

WB Regional Biosolids Processing & Storage Facility

March 17, 2026

• Biosolids Management • Challenges

- **Limited Storage Capacity**

Biosolids storage capacity is limited to **less than 28 days at current flow rates**, reducing operational flexibility during periods when solids cannot be land applied.

- **Digester Temperature and Process Limitations (503 Requirements)**

During colder months, maintaining required **time and temperature for Class A biosolids under 503 regulations** becomes more difficult. Lower temperatures increase required detention times, resulting in **solids backing up within the process** and limiting the ability to waste sludge effectively.

- **Land Application Limitations (Weather, Crops, and Farm Availability)**

Biosolids management relies heavily on land application, which is increasingly limited by **wet weather conditions, crop rotation schedules, and a declining number of participating farmers**. These combined factors significantly reduce disposal availability throughout the year.

- **No Available Liquid Biosolids Disposal Options**

There are currently **no facilities accepting liquid biosolids**, leaving land application as the primary disposal method and significantly limiting operational flexibility.

- **Compliance Risk Due to Solids Accumulation**

When biosolids cannot be removed at the required rate, **mixed liquor concentrations increase**, negatively impacting treatment performance and contributing to effluent quality issues. This has resulted in **extended periods of non-compliance at West Brunswick Regional (WBR)**.

- **Upset Pond Capacity and Re-Treatment Requirements**

The upset pond is currently at or near capacity, requiring diversion of flow to the drip irrigation site during periods of operational stress. All stored flow must be **re-treated through the facility**, increasing hydraulic loading and compounding existing process challenges.

Biosolids Project Benefits

- **Improved Operational Stability**

Provides adequate biosolids processing and storage capacity, allowing operators to **maintain proper solids levels in the treatment process** and keep the plant running consistently, even during high loading or stressful conditions.

- **Reduced Dependence on Land Application**

Decreases reliance on land application sites that are limited by weather conditions, crop rotations, and declining farmer participation, **improving year-round operational flexibility.**

- **Expanded Disposal Options**

Dewatering produces a material that can be handled, transported, and accepted at facilities that do not accept liquid biosolids, **increasing disposal flexibility.**

- **Lower Hauling Volume and Improved Efficiency**

Reduces the volume of biosolids by removing water, resulting in **fewer loads, reduced hauling frequency, and improved transportation efficiency.**

Biosolids Project Benefits

- **Improved Regulatory Compliance**

Allows solids to be removed from the treatment process at the required rate, **reducing the risk** of effluent violations and extended non-compliance events.

- **Reduced Operational Strain on Plant Systems**

Minimizes reliance on the upset pond and **reduces the need for re-treatment**, lowering system stress and **improving overall plant performance**.

- **Cost Control and Predictability**

Reduces emergency hauling and reliance on high-cost disposal options such as the Sampson County Landfill, **improving long-term cost stability**.

- **Supports Future Growth**

Provides the infrastructure needed to manage increasing biosolids production associated with **ongoing and future wastewater treatment plant expansions**.

Biosolids Project Cost Comparison

Cost of liquid processing

Liquid to Farmers		Liquid to Landfill	
2.83%	% Solids AVG	2.83%	% Solids AVG
5,263,000	Gallons	5,263,000	Gallons
21,947	Wet Tons	21,947	Wet Tons
621.1	Dry Tons	621.1	Dry Tons
6,500	Truck Size gallons	6,500	Truck Size gallons
809.69	Year 2025 Loads	809.69	Year 2025 Loads
\$ 0.0818	\$ per gallon	-	-
\$ 531.70	\$ per truck	\$ 167.11	\$ per truck
\$ 430,513.40	Year 2025 Cost	\$ 3,667,563.17	Year 2025 Cost

Costs of cake processing

Cake to Farmers		Cake to Landfill	
20%	% Solids AVG	20%	% Solids AVG
744,724	Gallons	744,724	Gallons
3,106	Wet Tons	3,106	Wet Tons
621.10	Dry Tons	621.10	Dry Tons
25	Truck Size gallons	25	Truck Size gallons
124.22	Year 2025 Loads	124.22	Year 2025 Loads
-	-	\$ 65.00	\$ per wet ton tip fee
\$ 40.00	\$ per ton	\$ 195.00	\$ per ton
\$124,220.00	Annual Cost*	\$226,080.40	Annual Cost*

