

# GELITA USA

CASE  
SUMMARY

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## GELITA USA, INC.

Sergeant Bluff, Iowa  
Woodbury County

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Major: Civil Engineering  
School: Iowa State University



## The Company

The GELITA Group companies manufacture high quality gelatine which is used in a variety of applications in the food, photographic and pharmaceutical industries. GELITA USA Inc. is the largest single site gelatine manufacturer in the world and one of the few gelatine manufacturers utilizing both pigskins and bone chips as raw materials.

## Project Background

Currently, the plant wastewater passes through an onsite pretreatment process before being discharged to the city wastewater treatment facility. One of the stages of extracting gelatin from bone is the liming process, which generates a large amount of liquor. This liquor contains a large portion of the BOD, COD, TSS, TKN, and hydraulic loading emitted to waste treatment and is considered a liability. GELITA proposes that the components making up the lime drop wastewater stream are valuable as by-product and should be recovered as such.

## Incentives to Change

Following pretreatment, wastewater from the facility is sent to the Sioux City Wastewater Treatment Facility. In the near future, the costs of treating the wastewater are projected to rise. GELITA desires to change the characteristics of their wastewater to reduce future treatment and disposal costs.

## Results

### 1. Lime Drop Recovery - \$1,555,691 per year

During the liming process, tanks of bone are drained weekly so that fresh water and lime may be added. Significant portions of solids and protein are among the components of the drained water. These components, which can be problematic in the pretreatment lagoons, could potentially be collected for by-product. By reducing the moisture content of the product to approximately 10 percent, a sellable by-product is created and substantial load is taken away from the lagoons. Many expenses will be encountered during the development of this by-product including costs for equipment, installation, labor, and energy.





However, the income and savings earned by this process will be able to pay for all of the expenses within a five year period.

## 2. North Deliming Screen By-Pass - \$8,382 per year

During the liming process, occasionally a lime bed is split and distributed over other lime beds to increase throughput. During the transfer, this ossein travels over the north deliming screen which rinses away the lime water and feeds filtered well water. This is not a necessary function since the split lime bed will be receiving more lime water. Existing valves and pipes can be used to bypass the north deliming screen during a transfer. This project is currently in operation and saving approximately 124,000 gallons of water per year.

## 3. Immediate Lime Bed Splits - \$18,390 per year

Lime bed splitting occurs to increase throughput in the lime house. It has been proposed to split a bed as soon as it enters the lime house rather than waiting four weeks. This procedure would cut down on water use and result in less waste. During normal operations throughout the year, 14,145,858 gallons of water per year could be avoided.

## 4. Spent Wash Water Reuse - \$31,200 per year

In the past few years, spent wash water (SWW) has been used in the limehouse for transfers and other such needs that didn't required filtered well water. Recently, this use has been halted due to potential degradation of product and decrease in yield. Upon initial examination, no increase in yields was found after the use of spent wash water halted. If this spent wash water does not create any problems, reuse should continue to save at least 24 million gallons each year. Further study on this opportunity is recommended.

Project Description	Environmental Impact	Economic Cost Savings	Status
Lime Drop Recovery	Wastewater reduction	\$1,555,691/yr	Recommended
North Deliming Screen By-Pass	Water Savings and Wastewater reduction	\$8,382/yr	Implemented
Immediate Lime Bed Splitting	Water savings and Wastewater reduction	\$18,390/yr	Recommended
Spent Wash Water Reuse	Water savings and Wastewater reduction	\$31,200	Recommended