

Carrying more than your share of wastewater load?

By Philip Brink

You might be if you are catching non-feedlot runoff in your lagoons. Consider the drainage patterns at your feedlot. Does the drainage boundary include road ditches, waterways, pasture or cropland? Does water running off the roofs or lawns of your office or employee houses flow toward the retention ponds? If you answered yes to any of the above, you may be wasting valuable lagoon storage capacity.

Federal and state regulations require feedlots to have enough storage capacity to contain a 25-year, 24-hour storm plus process wastewater from the feed mill or other sources. The amount of water generated by such a storm depends on the geographic location of the feedyard and the size of the runoff area. In general, runoff must be contained from pens, alleys, feed storage locations and any other areas where surface water can come into contact with manure or urine. While you can't change the rainfall amount, it may be possible to reduce your runoff area by diverting "run-on" water from non-feedlot areas. This will, in turn, reduce the amount of storage capacity needed.

For example, a feedlot around Dodge City receives about 5 inches of rain during a 25-year, 24-hour storm. Using the runoff curve for unsurfaced lots, this amount of rainfall will generate 3.9 inches of runoff per acre. If the feedlot's current drainage area is 200 acres, the total stormwater runoff is approximately 65 acre-feet.

Say the drainage area can be reduced by 30 acres when run-on water from an adjacent pasture and an employee housing area is diverted. This results in a reduction of almost 10 acre-feet of total runoff! Feedlots that already have enough lagoon capacity can then use this "additional" storage as an extra buffer during chronic rainy periods, decreasing their chance of a discharge. And, feedlots that don't have enough stormwater storage capacity can sometimes avoid building another lagoon by diverting run-on water.

If you're building a new feedyard or expanding an existing one, keep the feedlot drainage area as small as possible by keeping the facility compact. Any new feedlot construction or expansion plans should include a survey of the site drainage characteristics to determine the proposed drainage area size and identify where run-on water needs to be diverted.

Channels, culverts, berms and terraces can all be used to direct clean run-on water away from the feedyard. Keep in mind that all diversion structures must be constructed and maintained to carry peak flows expected during a 25-year, 24-hour storm. The costs of installing diversion structures must be weighed against the benefit. Spending thousands to divert 1 acre-foot of run-on water is seldom cost effective unless it means the difference between building a new lagoon or not.

For some operations, capturing run-on water may actually be desirable if the extra water is needed for irrigation purposes. But for most facilities, it just means they're carrying more than their share of the wastewater load.