



An Employee-Owned Company
Comprehensive Wastewater Solutions

April 2026

»»» ISSUE 9 «««

CLEAN THOUGHTS

Wastewater Consultants Like No Other



IN THIS ISSUE

»»» BIOLOGICAL STABILITY DURING
PLANNED OR UNPLANNED OUTAGES
PG. 1 & 2

»»» WHY DO SETTLING BASINS
EXPERIENCE INVERSION?
PG. 4 & 5

»»» BIOAUGMENTATION AS A PROCESS
CONTROL TOOL PG. 3

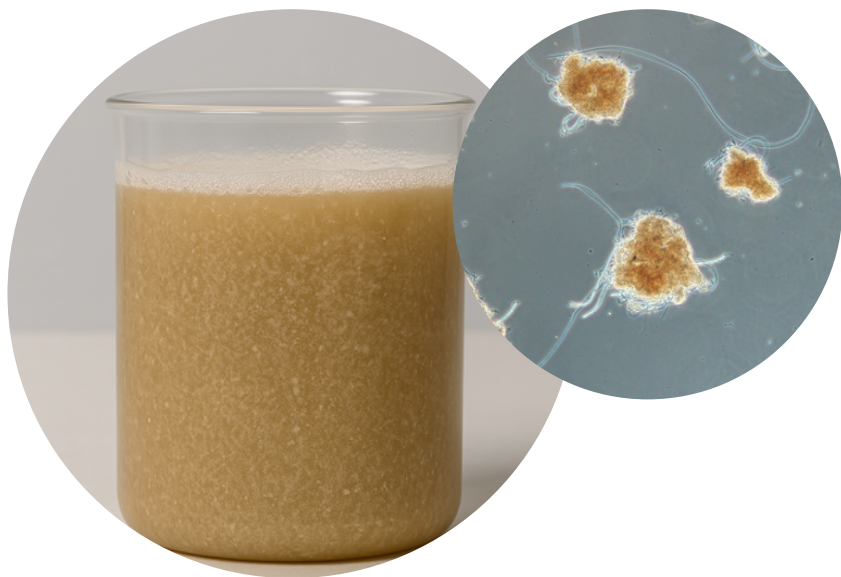
»»» UPCOMING EVENTS PG.6

MAINTAIN YOUR ACTIVATED SLUDGE BIOLOGY: STABILIZE YOUR BIOLOGY DURING PLANNED OR UNPLANNED OUTAGES

Shutdowns, turnarounds, seasonal slowdowns, and process interruptions pose a significant risk to biological wastewater treatment systems. Extended periods without adequate BOD loading can reduce microbial activity, compromise nitrification, and increase the likelihood of startup upsets or permit violations.

How Do Shutdowns Affect Your Biomass?

- Increased biomass decay due to loss of heat and oxygen transfer
- BOD loading (food) decreases, which starves biomass and slows respiration
- Lack of aeration prevents suspension of biomass and impacts BOD degradation early in the system
- Floc quality can diminish if F:M becomes unbalanced, causing poor secondary settling and increased effluent TSS



HELPFUL OUTAGE TIPS!

- Reintroduce a portion of normal BOD loading for 3-5 days prior to startup.
- Consider bioaugmentation and targeted nutrient supplementation to help the biomass handle the sudden and sometimes unpredictable changes in loading during startup.
- Consider applying **MicroCarb™** as a carbon-based food source, especially if the biomass is without a suitable BOD source leading up to the startup, depending on the length and magnitude of the outage.
- Control the controllables:
 - pH between 6.5 - 8.5
 - Hydraulic flow to the WWTS
 - Closely monitor CODs/BODs daily

SUPPORT YOUR BIOMASS WITH SUPPLEMENTAL ADDITIVES TO MAINTAIN COMPLIANCE

SUPPORT YOUR ASB

EBS CalNit Calcium Nitrate Solution – Nitrate is between dissolved oxygen and sulfate on the electron tower for bacteria. When a wastewater stream containing organic material becomes oxygen-limited, the bacteria look for an alternative terminal electron acceptor, or TEA. If there is no nitrate available, the bacteria utilize sulfate, forming hydrogen sulfide (H₂S) and creating health and odor issues. If nitrate is available, the byproduct is odorless and harmless nitrogen gas. CalNit nitrate solution is non-hazardous and generates no harmful byproducts.



EBS MicroCarb™ is a glycerin-based, non-toxic alternative carbon source that supplies biological wastewater systems with a readily degradable organic food source. Regular supplementation with MicroCarb helps low-loaded systems maintain sufficient biomass, ensuring optimal performance of their secondary clarifiers. Other applications include temporary usage during an outage, turn-around, or shutdown to maintain the biomass population.



BIOAUGMENTATION AS A PROCESS CONTROL TOOL

WHAT IS BIOAUGMENTATION AND WHY DOES IT WORK?