*Estimate based on 6 MGD operations and Year 2025 data

Biosolids Project Capital Cost Participation

A. Capacity & Upfront Capital Allocation

Participant	Capacity (MGD)	% of Capacity	Upfront Capital Share (\$)
County (Existing)	1.5	12%	\$4,625,000
Oak Island	3.0	24%	\$9,250,000
Holden Beach	1.0	8%	\$3,083,333
Shallotte	0.5	4%	\$1,541,667
County (New Capacity)	6.0	52%	\$18,500,000
TOTAL	12.0	100%	\$37,000,000

B. Optional Rate-Funded (Differential Rate) Scenario

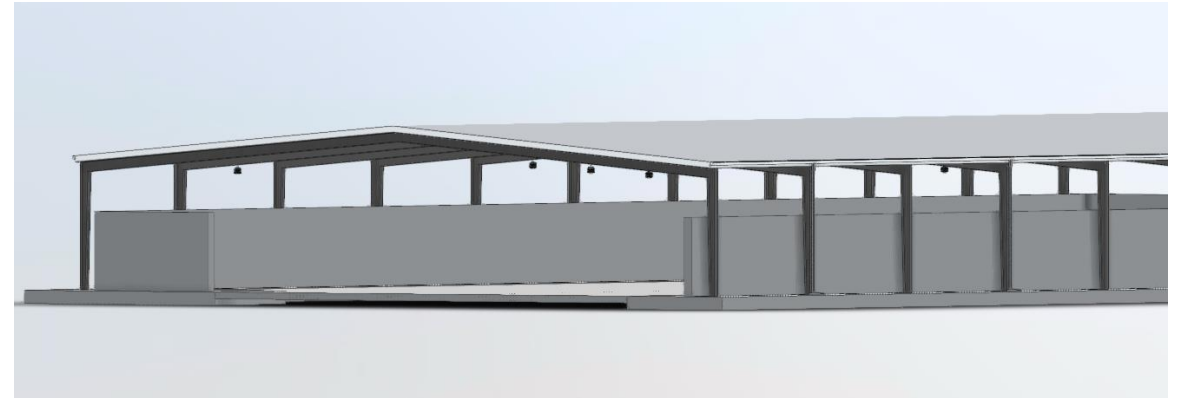
County funds all capital upfront; participants repay their share through rates.

Participant	Annual Flow (MG)*	% of Participant Flow	Annual Debt Service (\$)
Oak Island	270.6	52%	\$529,249
Holden Beach	79.2	15%	\$154,902
Shallotte	172.2	33%	\$336,795
TOTAL	521.9	100%	\$1,020,947

*Flow Estimate (Most Recent 12 Months)

Uniform Biosolids Rate (Participants Only): \$1.96 per 1,000 gallons

Biosolids Project Update



60% Design Review

(March 18, 2026)

Enter Phase 2 –
Construction Agreement

(July/August 2026)

Mobilize for
construction

(Fall 2026)

Construction
duration is ~15
months



Thank You

Biosolids Project

Project Need Summary

- Heavy reliance on land application, with fewer facilities currently accepting liquid biosolids.
- Disposal is affected by weather, crop cycles, and seasonal limitations.
- Declining participation from farmers accepting liquid for land application.
- Increasing hauling distances and rising disposal costs.
- Limited storage capacity, with only about 28 days of storage available.
- Need for a more reliable long-term solution to reduce biosolids volume, lower hauling needs, and support the County's growing wastewater system.

Biosolids Facility

PROJECT NEEDS/CURRENT CHALLENGES:

- **Operational Constraints - Limited storage capacity** prevents maintaining optimal Mixed Liquor Suspended Solids (MLSS) levels which creates challenges for stable treatment plant operations.
- **Limited Disposal Options-** Third-party facilities periodically shut down or reach capacity. Key disposal outlets include Sampson County Landfill.
- **Seasonal and Agricultural Restrictions** - Some permitted fields are limited to Class A biosolids only. Emergency hauling required during wet and cold seasons
- **Cost Uncertainty-** Hauling and tipping fees continue to rise. Some facilities do not accept liquid biosolids.
- **Regulatory Risk-** WB Facility has received Notices of Violation (NOVs) due to inability to properly waste sludge.
- **Operational Risk-** Current wet sludge require higher hauling frequency and therefore higher transportation cost.

