

## ***Dairy Manager's Annual Report of Holsum Dairy's Second Year of Green Tier Qualification***

All the hard work of the past two years led to our being the first dairy in the country to pass an ISO 14001:2007 conformance assessment. Being the 'first' is not, and has not been, a goal of ours. However, it is relevant in at least two contexts:

1- Wisconsin's Dairy Business Association (DBA), in the final months of the year, reached agreement with WDNR to maintain a database of environmental legal requirements specific to dairy farming. Green Tier and ISO14001 mandate keeping abreast of current federal, state, and local governmental directives.

The DBA-Green Tier Charter agreement was predicated on at least one Wisconsin dairy's passing the ISO 14001 assessment, so this success opened the door for fellow DBA members to consider Green Tier qualification. The database is a big step in removing legal surveillance responsibility from the individual participants.

2- Several minor nonconformances were reported on our audit. They are, as it turns out, common in all industries undergoing these stringent assessments. Here, I reference "being first" to emphasize that our nine nonconformances were all "minor" (thanks to consultants Tim Anderson, Laura Paprocki, and Marla Shoop, as well as our DNR liaison, Tom Eggert, for their guidance).

One of our nonconformances was a missing methane igniter (which was on back order and was installed when it arrived a week later); the others were all documentation failures, i.e., failure to write down what we were doing. We corrected each within thirty days, as agreed.

We salute our auditors for their pioneering efforts in learning how to apply industrial evaluations to dairy agriculture and for broadening our legal horizons.

Our audit was conducted by Environmental Compliance Systems, Inc. of Lake Mills, Wisconsin. As such, we have met the Green Tier requirement for an 'external' audit in only our second year of participation. This level of assessment qualifies us for or three years at Level 1, and opens the door for us to qualify at Level 2.

In 2008, Holsum Dairy will continue conversations with interested businesses about innovative projects such as:

- recycling of manure fiber into particle board
- capturing flared landfill methane gas and directing it to our digester
- acquiring higher efficiency manure fiber separators
- efficient uses of biodiesel fuel

***Respectfully,***

***Kenn Buelow, Dairy Manager, Holsum Dairies, Hilbert, Wisconsin 54129***

Elm Dairy's regular visitors, a flock of wild turkeys, return to the woods after supplementing their winter diets. They have learned to pick through the leftover feed pile outside Barn 2 before it gets recycled in the digester.



## Regulated topics:

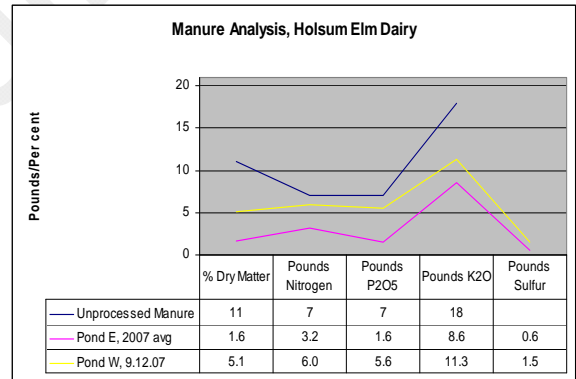
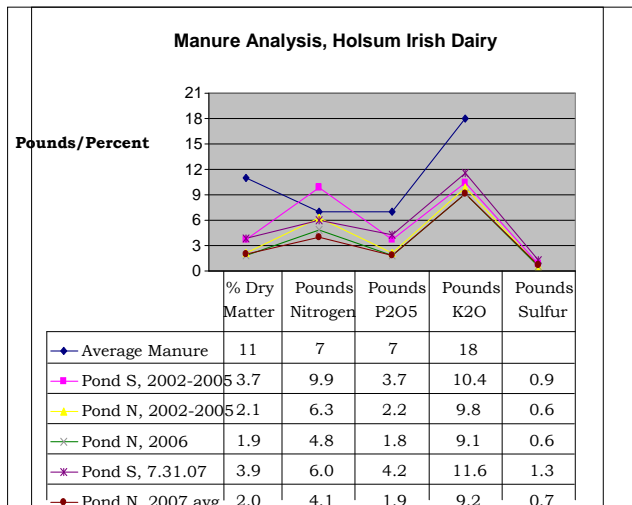
### Manure Metrics

