

SECTION 2: MANURE AND WASTE WATER HANDLING AND STORAGE

This section addresses the components and activities associated with the production facility, HUAs, manure and wastewater storage and treatment structures and areas, and any areas used to facilitate transfer of manure and wastewater. Components and activities covered in this section are: types of animals, number of animals, average weight of animals, confinement time, total estimated manure and wastewater volumes produced at the facility, manure storage type, volume and length of storage, existing and planned manure transfer equipment, nutrient content of the manure materials, nutrient losses in the waste management system, emergency action plan, and mortality disposal plan.

NOTE: Design and associated calculations in this section assumes the dairy and cattle operation are at full capacity of 2800 mature cows and 5000 beef cattle. Noted above, the dairy portion will not be able to expand beyond 1400 mature cows until two additional freestall barns are constructed.

General

Conservation practices planned for the waste storage, collection, and transfer facilities are presented in this section separately for the cattle feeding operation and the new dairy facilities.

If in the future the landowner decides to adjust the nutrient content of the feed, he will work with a certified feed specialist and will minimize manure nutrient content. The nutrient content of waste was taken from Table FL 4-5 of the NRCS AWMFH based on a medium to high feed ration and the current feed content and are presented in the later Nutrient Management section.

Cattle Feeding Operation

All 5,000 beef cows (average weight 863 lbs) will be totally confined with collected solids being mostly land applied typically after being composted, however some solids may be delivered to the plug-flow methane digester if the dairy manure levels are not sufficient to optimize gas production. Note that dry cows may be housed in the stacked-bed confinement barns periodically where the number of beef cows will be reduced by 1.92 per dry cow.

As indicated above, the nutrient management plan for the cattle feeding operation is based on nutrient recycling where the animal manure is collected, passed through a methane digester, applied to forage and other crops as organic fertilizer, and finally a portion of these nutrients return to the animals as feed. The following discussion presents the nutrient balances through each component of the waste management and feed production systems

Cattle Confinement Barns and Manure/Bedding Handling: The primary sizing criteria for the barns is allowing for 41 ft²/animal of stacked bedded area for animals that come into the barns at a weight of 525 lbs and leave at a weight of 1,200 lbs. The cattle will be housed in the confinement barns approximately 91% of the time that the animals are on the farm. The only time the animals are not in the barns is during a brief conditioning periods when they first come onto the farm and during clean-out operations or other barn maintenance activities where they will be held in covered, concrete floored holding pens next to the barns. All of the manure deposited in the barns will be totally contained within the barns until clean-out activities. Routinely, the manure/bedding materials will be representatively sampled and tested for nitrogen and phosphorus content as it is being added to the digester. The manure/bedding materials will be cleaned out of the barns by front-end loaders and placed directly into transfer dump truck or wagon, which will be used to transport the solids to the reception pit of the methane digester where it will be mixed with water and chopped to form ~12% solids slurry