BENEFITS OF A BIOSOLIDS PROCESSING & STORAGE FACILITY:

- **Operational Stability-** Provides adequate biosolids storage and allows operators to maintain proper MLSS and plant performance
- **Disposal Options-** Less reliance on external disposal sites with capacity limitations
- **Cost Control** - Reduces emergency hauling and improves cost predictability.
- **Regulatory Compliance** – Reduces risks of Notices of Violation (NOVs) & fines
- **Long Term Solution** - Establishes reliable and sustainable biosolids management for future growth

BACK UP - Full details

Biosolids Facility Requirement

CURRENT CHALLENGES

Brunswick County faces challenges in managing biosolids due to limited storage capacity, restricted disposal options, seasonal land application limitations, and rising hauling costs. The current system provides about 28 days of storage and relies heavily on land application sites that are affected by weather, crop cycles, and declining farmer participation, with no facilities currently accepting liquid biosolids.

- **Operational Constraints** - Limited biosolids storage capacity restricts the ability to maintain optimal Mixed Liquor Suspended Solids (MLSS) levels within the treatment process. When solids cannot be removed in a timely manner, MLSS concentrations increase, creating operational challenges that can impact treatment efficiency and plant stability. The current Class A biosolids storage tank provides approximately 28 days of storage capacity at current plant flow rates, limiting operational flexibility.
- **Limited Disposal Options** - Disposal options for biosolids are extremely limited. There are currently no facilities accepting liquid biosolids, which restricts disposal primarily to land application. Land application availability depends on field conditions, crop cycles, and coordination with local farmers.
- **Cost Uncertainty** - Hauling and disposal costs continue to increase due to rising fuel, labor, and contractor costs. In emergency situations when biosolids must be transported to the **Sampson County Landfill**, costs increase significantly and are not sustainable for routine operations.
- **Regulatory Risk** - Operational limitations associated with biosolids handling have resulted in compliance challenges in the past. For example, the West Brunswick facility has received Notices of Violation (NOVs) due to the inability to waste sludge at the required rate during periods of limited disposal availability.
- **Seasonal and Agricultural Restrictions** - Land application is frequently restricted during wet weather conditions, preventing access to permitted fields. Application timing must also align with crop cycles and field availability. Some permitted fields are limited to Class A biosolids only, further reducing disposal flexibility.
- **Emergency Hauling Requirements** - During plant upsets or periods of elevated mixed liquor concentrations, biosolids must occasionally be hauled to the Sampson County Landfill. Due to the significantly higher cost associated with this disposal method, it is only utilized in emergency situations.
- **Inefficient Transport of Liquid Biosolids** - Without dewatering, biosolids contain a high percentage of water, resulting in increased hauling frequency and higher transportation costs. A biosolids dewatering facility would significantly reduce the volume of material transported, improving operational efficiency and reducing long-term disposal costs.

BACK UP - Full details cont.

Biosolids Facility Requirement

BENEFITS OF

The biosolids processing facility provides long-term biosolids management

STABILITY:

reduces volume, lower hauling needs and costs, decrease reliance on land application, and provide a more reliable long-term wastewater system.

- **Operational Stability** - Provides adequate biosolids storage and processing capacity, allowing operators to maintain proper Mixed Liquor Suspended Solids (MLSS) levels and stable treatment plant performance. Additional storage and processing flexibility reduces operational stress during periods of high solids production or process upsets.
- **Expanded Disposal Flexibility** - Processing and dewatering biosolids significantly reduces volume and allows for additional disposal options that are not available for liquid biosolids. This reduces reliance on land application and limited third-party disposal sites.
- **Cost Control and Predictability** - Dewatering biosolids reduces the volume of material requiring transportation and disposal, lowering hauling frequency and associated costs. It also reduces the need for emergency hauling to facilities such as the Sampson County Landfill, improving long-term cost predictability.
- **Improved Regulatory Compliance** - Increased biosolids handling capacity allows solids to be wasted from the treatment process as required, reducing the risk of operational upsets, permit violations, and Notices of Violation (NOVs).
- **Reduced Reliance on Land Application** - A processing and dewatering facility reduces dependence on land application sites, which are limited by weather conditions, crop cycles, and declining farmer participation.
- **Long-Term Sustainable Solution** - Establishes a reliable and sustainable biosolids management strategy that supports current operations and future wastewater treatment plant expansions within Brunswick County.
- **Volume Reduction Through Dewatering** - Dewatering biosolids significantly reduces water content, resulting in substantial volume reduction. This improves transportation efficiency, reduces hauling requirements, and expands disposal options.