



*Clean Water – Healthy World*

***An Effective and Sustainable Water Remediation  
and Biomass Production Process***

Bill Eggers, CEP, CWB, PWS  
VP Science & Technology  
BS Wildlife Ecology/Zoology, UF 1992

Renewable Energy Systems & Sustainability Conference  
July 31 – August 1  
Florida Polytechnic University



Vision:

Clean Water – Healthy World

AquaFiber's cutting edge AquaLutions™<sup>®</sup> technology can permanently remove algae and nutrients at scale from surface water more efficiently, effectively and economically than any other.

# AquaFiber

TECHNOLOGIES CORPORATION

## AQUALUTIONS®™



- CUSTOMIZED FOR RESTORATION TARGETS
- OPTIMIZED FOR LARGE, VERY DIRTY WATERBODIES
- PROVEN AT COMMERCIAL SCALE
- EFFECTIVE AND EFFICIENT
- SMALL LAND FOOTPRINT
- RELIABLE
- SCALABLE
- SUSTAINABLE
- ENVIRONMENTALLY SAFE
- LEAST EXPENSIVE LIFE-CYCLE COST ON MARKET



Lake  
Monroe

Lake  
Jesup

Lake  
Harney

World • United States • FL • Seminole Co.



50 feet 20 m

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## PROVEN TECHNOLOGY

### LAKE APOPKA:

- 6+ YEARS OF TESTING AND DEMONSTRATION

### LAKE JESUP:

- 5-YEAR PILOT PROJECT WITH SJRWMD
- 5.7 BILLION GALLONS RESTORED (3.7 MGD)
- THIRD PARTY VERIFICATION OF RESULTS



AquaFiber – Lake Jesup

THE RESULTS SHOWED THAT...

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## PHOSPHORUS REMOVAL AND MUCH MORE

### AQUALUTIONS®™ CAN:

- PERMANENTLY REMOVE MORE THAN 75% OF THE TOTAL PHOSPHORUS
- PERMANENTLY REMOVE MORE THAN 45% OF THE TOTAL NITROGEN
- PERMANENTLY REMOVE DECADES OF UNCONSOLIDATED MUCK AND LEGACY LOADS
- RESTORE WATER CLARITY
- REMOVE HARMFUL, TOXIN-PRODUCING ALGAE
- IMPROVE DISSOLVED OXYGEN CONCENTRATION





## LAKE JESUP PHOSPHORUS REMOVAL RESULTS (2009 – 2014)

- MEAN INFLUENT CONCENTRATION
  - 0.163 MG/L
- MEAN EFFLUENT CONCENTRATION
  - 0.033 MG/L
  - BMAP TARGET - 0.096 MG/L
  - FL NNC FOR COLORED LAKES – 0.050 MG/L
- MEAN REMOVAL EFFICIENCY
  - 75.1%
- TOTAL TP REMOVED
  - 6,449 LBS (2.93 MT)
  - MASS BALANCE



## LAKE JESUP NITROGEN REMOVAL RESULTS (2009-2014)

- MEAN INFLUENT CONCENTRATION
  - 3.48 MG/L
- MEAN EFFLUENT CONCENTRATION
  - 1.64 MG/L
  - BMAP TARGET – 1.27 MG/L
  - FL NNC TARGET FOR COLORED LAKES – 1.27 – 2.23 MG/L
- MEAN REMOVAL EFFICIENCY
  - 46.1%
- TOTAL TN REMOVED
  - 90,749 LBS (41.16 MT)

