



# Clean Thoughts

NEWSLETTER  
ISSUE 2 | SEPTEMBER 2022

## IN THIS ISSUE

- Hurricane Preparedness p. 1
- Ask the BioWizard p. 1
- Technology Corner p. 2
- Trivia Questions p. 2
- Know Your Bugs p. 3
- Trivia Answers p. 3
- Alliance Partners p. 3
- Technical Innovations p. 4
- Upcoming Training Programs p. 4

## HURRICANE PREPAREDNESS

### STORM PREPAREDNESS AND RECOVERY

Dating back to Hurricane Ivan in 2004, EBS has helped countless clients recover after major storms. In fact, one of our core values is "Calm in the Middle of the Storm". We know the effects of major storms are challenging for both business and families. EBS is here to help.

Since receiving shipments on-site can be difficult during these events, we recommend that facilities have a stock of one or more of the following on-site as part of their emergency plan.

- Bioaugmentation cultures (aka inoculum) - In case of washout or loss of power, our [BioStar™](#) or [MicroStar™](#) formulas can be applied to re-establish viable biomass.
- [BAC™ & BAC-2™ unit](#) (patented on-site bacteria grow-up systems) - Increases bioaugmentation efforts between 2-3 orders of magnitude.
- Nutrient - EBS [MacroGro™](#) nutrient formulations support cell synthesis to achieve optimal BOD removal.
- Food (BOD) source - Oftentimes after a storm event, production is down resulting in minimal BOD loading. EBS [MicroCarb™](#) provides a carbon source necessary for biomass growth.
- Alternate oxygen source - O<sub>2</sub> deficiency can arise when aerators are down. EBS has a calcium nitrate-based solution that can be applied safely and effectively to reduce the negative impacts of oxygen-deficient conditions and prevent the formation of hydrogen sulfide (H<sub>2</sub>S).