Manure composition is of interest to us for our nutrient management plan, as well as for minimizing our environmental footprint. After capturing the energy and fibrous material from cow "waste", we have effluent with 82% less dry matter, 32% less nitrogen, 75% less phosphorous pentoxide (44% phosphorus), and 49% less potassium oxide (83% potassium); when compared to undigested manure values.

-In 2007, of approximately 67 million gallons, only 12 % of Elm Dairy and none of Irish Dairy's were spread by tanker trucks or tractor-towed wagons.

- As in 2006, we surpassed our goal of 80% of manure spread by hose (versus loads of manure spread by tanker trucks or tractor-towed wagons.), by achieving 88%.

2005 gallons applied: 29,599,495 (Irish Dairy)  
 2006 gallons applied: 46,040,343 (Irish Dairy and start of Elm Dairy)  
 2007 gallons applied >67 million (Irish and Elm Dairies)



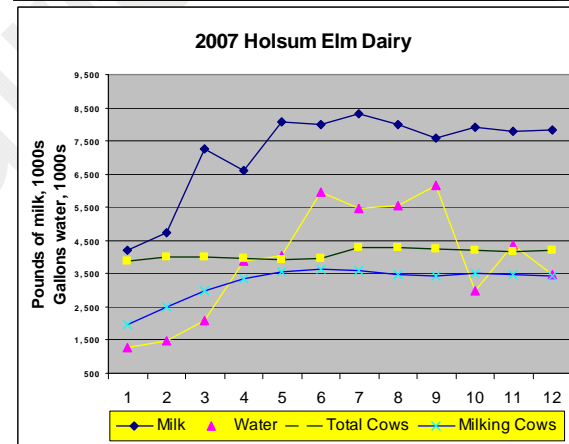
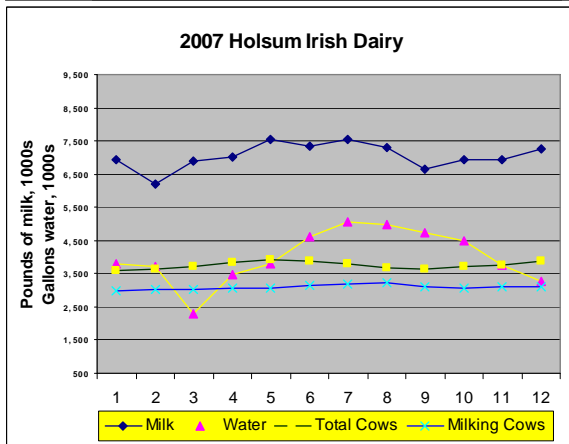
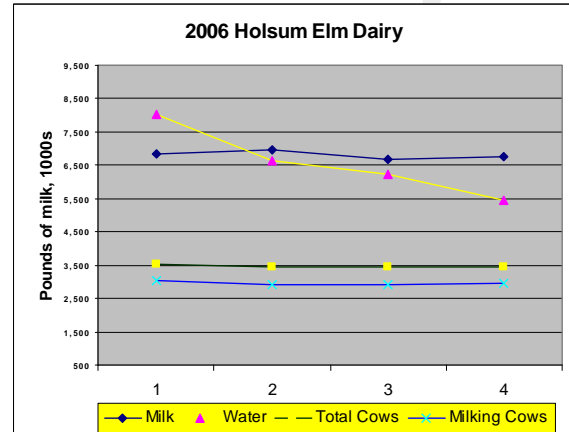
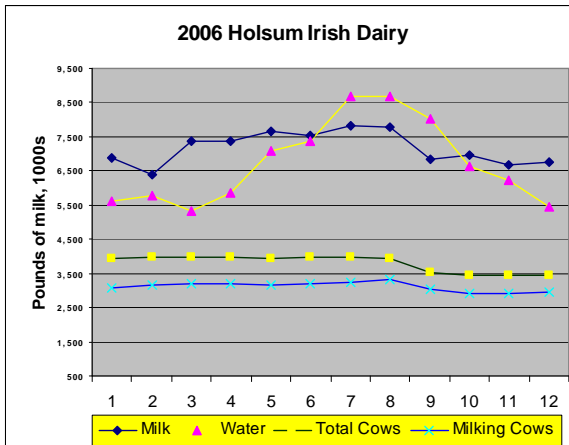
### What do all these digested manure numbers mean?