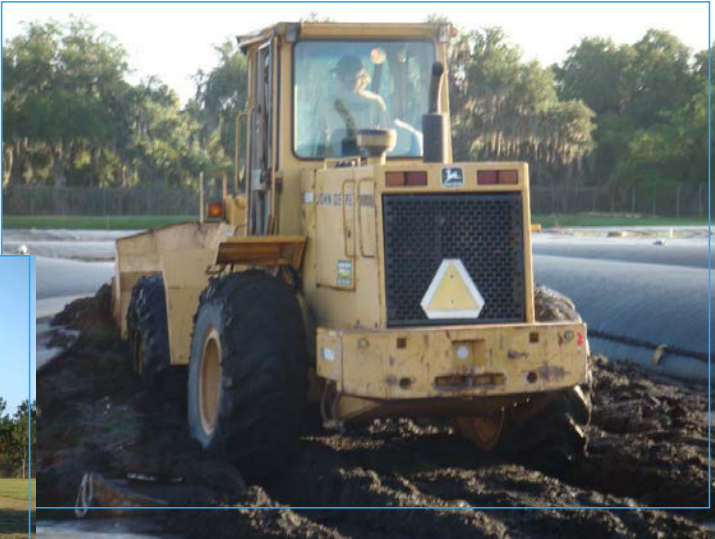




LAKE JESUP OPTIMAL RESULTS - YEAR 2  
DUAL NUTRIENT EFFICIENCY  
4/18/10 – 4/18/11

- **TOTAL WATER TREATED**
  - (350 DAYS)
  - 1.7 BILLION GALLONS
- **TOTAL TP REMOVED**
  - **2,474.30 LBS** (1.12 MT)
- **TOTAL TN REMOVED**
  - **33,659,91 LBS** (15.27 MT)
- **MEAN DAILY FLOW**
  - 4.9 MILLION GALLONS
- **TP REMOVAL EFFICIENCY**
  - **82.49% ± 15.88 SD**
- **TN REMOVAL EFFICIENCY**
  - **59.08% ± 13.18 SD**

# BIOMASS



**EVERYWHERE!**



# BIOMASS.... EVERYWHERE!



*"The Bobcat Ballet"*



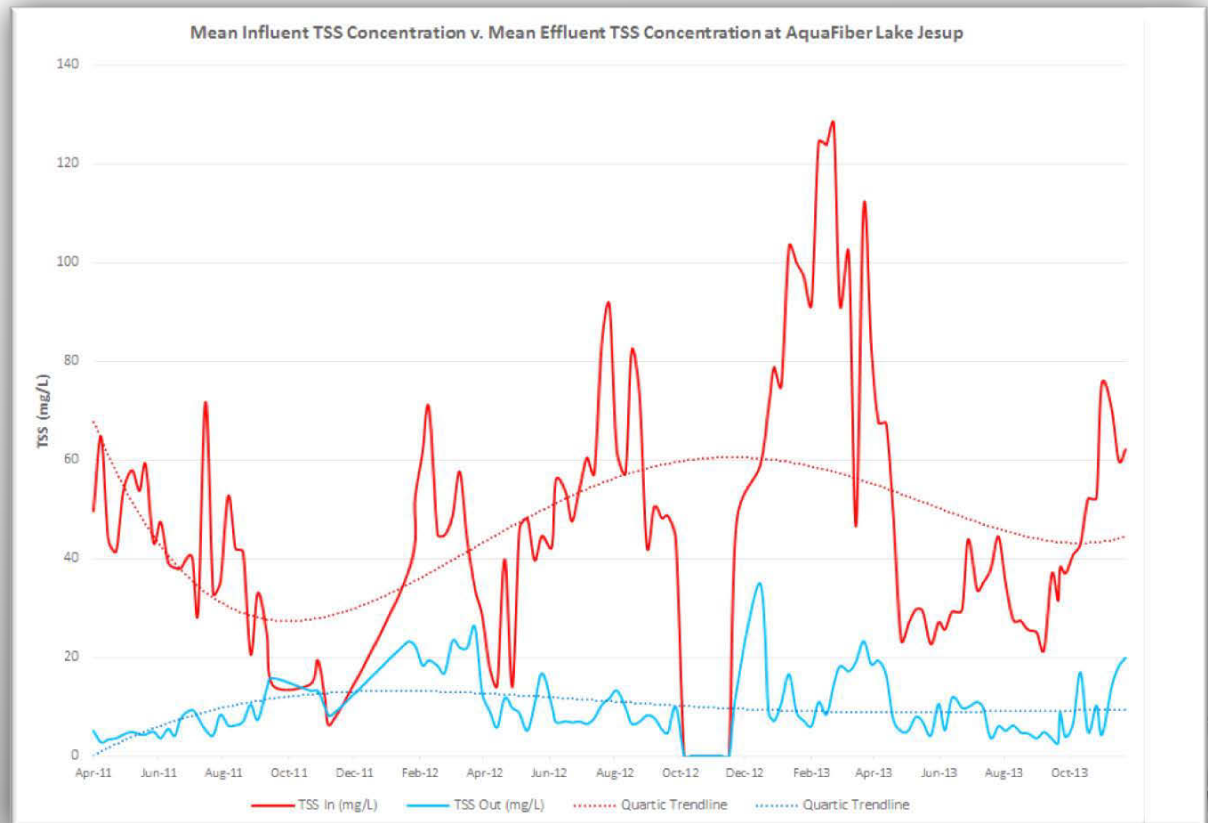
## LAKE JESUP RESULTS 4/18/11 – 4/18/14

### TOTAL SUSPENDED SOLIDS (TSS)

- MEAN INFLUENT CONCENTRATION
  - **46.1 MG/L**
- MEAN DAILY INFLUENT RANGE
  - **8.9 MG/L MIN**
  - **193.2 MG/L MAX**
- MEAN EFFLUENT CONCENTRATION
  - **9.3 MG/L**
- MEAN REMOVAL EFFICIENCY
  - **72.5%**

