



AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

SUCCESS STORIES

PLANT NAME AND LOCATION

BIRDS EYE FOODS (FORMERLY AGRILINK/SOUTHERN FROZEN FOODS) - MONTEZUMA, GA

DESIGN DAILY FLOW / PEAK FLOW

2.0 MGD (7571 M³/DAY) / 2.4 MGD (9085 M³/DAY)

AQUA-AEROBIC SOLUTION

DUAL-BASIN AquaSBR[®] SYSTEM

AquaSBR[®] SYSTEM TREATS HIGH STRENGTH VEGETABLE PROCESSING WASTE

In early 1993, Birds Eye Foods (then known as Southern Frozen Foods) was faced with a difficult decision, to construct a new wastewater treatment facility or to retrofit their existing flow-through extended aeration treatment system. The existing flow-through system was often unable to produce the required effluent quality because of widely varying flows and highly variable organic loading rates. Increasing chemical costs and excessive power consumption added to the feeling that the system was no longer suited to the needs of the growing plant operation.

After investigating several wastewater treatment systems, Birds Eye Foods decided that a retrofit of the existing system to an AquaSBR system was far more cost effective than constructing a new facility. A retrofit of the existing system offered the ability to improve overall power consumption and chemical addition, while providing a cost effective alternative for increasing the overall system performance.

A dual-basin AquaSBR sequencing batch reactor system was installed and it is a continuous flow system, which means that flow enters 100% of the time. Daily surges in hydraulic and/or organic loading change frequently during the day depending on the types of fruits and vegetables being processed and clean-up of the plant.



Aerial view of the Birds Eye Foods dual-basin AquaSBR[®] System.

In addition to the food processing wastewater the AquaSBR system normally treats, it also treats 100 gallons per week of Propylene Glycol solution (non-toxic chemical). The chemical is bled into the system slowly over the week.

Immediately following the installation of the AquaSBR system, overall power consumption for the upgraded facility declined by an average of 47%, as compared to the previously existing extended aeration plant. This saved Birds Eye Foods over \$18,000 in a four-month period.

AquaSBR® SYSTEM PROCESS

The AquaSBR system operates on a simple concept of introducing a quantity of waste to a reactor, treating the waste in an adequate time period, and subsequently discharging a volume of effluent plus waste sludge that is equal to the original volume of waste introduced to the reactor. This "Fill and Draw" principle of operation involves the basic steps of Fill, React, Settle, Decant, and Sludge Waste. The system may be designed to include seven individual phases of operation but the inclusion or duration of any individual phase is based upon specific waste characteristics and effluent objectives.

Where nutrient removal is required, a simple adjustment to the SBR's operating strategies permits nitrification, denitrification, and biological phosphorus removal. Optimum performance is attained when two or more reactors are utilized in a predetermined sequence of operation.

DESIGN CHARACTERISTICS

Birds Eye Food's AquaSBR system was designed to treat 2.0 MGD (7571 m³ mg/l) of fruit and vegetable processing waste with an average BOD₅ of 1080 mg/l and TSS of 200 mg/l. Effluent discharge limits are set at 25 mg/l for BOD₅ and 30 mg/l for TSS.



One of the AquaSBR® basins in operation at Birds Eye Foods. Shown are the Aqua-Jet® aerators in operation and an AquaDDM® mixer to the left.

AVERAGE ANNUAL OPERATING DATA

LOADING	DESIGN INFLUENT	AVG INFLUENT	AVG EFFLUENT	PERMIT EFFLUENT
AVG Flow mgd	2.0	1.2	----	----
Peak Flow mgd	2.4	2.3	----	----
BOD ₅ mg/l	1080	650	8	25
TSS mg/l	200	260	6	30
NH ₃ -N mg/l	----	4.3	0.3	NA

AquaSBR® SYSTEM ADVANTAGES

The AquaSBR system's ability to handle widely varying flows and highly variable organic loading rates has allowed Birds Eye Foods to meet its effluent requirements and greatly reduce its power consumption by an average of 47%. This has saved the plant a considerable amount of operating costs.

Other benefits of the AquaSBR system include:

- All components retrievable and accessible
- Tolerates variable hydraulic loads
- Controls filamentous growth
- Tolerates variable organic loads
- Provides quiescent settling
- Separation of aeration and mixing
- Lower installation costs
- Return activated sludge pumping eliminated
- Small footprint
- Simple to expand or upgrade
- One company accountability