



Integrated Manure Management System™

Harvest Energy | Capture Nutrients | Reclaim Water™

Virtual Tour of Majestic Crossing Dairy

January 2017

Meet Dean Strauss...

- Family owner of Majestic Crossing Dairy
- His **650 cows** make **~20,000 gallons of manure every day**
- Manure is stored in a lagoon and then spread on land, which is:
 - Costly and time consuming
 - Highly regulated and weather dependent
 - Releases odors and pathogens
 - May contribute to runoff and contaminate ground water

Farmers like Dean are facing lawsuits, tougher regulations, higher costs, and community backlash from current and expanding dairy operations



Our Solutions

We sell integrated systems that harvest energy, capture nutrients, and reclaim the water from organic waste.



BioMicronizer™

Cost-effective feedstock pre-treatment



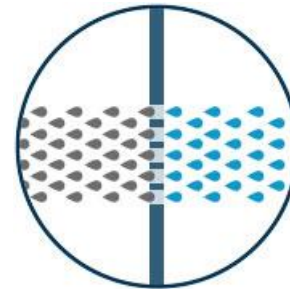
BioEliminator®

High-rate anaerobic digestion



BioSupport®

Customized bio-activator



NCWR®

Nutrient Concentration & Water Reclamation System

The Integrated Manure Management System™ (IMMS)

