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Pond Renovation During Drought

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Unfortunately, much of western Oklahoma and Texas has experienced moderate to severe drought throughout 2011. As bad as the drought is in many areas, there may be a small silver lining in the cloud of drought. Landowners are often tempted to take advantage of droughts by deepening or enlarging existing ponds when water levels drop low enough or when ponds dry up completely. This can be an opportunity to increase water supply for fisheries and livestock, but certain factors should be considered before spending money and time deepening or enlarging a pond. This is especially important when considering changes to a relatively new pond that was properly designed.

A watershed is the land area that drains into a pond, lake or river, and is one of the most important factors to consider when increasing the size of an impoundment. Within a 100-mile radius of Ardmore, Okla., the "rule-of-thumb" for pond watershed size under normal runoff conditions is 3 to 20 or more acres for each acre-foot of storage from east to west, respectively. Soil infiltration, vegetation and slope are some of several factors that influence normal runoff conditions; therefore, watershed size may need to be increased or decreased accordingly. For instance, a pond constructed on a well vegetated watershed with sandy topsoil near Lawton, Okla., will probably require much more than a 20-acre watershed to be sustainable. The point is to make sure watershed size is adequate to fill the void created by deepening or enlarging a pond to avoid wasting money and time.

Pond depth in our consultation area should be a minimum of 6 to 10 feet from east to west, respectively. To mitigate normal siltation, a pond should be constructed deeper when soils are suitable and the watershed is of sufficient size. When deepening an existing pond, be aware of the risk of digging into a layer of sand or gravel, jeopardizing the pond's ability to hold water. Deeper is always better when water for livestock is important. However, deeper may not always be better for fisheries due to temperature stratification that often develops in deep ponds during the summer which could lead to dissolved oxygen problems. Pond depths of 12 to 15 feet are adequate for pond life, fisheries and livestock water.

Like deepening a pond, enlarg-

ing or increasing its surface area should only be done if the watershed is of suitable size to keep the pond full; digging into a layer of sand or gravel is also a risk. Enlarging a pond increases water volume, which is important for livestock needs, but may be of even greater benefit to fisheries. Increased surface area allows more water to be exposed to sunlight. Sunlight drives the photosynthetic process for aquatic plants, the most important of which for fisheries production is phytoplankton. Phytoplankton is comprised of microscopic plants that form the basis of production in a pond and, when abundant, impart a "greenish" tint to the water. Ponds with more surface area have a greater potential for fisheries production because of the increased potential for phytoplankton growth.

If your pond is properly constructed and the watershed is well vegetated, it should last many years without the need for deepening or enlargement. If you are considering deepening or enlarging an existing pond, contact a Noble Foundation consultant or your local Natural Resources Conservation Service office for assistance with addressing watershed size. ■