## ASK THE BIOWIZARD

### WHAT IS BIOAUGMENTATION?

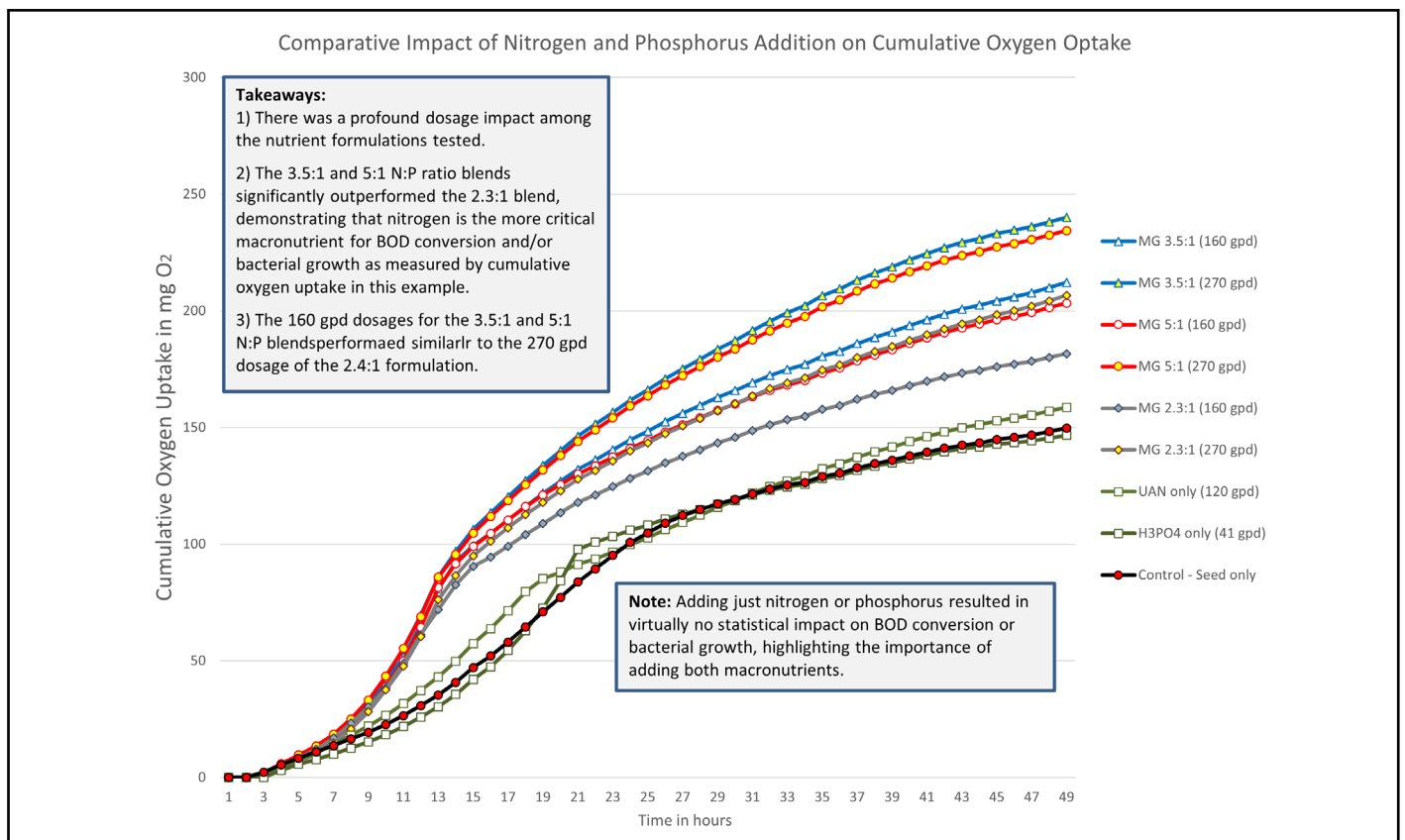
Bioaugmentation is the addition of supplemental bacteria to a system to support existing biomass or re-establish a healthy population following an upset event. Bioaugmentation is particularly applicable in Aerated Stabilization Basins (ASBs) where there is no return sludge (RAS) to continually re-inoculate the aeration basin. Bioaugmentation of Pulp and Paper mill ASBs has been used effectively to improve BOD removal for many years. By utilizing our Bac™ unit technology, the cost-effectiveness and efficacy of our programs are unequaled in the marketplace. So, if your ASB is struggling with inadequate BOD removal or high effluent TSS, contact us today!

## TECHNOLOGY CORNER

### OUR RESPIROMETRY CAPABILITIES - Benefits of a Nutrient Study

For over twenty years, EBS has been the leader in nutrient applications in the Pulp and Paper industry. One of our unique offerings is the use of respirometry to select and optimize the N:P ratio in our MacroGro™ blends for the initial program implementation and as needed based on observed performance.

The EBS treatability lab conducted a nutrient optimization study for a client who was interested in confirming the optimum nutrient formulation for their wastewater treatment system (WWTS). Three blends of varying N:P concentrations were introduced at doses equivalent to 160 gpd and 270 gpd. The oxygen uptake rate response of the bacteria was monitored over the following 48 hours. At the study's conclusion, the greatest oxygen uptake response was in the samples dosed with ratios of 5:1 and 3.5:1 of N:P blends. These results agreed closely with BOD, COD, TSS, and nutrient residuals obtained before and after the testing was performed. While these results show the comparative performance among the three formulations, the actual feed rates to the system will vary and be dictated by overall BOD loading and other factors.



### This Issue Trivia Questions:



1. What EBS products can be used on-site to help re-establish the bacterial population?
2. True or False. Rotifers are usually found when dissolved oxygen is low, <0.5 mg/L.
3. What is the most abundant element in the universe?