First installation now complete at Majestic Crossing Dairy - \$1.3M project

1 Fiber Separation



- Soil amendment
- Compost feedstock

2 BioMicronizer+ BioSupport



- Improves digestion

3 BioEliminator



- Biogas to run boiler

4 Nutrient Concentration & Water Reclamation

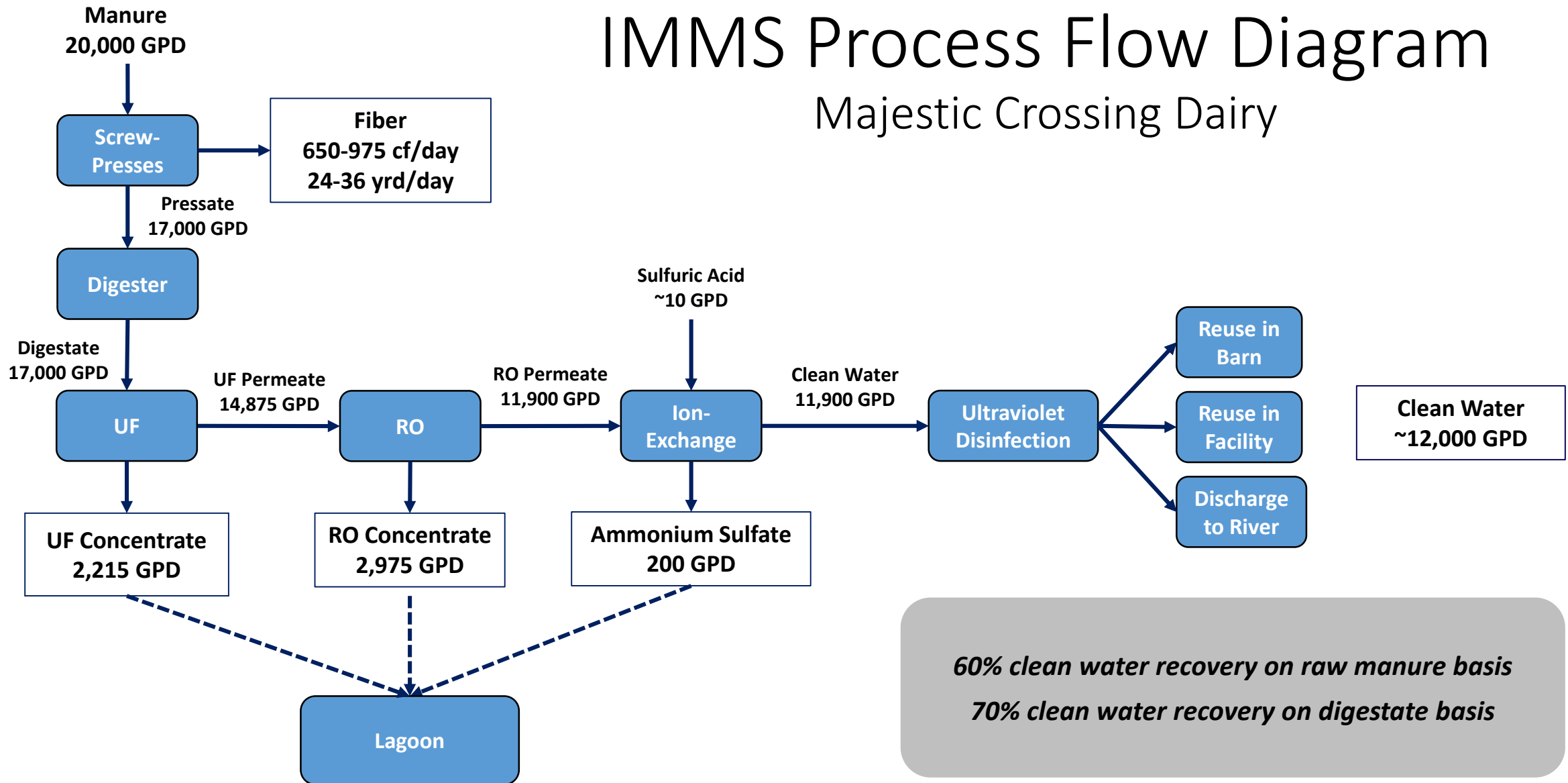


- 60% clean water
- 40% fertilizer
- **Happy farmer!**

The only proven solution that produces drinking water and organic-certified fertilizer without using polymers!

IMMS Process Flow Diagram

Majestic Crossing Dairy



60% clean water recovery on raw manure basis
70% clean water recovery on digestate basis

*Distribution of clean water to barn, facility, and river dictated by operator choice and equipment water demands

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Fiber Separation

- 2 FAN Screw-Presses
 - 750-micron screen size
- Ideal soil amendment
- Compost feedstock
- Bedding material



Material Analysis

Dry Matter	Moisture	pH	Electrical Conductivity
30.1%	69.9%	8.5	1.3

	Nitrogen	Phosphorus (P ₂ O ₅)	Potassium (K ₂ O)	Sulfur
LBS/TON	8.0	2.1	5.1	1.2
\$/TON	\$1.30	\$1.41	\$3.03	\$0.34

2 BioMicronizer™ + BioSupport®

BioMicronizer disintegrates fine solids in pressate by forcing material through nozzle under pressure, forcing air bubbles to form and pop, causing high shear forces

- In testing, it increased the amount of organic matter smaller than 20 microns by 2x and smaller than 1.5 microns by 3x!
- Reduces settling in digester by homogenizing pressate

BioSupport adds trace minerals and bio-activators to the pressate tank at about ¼ gallon per day.

- One drum lasts ~200 days!



BioMicronizer Pump

BioSupport

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BioEliminator[®]

- 100,000 gal in-ground concrete digester (5-day average hydraulic retention time)
- Four channels that pressate flows through in zig-zag fashion
- First section promotes acid hydrolysis and captures any particles that will settle for easy clean-out
- Next three sections contain plastic media that provides a surface for bacteria to grow on, forming a “biofilm”
- Biofilm makes higher quality biogas (>65% methane) and is less susceptible to upsets
- No moving parts inside digester means low maintenance requirements



Safety Relief Valves

Inside View (without bio-media)

Quick Access Panels

Quick Clean-Out Ports



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Nutrient Concentration & Water Reclamation

Multi-stage process to obtain drinking-quality water for Majestic's cows:

- **Ultrafiltration** to remove suspended solids
- **Reverse Osmosis** to remove dissolved solids
- **Water Polishing** to remove ammonia, aerate, pH adjust, and UV disinfect

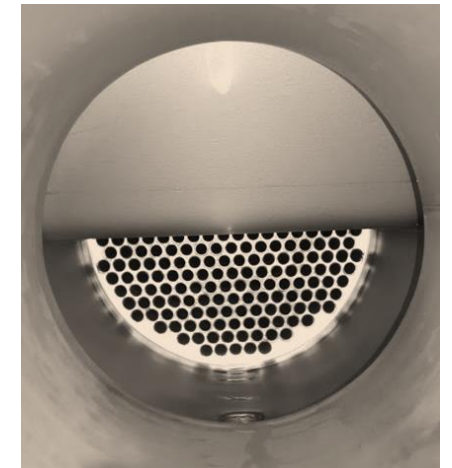


“Big Jake” UF Module at Majestic Crossing Dairy

18” diameter x 10’ long



UF Permeate or “Tea Water”
(goes to RO)



View looking inside the module
at tubular membranes

Reverse Osmosis and Ion Exchange System

*RO contains two high pressure membrane holders, each with 2 RO membranes
IEX system contains two tanks of resin to remove ammonia from RO Permeate*



Ion Exchange Resin Tanks

High Pressure Membrane Holders



RO produces "RO Concentrate", a fertilizer rich in potassium and ammonia nitrogen.

