



## CASE STUDY

### Murphy Family Vestal Hog Farms Dragonfly Wastewater Treatment System



The proliferation of large and efficient confined animal farms has created a significant problem for the processing and disposal of the water used for cleaning and cooling as well as other applications on the typical farm. The answer is Water Energy's utilization of the technology presently known as the Dragonfly Water Treatment System. The result is the only hog farm capable of reusing 100% of the water and no need to use spray fields. No smell, no pollution, and no farm land to grow unnecessary crops. Wow, what a paradigm shift!

Vestal Farms was an outdated hog farm with over 16 acres of lagoons being used for anaerobic storage of hog wastes. The liquid was also being pumped back to the farms and used for flushing the hog houses. Problems with the existing design were a substantial odor and high levels of nitrogen requiring approximately 180 acres of cropland for liquid disposal. The conditions were such that the farm's permit was not going to be renewed.



Water Energy provided the treatment system design, fabrication, construction, and operation for a 10,000 hog-finishing farm. This system was designed as a research and development project to introduce new technology into the agricultural community. This process has been awarded patent number 6039874.

**Requirement:** Water Energy was tasked to design a system that would reduce the nitrogen load, eliminate noxious odors, reduce the dependency for discharge to croplands, and allow the farm to be permitted for operation.

**Solution:** Water Energy created a treatment system to initially treat the incoming wastewater aerobically, reducing all noxious odors. This design included culturing bacteria to enhance the primary treatment, then treating the effluent with a polymer to drop solids. This created a clarified solution, which then was further treated to reduce nitrogen. The final step in the design included ozonation of a portion of the water suitable to return to the hog houses as drinking and misting water.



**Result:** The final treatment system provided a 500,000-gallon storage basin and deluge water supply free from noxious odors, a source of treated water with greatly reduced nitrogen content suitable for flushing the barns, and a final source of 40,000 gallons for drinking and misting. One hundred percent of the water was reused. Because of the significant use of aeration, fresh water has replaced that amount lost to evaporation and the small amounts removed with the screened solids. The Water Energy system enabled Vestal Farms to continue to operate and produce 25,000 hogs per year in compliance with their permit. Additionally, the existing 16 acres of lagoons have been filled in, and the neighbors have stopped complaining about noxious odors. Finally, the mortality rate for the hogs has been cut in half - from 6% total down to 3%!