The EBS Bacterial Acceleration Chamber (BAC) unit and the two-stage BAC2 unit are designed to be used with various EBS formulations: Pulp & Paper, Food & Beverage, CPI Refining, etc. to acclimate and grow 10 to 100 times the bacterial population that is in the dry product for the BAC unit and 100 to 1000 times the bacterial population that is in the dry product for the BAC2. To achieve this growth rate, EBS developed special product formulations that provide additional nutrients and food for optimum bacterial growth. Other bacterial products do not contain the proper ingredients to sustain multiple log growth rates.



EBS develops and applies custom-formulated bacterial blends designed to address specific treatment challenges, including:

- Pulp & Paper
- Food & Beverage
- Cold-weather operations
- Oil & Gas applications
- Nitrogen limits
- General application for wide use

HOW CAN EBS HELP?

- Improve system stability
- Improve efficiency and resiliency in Aerated Stabilization Basins (ASBs)
- Shorten recovery times
- Enhance nitrification and BOD removal
- Reduce chemical and operational costs



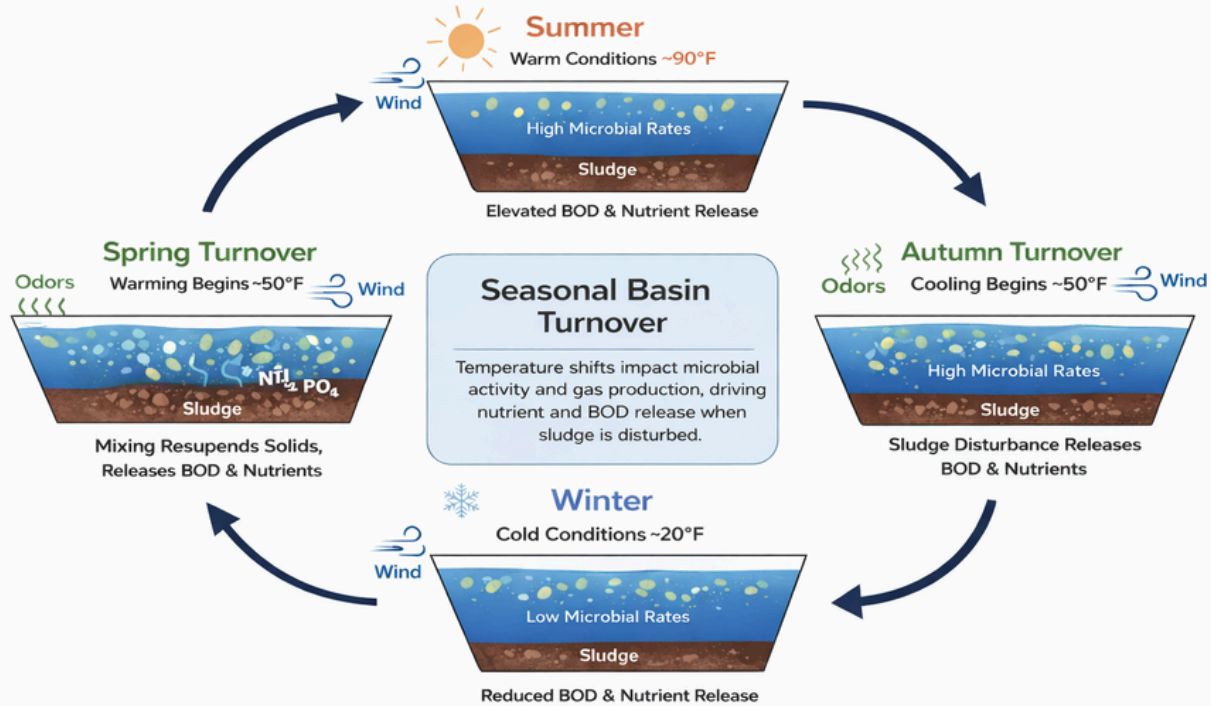
**ENSURE YOUR SYSTEM RUNS AT PEAK EFFICIENCY.
LET EBS HELP WITH BIOAUGMENTATION SOLUTIONS!**



WHY DO SETTLING BASINS EXPERIENCE INVERSION?

Seasonal Basin Turnover

Seasonal Temperature Shifts Drive Microbial Activity, Nutrient & BOD Release, and Solids Resuspension.