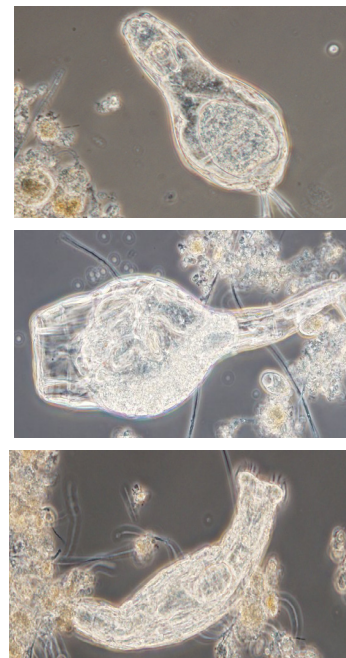
## KNOW YOUR BUGS

### ROTIFERS

Rotifers, one of the larger organisms often found in wastewater samples, are multi-cellular organisms ranging in size from 50 to 500  $\mu\text{m}$ . They are motile and are often seen grazing on bacteria or attached to debris by their forked tail or toe. Rotifers feed on algae, dispersed bacteria, bacterial floc, protozoan species, and dead organisms. In secondary systems, rotifers remove bacteria, algae, and small floc particles. It is generally accepted that the grazing on the floc aids in oxygen transfer into the floc structure. Rotifers also reduce the solids in the system and may have an incremental impact on effluent quality. Rotifers are strictly aerobic organisms, so their presence is typically indicative of an environment consistently maintaining aerobic conditions. They are often found in systems with a low F/M, high MCRT, and/or high MLSS. A sudden disappearance of rotifers may indicate a sudden increase in BOD loading or toxic shock. Early diagnosis by monitoring your microbiological population can prevent small problems from turning into major upsets.

#### References:

1. Foster, M. H. & Klopping, P.H. (2003). **Aerated Stabilization Basins for Pulp and Paper Mills**. Corvallis, Oregon. Callan and Brooks Publishing, Inc.



## SPOTLIGHT ON ALLIANCE PARTNER

### DR. ANDREW ENGLANDE

Dr. Englande joined EBS in 2015 as Sr. Wastewater Consultant and Adviser to the Treatability Lab following a 35-year career in academia. During his time with EBS, he has been a wonderful asset to the collaborative atmosphere of EBS by providing advice on laboratory research projects and client applications.

Previously, Dr. Englande was a Professor at Tulane University, Department of Global Environmental Health Sciences where he now holds the position of Professor Emeritus. He specializes in natural resource management including water quality and toxics assessment/control, with research areas in industrial waste management, wastewater and water treatment; bioremediation; the fate of trace contaminants and pathogens in the environment. Dr. Englande has published over 150 papers covering topics such as sustainability, wastewater and water treatment, waste minimization, and kinetics of contaminant removal by biological systems. He has presented a similar number of papers at international, national, and local conferences and has organized and participated in numerous continuing education programs and workshops.



### Trivia answers:

1. Bioaugmentation products (BioStar™ or MicroStar™) and Bac™ unit
2. False, rotifers are typically found when dissolved oxygen conditions are sufficient, usually around 2 mg/L.
3. Hydrogen, ~70% of the universe consists of hydrogen



## EXCITING ANNOUNCEMENT!

### EBS HAS CREATED AN INNOVATIONS GROUP

We are excited to announce that we are creating a new work group focused on enhancing existing products and developing new ones.

We invite you to share your most challenging hurdles faced when operating your treatment system.

We look forward to updating you on our latest discoveries and lessons learned in the near future!

Thank you,  
EBS Innovations Team

[Wastewater Challenges Survey](#)



## SPECIALIZED TRAINING PROGRAMS OFFERED



**1. SEMINAR - Aerated Stabilization Basins (ASB) and Activated Sludge Systems**  
**Mandeville, LA - October 11-13<sup>th</sup>**



**2. WEBINAR - Fecal Bacteria Testing**  
**Online - TBD**



**3. WEBINAR - Nitrification & Denitrification**  
**Online - TBD**

We want to hear from you! For more information regarding upcoming training programs, operational issues at your facility, request a specific article topic, or want to participate in our “Ask the BioWizard” questions, please contact us by phone, email [info@ebsbiowizard.com](mailto:info@ebsbiowizard.com) or through our [Contact Us](#) form located on our website.



**1930 SURGI DRIVE MANDEVILLE, LA 70448**

985-674-0660 | [info@ebsbiowizard.com](mailto:info@ebsbiowizard.com)

[www.ebsbiowizard.com](http://www.ebsbiowizard.com)