### TOTAL DEWATERED BIOMASS REMOVED

- **13,402,584 POUNDS (6,079 MT)**





**AquaFiber**  
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**Neutraceuticals**

**Anaerobic Digestion**

**Hydrogen**

**Mulch**

**Biodiesel**

**Wetland Mitigation**

**Building Materials**

**Fertilizer**

**CO2 Utilization**

**JP-8 Jet Fuel**

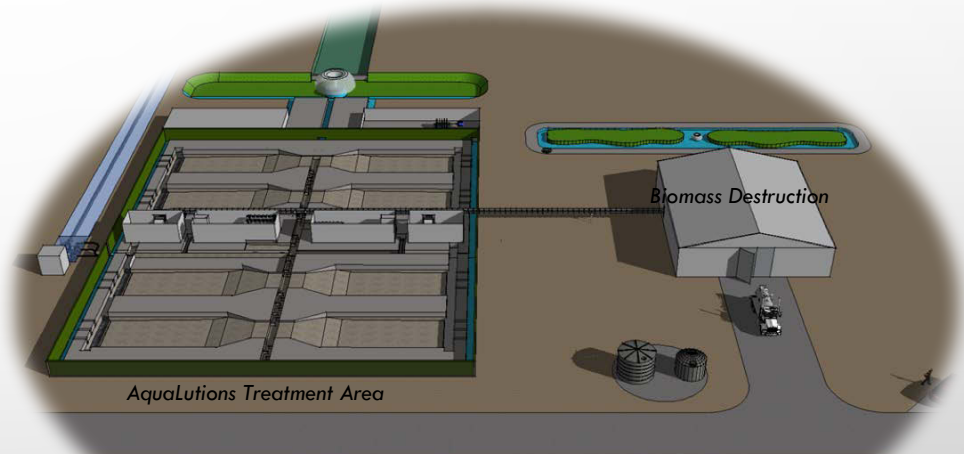
**Plastic Alternatives**

**Gasification**



## AQUAFIBER WITH BIOMASS DESTRUCTION

- 24 MGD WATER TREATMENT CAPACITY ON <10 ACRES OF LAND
- REMOVES ~16,000 POUNDS OF PHOSPHORUS AND ~217,000 POUNDS OF NITROGEN PER YEAR
- PERMANENTLY REMOVES AND RECYCLES NUTRIENTS INSTEAD OF SEQUESTERING OR WASTING THEM
- 40,000 - 50,000 GALLONS WET BIOMASS PER DAY
- USES BIOMASS AS ONLY FEEDSTOCK IN FLUIDIZED GAS BED TO DESTROY ITSELF (CAN ALSO GENERATE ELECTRICITY)
- CREATES NEW CLEAN TECH "STEM" JOBS (40)