-Less phosphorus builds up in the soil, no longer available to run into streams and contribute to algae bloom.  
 -We provide nitrogen and potassium (potash) and water to the alfalfa crop. By applying effluent when the soil is relatively dry, and the plant is actively growing, we reduce the likelihood of nitrogen leaching through the root zone. We reduce the purchase, transport and additional application of fertilizer.

In 2008, because of our investment in a Davis Instruments weather station, we will be able to document the local microclimate each day that we distribute 'manure' from our lagoons. It is one more way to demonstrate and document Holsum Dairies' commitment to a Green Tier level of accountability.

## Water usage

We are tracking our **water usage** from each well, as required by statute. In addition, to allow for retrospective data mining and managing, we are comparing it to the numbers of cows (milking and dry) and the amount of milk shipped from the dairies. Increased water usage in hot months is for cow cooling primarily. Water conservation has been in place for four years; the differences in the next graphs are related to ambient conditions. For 2008, we will have a full year's weather data from our own weather station.



## Corrected Environmental Errors:

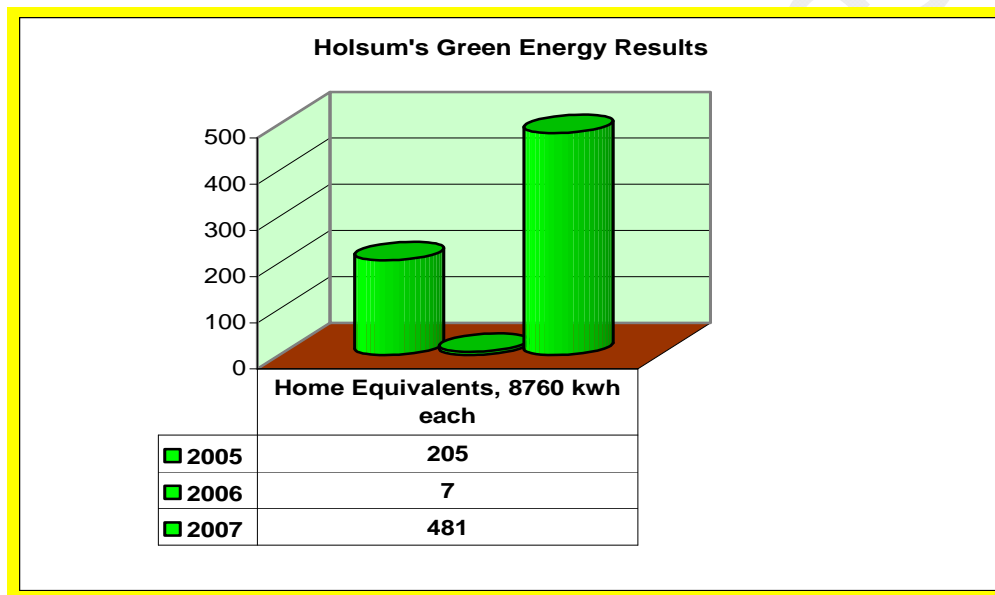
Liquid manure spills, chronological order	2006	2007	2008
August 2006, Severity 0	1	2	
September 2007, Severity 1			
December 2007, Severity 1			
0 == no impact on surface or ground water			
1==reached adjacent on-dairy dry containment ditch			
2==reached sediment retention ponds			
3== reached surface water (stream/pond/lake)			
4==impacted ground water			

