SynaPure™
wastewater treatment

CASE STUDY

ELIMINATING TRUCKING AND DISPOSAL COSTS AT BIOSOLIDS COMPOSTING FACILITY

This case study demonstrates the successful application of the mobile SynaPure™ wastewater treatment systems in addressing the challenges of managing stormwater runoff at biosolids composting facilities.

The modular nature of the technology enabled rapid deployment along with effectively eliminating trucking and disposal costs, minimizing environmental impact, and optimizing resource utilization.

By adopting this innovative solution, the composting facility achieved significant financial savings, enhanced its environmental sustainability and ensured its long-term operational viability.

THE PREMIER SUSTAINABLE SOLUTIONS PROVIDER IN NORTH AMERICA

Synagro delivers environmentally beneficial products, services and circular innovation by reimagining product design, material use and resource efficiency.

INTRODUCTION

A biosolids composting facility in South Carolina faced mounting costs associated with hauling and disposing of its stormwater runoff. Traditional methods of managing stormwater, such as retention ponds and trucked disposal, proved inefficient and expensive. Seeking a cost-effective and sustainable solution, the facility explored the potential of mobile membrane-based wastewater treatment.

CHALLENGE

The biosolids composting operation generated significant quantities of stormwater runoff contaminated with suspended solids, organic matter and nutrients. Trucking this contaminated water to a distant disposal facility incurred substantial transportation costs and environmental impact. Additionally, the facility faced challenges in managing the limited capacity of its retention ponds, requiring frequent and costly maintenance.

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SOLUTION

To overcome these challenges, the facility opted for Synagro's SynaPure™ membrane-based wastewater treatment system. This system, mounted on a trailer for easy transport and deployment, utilized a nanofiltration (NF) membranes to treat the contaminated stormwater on-site.

PROCESS TREATMENT TRAIN

1. **Stormwater Collection –** Stormwater runoff was collected and directed to a holding tank.
2. **Nanofiltration –** The water underwent treatment through NF membranes, removing suspended solids, colloids and pathogens, e.g., E. coli, as well as removing dissolved pollutants like nutrients and organic matter.
3. **Reuse or Discharge –** The highly treated water met stringent discharge standards and could be reused for various purposes, such as irrigation or washing equipment. Alternatively, it could be safely discharged into nearby waterways.

SUCCESS

Implementing the mobile membrane-based system yielded significant benefits:

- **Elimination of Trucking and Disposal Costs –** On-site treatment eradicated the need to truck contaminated water, resulting in substantial cost savings.
- **Reduced Environmental Impact –** Eliminating trucking lowered greenhouse gas emissions and minimized the risk of spills or accidents during transport.
- **Reduced Reliance on Retention Ponds –** On-site treatment minimized the need for retention ponds, freeing up valuable land and reducing maintenance costs.
- **Improved Water Quality –** The treated water met all discharge regulations, safeguarding the environment and supporting sustainable operations.

ADDITIONAL BENEFITS

- **Mobility –** The mobile system offered flexibility and scalability, enabling easy deployment at variable locations depending on the need.
- **Operational Efficiency –** The system required minimal operator intervention and maintenance, further reducing operational costs.
- **Compact Design –** The small footprint of the system made it ideal for the facility's existing space constraints.

ABOUT THE SYNAPURE WASTEWATER TREATMENT SYSTEM

The SynaPure wastewater treatment system is a flexible, single-pass process capable of treating a wide variety of influent wastewater types to produce direct discharge or reuse quality effluent. Provided on a skid or built into a shipping container, the system can be rapidly deployed to virtually any site.

The technology behind the SynaPure system removes contaminants including inorganic and organic pollutants, total suspended solids, total dissolved solids, PFAS, heavy metals and pathogens that can create challenges and disposal issues for our current and future customers.[1]

[1]https://www.epa.gov/system/files/documents/2021-09/multi-industry-pfas-study_preliminary-2021-report_508_2021.09.08.pdf

Climate Change

We've baselined our Scope 1, 2 and 3 CHG emissions and calculated our beneficial handprint.

Product Stewardship

In 2022, we processed 6.5 million tons of biosolids, of which 80% was reused for a beneficial purpose.

Technology and Circular Innovation

We are collaborating with CharTech Solutions to pilot an industry-first process to treat biosolids.

To learn more about our sustainability efforts and how we plan to grow our business sustainably, visit www.synagro.com/sustainability.

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