24 MGD Expansion Plans

"MAKE FLORIDA THE FIRST CLEAN-WATER STATE IN THE UNITED STATES" – DICK NUNIS, WDW RETIRED



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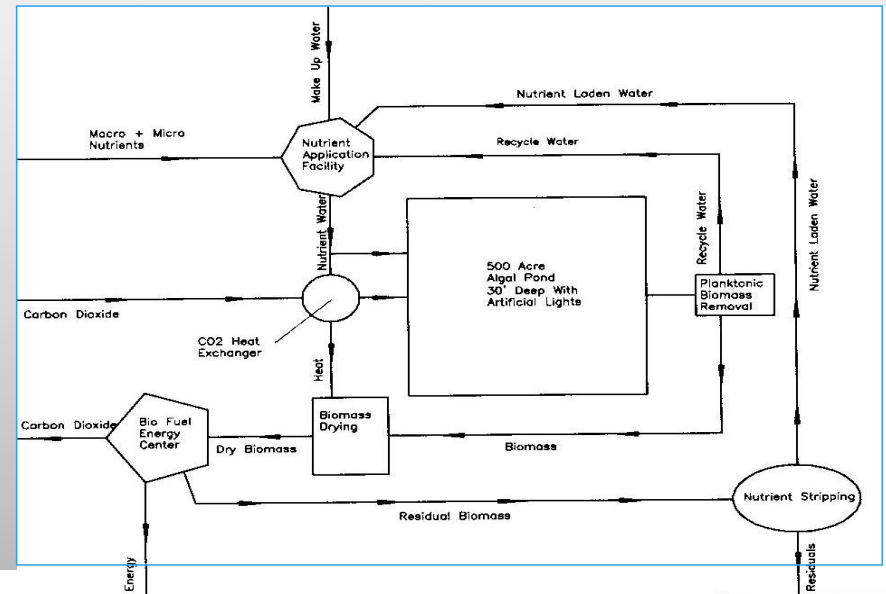
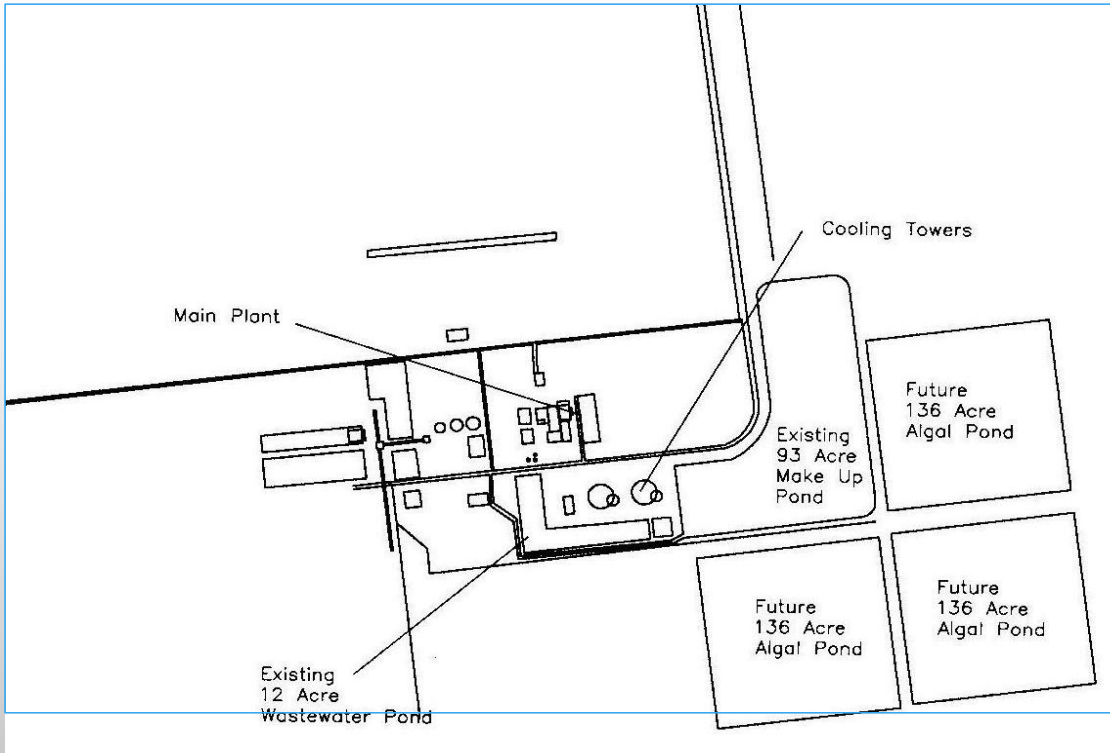
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## TESTED APPLICATIONS

- LARGE IMPAIRED SYSTEMS
- SMALL LAKE RESTORATION
- LEGACY LOAD REDUCTION
- FLOWING WATERS
- INDUSTRIAL WASTE WATER
- MINING WATER
- POWER PLANT COOLING WATER
- STORMWATER SYSTEMS
- WASTEWATER EFFLUENT POLISHING



## CARBON CAPTURE AND UTILIZATION



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## AQUAFIBER:

- IS PROVEN AND VERIFIABLE
- HAS SIGNIFICANT ADVANTAGES
- IS MODULAR AND SCALABLE
- WORKS AT SCALES LARGE ENOUGH TO RESTORE WHOLE BASINS
- PERMANENTLY REMOVES THE NUTRIENTS
- PRODUCES A BENEFICIAL BIOMASS OR ELECTRICITY
- CREATES NEW “STEM” JOBS





**THANK YOU**