and compacted by a loaded dirt-pan or, ideally, a sheepsfoot roller before laying the next layer. An 8 inch lift will compact to about 6 inches after about 6 passes from proper compaction equipment under proper soil moisture (moist, but not dripping wet). There are parts of the state where soil permeability is naturally low and pond basin preparation and compaction are not necessary for successful completion. However, it is wise to at least remove topsoil and

compact the basin properly to ensure leaks will not occur as they are potentially costly and time-consuming to repair.

Pond basis preparation also includes grading proper slopes to the shoreline. A 3:1 slope (one foot deep for every three feet from shore) is recommended for most situations. Steeper slopes will likely require some form of reinforcement or excessive erosion will occur. Minimizing water shallower than 3-4 feet will help prevent excessive aquatic weed growth. Remember to test the basin's soil chemistry during construction so that, if needed, agricultural lime can be more easily spread before the pond fills. Install fish habitat covering 20-30% of the total area of the pond for better fish growth and survival. It's also much easier to build docks/piers before the pond fills. Finally, spread grass seed along what will be the shoreline and above, and cover with straw to reduce wash-out. Some seed manufacturers offer "tank dam mixes" that include blends of fescue, rye, Bermuda and several other pasture species that do well on sloped clay banks. Liming the pond banks when treating the pond basin will help grass establish and thrive. Water the seed daily until it is growing well, then water as needed until the pond is full.

What to Watch Out for in May:

Aquatic weeds are growing; this is the time for herbicide applications for highest efficacy. The MP556, SRAC0360, and MP44 contain information on selecting herbicides. The easiest plant ID tool available now is Texas A&M's Aquaplant "Identify a Plant" directory <https://aquaplant.tamu.edu/>. The MP556 and MP360 contain photos of many of the common problematic weeds in Arkansas. You can also text or email me photos of the plant you're dealing with and I can advise. IMPORTANT: If you encounter an aquatic weed you suspect to be non-native, such as hydrilla, giant salvinia, or water hyacinth, for example, (same for non-native fish like any of the bighead carps or snakehead) please report it to me or the Arkansas Game and Fish Commission Aquatic Nuisance Species Program Coordinator, Matt Horton Matthew.Horton@agfc.ar.gov 877-470-3309 ext. 1206. You are a valuable resource in the field that can help fight the spread of harmful invasives. If we confirm an invasive on a land-owner's property, we can work together to develop a plan to contain and hopefully eliminate that invasive from their property without disrupting normal operation.

Pond Management Tasks for May:

Fertilization and feeding programs should be underway. It is time for aquatic dye for weed/algae control. Be aware that during the rainy season dyes will need to be reapplied regularly to maintain effective concentration. Continue herbicide applications for troublesome weeds. This is a favorable time for fish stocking (species and numbers depend on the client's situation and pond conditions). Encourage clients to harvest largemouth bass (10-15 lbs/acre/yr for normal ponds, 25-35 lbs/acre/yr for bass-

crowded or highly productive ponds). Harvest bluegill less than about 7 inches in length up to about 25 lbs/acre/yr. Aggressive harvest of all crappie caught, especially from ponds smaller than about 25 acres is encouraged. Crappie are sexually mature at about 6 inches and can spawn prolifically (often resulting in overpopulation in small ponds) so aggressive harvest of eating-size crappie often does not result in crippling the spawning capabilities of the fishery. Continue mowing grass on dams and levees to keep brush and saplings from developing. Keep drains and spillways clear of debris and clogs so that they are working efficiently during the rainy season. Continue daily operation of aerators. For diffused aeration systems that have not yet been activated, follow the startup schedule of: Day 1, run 30 minutes then turn it off the rest of the day. Day 2, run 1 hour. Day 3, run 2 hours. Day 4, run 4 hours. Continue doubling the run time each day until you are running 24 hrs/day and keep it on for the rest of the summer.

Message me with any questions or workshop planning ideas. It's pond season.

Take care,

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