Water Polishing

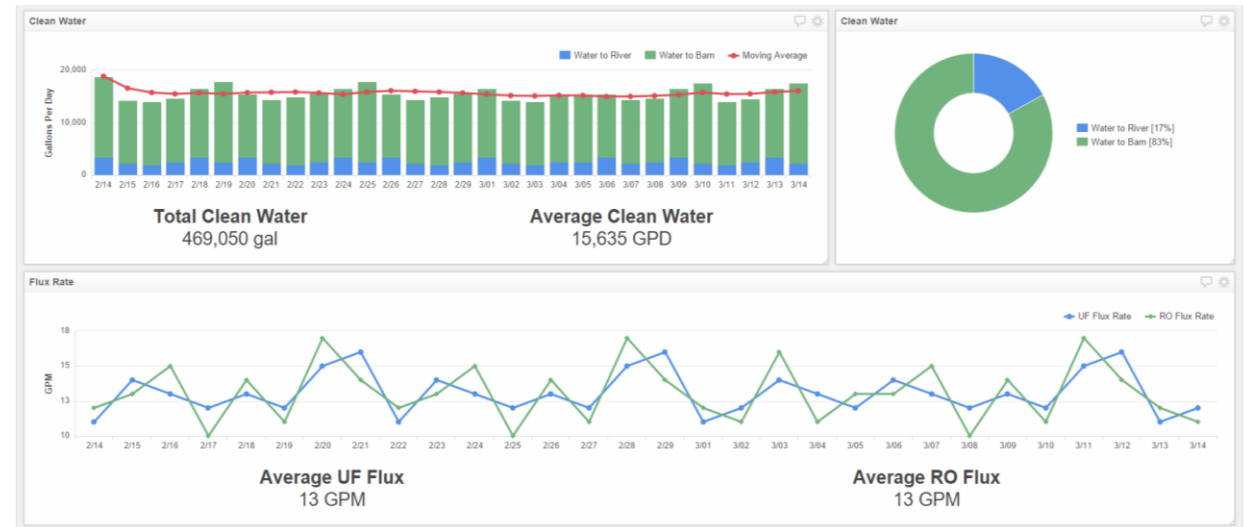
pH neutralization, particulate filtration, carbon filtration, and UV disinfection



Delicious, clean water!

Controls and Automation

- Entire system is automated so there is little to no operator attention required
- System sends email and text alerts if a problem is detected
- We remotely monitor all systems and can alert you if something requires attention
- We recommend a daily walk through with a brief checklist (5-10 min) to ensure everything looks ok
- Data is exported and presented to owner via online dashboard



Come Drink the Water...

The cows are enjoying it, so can you!

Please call or email Bobby Levine to
arrange a tour today.

robert.levine@digestedorganics.com

847-707-8433



Mobile Pilot Systems

- We can test your manure at your farm or deliver a tote to us for testing
- Enables analysis of key performance metrics, allowing us to size and quote full-scale system



Benefits Summary

- Only fully integrated treatment system **commercially available today**
- **Lowest operating cost** per gallon clean water of any treatment system on the market today
- Eliminates lagoon management challenges through significant volume reduction
- Reduces excess nutrient runoff, hauling and spreading costs, and manure trucks on the road
- Conserves freshwater resources and minimizes stress on wells
- Highly scalable - enables herd expansion without requiring more land
- Enables more targeted delivery of nutrients, increasing crop uptake and yields
- Concentrated nutrients are 100% organic - no polymers
- Highly automated system requires minimal staff intervention
- There is a **Branding/Certification** opportunity to differentiate farmers who deploy technology



Harvest Energy | Capture Nutrients | Reclaim Water

USA Offices:

Ann Arbor, Michigan
Milwaukee, Wisconsin



For more information or to request a quote, please contact: Bobby Levine | 847-707-8433
<http://www.digestedorganics.com>