## Unregulated topics:

### 1-Energy Producing Manure Digesters

#### Kilowatt Hours balance:

Year	Irish Gen, kwh	Irish Use, kwh	Irish Excess, kwh	Elm Gen, kwh	Elm Use, kwh	Elm Excess, kwh	<b>Combined Excess, kwh</b>	Home Equivalents, 8760 kwh each
<b>2005</b>	4,149,991	2,352,707	1,797,284	-----	-----	-----	1,797,284	<b>205</b>
<b>2006</b>	2,246,260	2,183,638	62,622	-----	268,680	0	62,622	<b>7</b>
<b>2007</b>	3,339,093	2,734,106	604,987	6,120,919	2,514,400	3,606,519	4,211,506	<b>481</b>



WPSsummaryKWHdata.xls

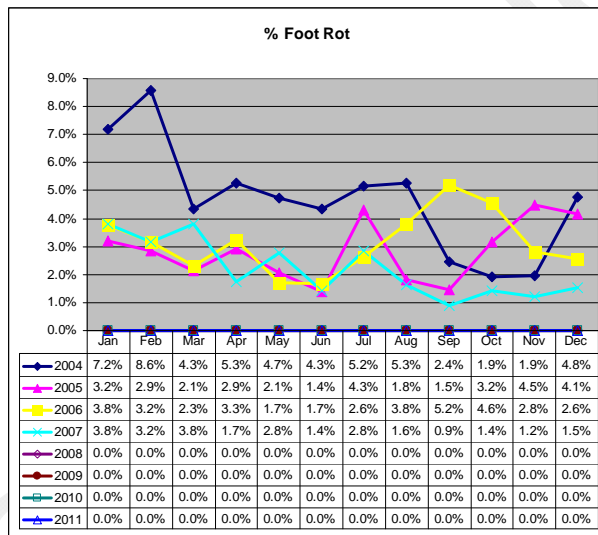
### 2-Fuel Usage in gallons:

	2005	2006	2007
<b>Diesel, Irish</b>	<b>55,270</b>	<b>62,117</b>	<b>58,536</b>
<b>Diesel, Elm</b>	-	-	<b>53,484</b>
<b>Gasoline, Irish</b>	<b>2,566</b>	<b>2,964</b>	<b>2,752</b>
<b>Gasoline, Elm</b>	-	-	<b>5,537</b>
<b>Propane, Irish</b>			<b>23,251</b>
<b>Propane, Elm</b>			<b>18,007</b>

### 3-Copper Sulfate Reduction

**Monitoring hoof health, specifically Foot Rot, related to copper sulfate reduction in 2006:** The yellow line is 2006. For the first seven months, percent of hoof trims was nearly identical to 2005. August, September, and October seemed to contradict the concept that we could reduce copper sulfate usage and maintain good hoof health. In fact, the footbath was not in operation in August and part of September due to improper drain cleaning.

Hoof health improved after that problem was corrected. Levels in 2007 have returned to the levels of 2005. Our nearly two year experiment appears to have benefited the land while serving our cows well. We are continuing to monitor as we continue to return less copper to the land.



## Elm Dairy update:

Holsum Elm Dairy, which started milking in September 2006, is approximately 4 miles west and north of the Holsum Irish Dairy facility. It now milks about 3,400 cows three times daily, in an eighty stall revolving carousel milking parlor.

### Highlights of Elm Dairy construction:

- cooperation with the Focus on Energy utility program led to the inclusion of more efficient lights, heat exchangers for in-floor heat, manure digester motors (25-36% more efficient than comparables at Irish Dairy), and variable speed drives
- inclusion of wet sediment basins, as part of storm water management
- construction of both lagoons to the highest standard in the state (necessitated with manure solids at lower than 2%)



**Our restored wetland:** Nestled just west of the Irish Dairy's cattle barns, the wetland attracts migratory birds and three season resident ducks and herons. Besides the memorable views, the spring chorus of frog songs is restorative to any listener.