In Kentucky, new dairy parlor operations can be denied permits to sell milk if the state Department for Human Resources feels wastewater from the parlor and milkhouse may potentially pollute a stream or the ground water, thus violating state water pollution regulations. Particular situations where this may be a problem are: 1) if the wastewater from the milkhouse or parlor drain pipe empties directly into a natural stream or watercourse, or 2) if the wastewater from the drain pipe outlet follows a natural conveyance or man-made conveyance into a stream or watercourse. If a permit has been refused for this reason, a field inspection is required by personnel of the Division of Water, Department of Natural Resources and Environmental Protection, along with their written confirmation that a violation no longer exists. To avoid this situation, consult the milk inspector early in the planning process of your parlor's construction to discuss the most suitable method for disposing of the parlor and milkhouse wastewaters.

Wastewater Disposal Methods

Several disposal systems are available that, if properly constructed to handle parlor wastewaters, will comply with the Kentucky water quality regulations. These include:

1) an earthen or concrete pit that also stores dairy manure,
2) an earthen retention pond which also stores feedfloor runoff and the liquid leachate from a solid manure storage facility, or
3) an earthen or concrete pit that stores only the parlor wastes.

Seepage from earthen pits can contaminate the ground water. Therefore, earthen pits should be located on soils of slow permeability. Avoid gravelly soils and shallow soils over fractured or cavernous rock. If soil self-sealing is not probable, the earthen pit should be sealed either mechanically, chemically or with an impermeable membrane.

The final disposal step should be spreading the wastewater on the land using either irrigation or a liquid manure tank wagon. A septic tank with a leaching field is not recommended for these wastewaters. Manure and spilled feed are not easily broken down in the septic tank so frequent cleaning and pumping (sometimes on a monthly basis) are necessary.

Estimating the Quantity of Wastewater

The volume of wastewater from a parlor and milkhouse depends more on the type of milking parlor facility rather than on the number of cows milked. The volume of water used in a double-four herringbone can range from 200 to 1200 gallons per day for 100 cows. Using high pressure water in the cleaning process minimizes wastewater volume. The following table presents the guidelines for estimating the volume of wastewater that needs to be handled per day in the parlor and milkhouse.
Table 1.—Recommended Volumes of Wastewater per Day from the Parlor and Milkhouse

<table>
<thead>
<tr>
<th>Washing Operation</th>
<th>Volume/Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow washing and waste flushing</td>
<td></td>
</tr>
<tr>
<td>manual</td>
<td>0.5 gal/cow</td>
</tr>
<tr>
<td>automatic</td>
<td>2 gal/cow</td>
</tr>
<tr>
<td>Floor washing</td>
<td>0.2 gal/sq ft</td>
</tr>
<tr>
<td>Automatic pipeline &amp; equipment cleaning</td>
<td>100 gal</td>
</tr>
</tbody>
</table>

covered, direct precipitation volume must be included in the structure design. To do this, add 2 inches for each month of storage to the depth determined for the wastewater volume, then add another 1 foot of depth as freeboard. The freeboard prevents overflow of the pond when it is filled to design capacity and cannot be emptied during an extremely rainy period.

The following requirements of the Sanitary Standards of the Consumer Health Protection Division of the Bureau of Health Services (DHR) must be incorporated into the design of your parlor and milkhouse wastewater handling system:

1) The nearest point of the high water mark of manure and wastewater earthen storage structures must be at least 100 feet from a well that supplies water to the parlor and drinking water for the cows.

2) The drainline carrying the wastewater from the parlor and milkhouse to a storage pit or pond needs a “trap” or “check valve” to prevent backflow.

## Design Considerations for Earthen Ponds or Pits

The additional volume requirement of a liquid manure pit or runoff retention pond is determined by multiplying the estimated daily wastewater volume from Table 1 by the number of manure storage days for which the pit or pond is designed to receive runoff and leachate. If the parlor wastewater pit is un-