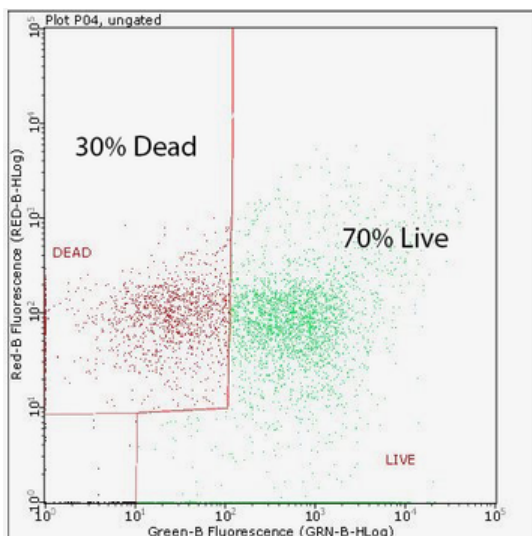
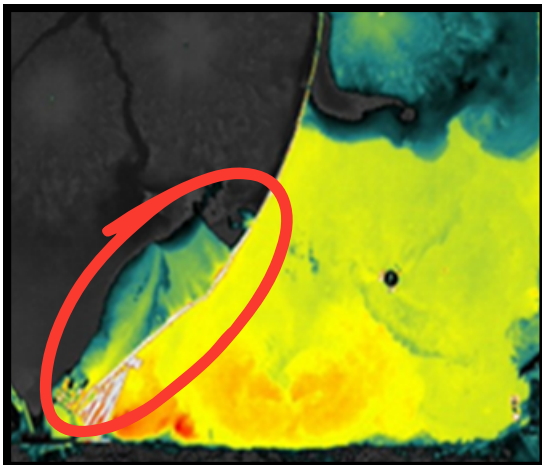
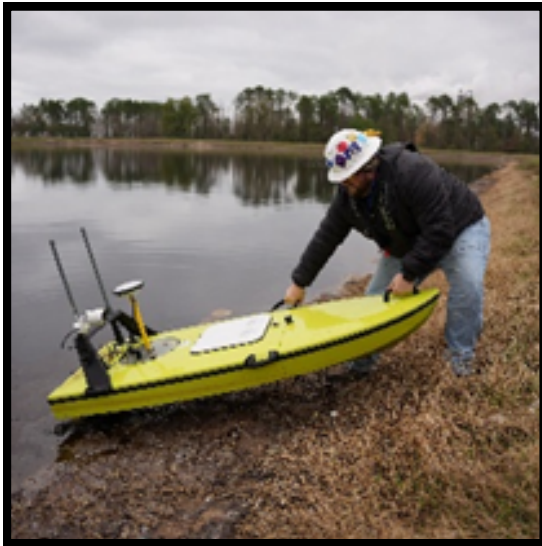
WHAT IS LAGOON INVERSION?

Although temperature does influence basin inversion, its effect in an ASB is mainly linked to the increased metabolic rate as the basin warms. Gasification is primarily the mechanism driving total suspended solids (TSS) resuspension and the release of nutrients from the benthic layer, including ammonium and phosphorus. Additionally, the conversion of complex, slowly degradable biochemical oxygen demand (BOD) into smaller molecular weight compounds through fermentation significantly impacts BOD performance.

WHY DOES IT OCCUR?

In most settling basin, the primary driver of inversion is not just the water temperature per se, but how temperature changes affect biology in the benthic zone. As air and water temperatures shift seasonally, microbial activity in the accumulated sludge increases, producing gases such as methane, CO₂, and hydrogen sulfide.

THE EBS ROLE



MITIGATION STRATEGIES

Inversion cannot always be prevented but its impact can be reduced. EBS supports facilities by helping identify risk, monitor basin behavior, and apply practical mitigation strategies.

ADVANCED MONITORING TOOLS

- **Profile studies** (temperature, solids, sludge depth) following severe weather events
- **Routine depth surveys** to track solids accumulation and compaction
- **Thermal imaging or drone surveys** to visualize surface temperature gradients and inflow impacts

ANALYTICAL & PROCESS SUPPORT

- Targeted sludge sampling to assess live vs. inert biomass
- Settleability and flowability testing on sludge layers
- Evaluating whether chemical additions (used cautiously) may temporarily stabilize floc during transition periods



Mark Your
CALENDAR

2026 TRAINING EVENTS

APRIL 30TH -- CPI/REFINING WORKSHOP: LAKE CHARLES, LA

JUNE 10-11TH -- ASB/AST WORKSHOP: MADISON, WI

JULY 15-16TH -- ASB/AST WORKSHOP: SAVANNAH, GA

SEPTEMBER 15-16TH-- ASB/AST WORKSHOP: PORTLAND, OR

OCTOBER 6-7TH -- ASB/AST FALL SEMINAR: MANDEVILLE, LA

LEARNING THAT LASTS:

HEAR FROM OUR ATTENDEES

"Overall experience was awesome. The teachers were very knowledgeable and would highly recommend to those who are starting out or looking to improve troubleshooting."

Utilities Process Specialist, Pulp & Paper



"It was very informative, it gave me a different perspective on things. Also it gave me insight on how to approach situations I run into from time to time."

Water Treatment Manager, Oil & Gas

