Revolutionizing Waste Management and Carbon Sequestration with Reclyzer™ Biochar

From Waste to Wealth: Turning Sewage Sludge into a Valuable, Sustainable Resource for Soil Health and Carbon-Neutral Future

Innovative Solutions for Soil Health and Carbon Dioxide Removal

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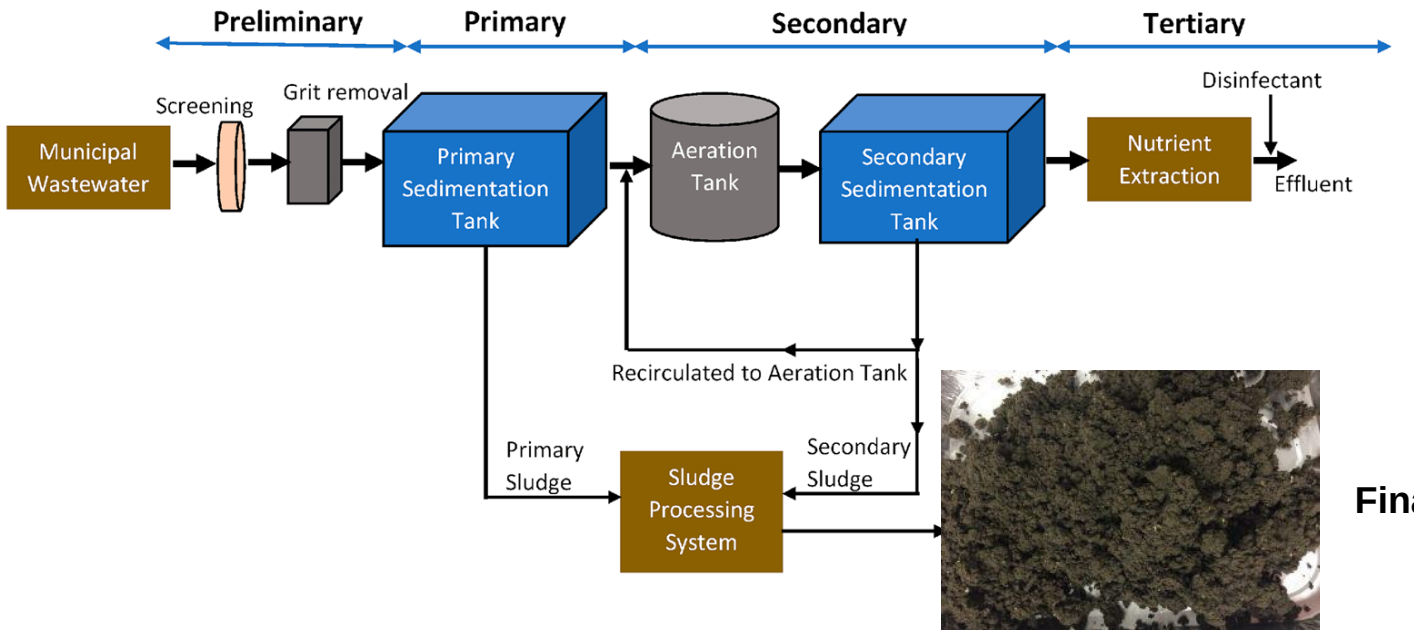
Introduction to the Problem

- Sewage sludge is the solid fraction separated during the domestic wastewater treatment process.
- The U.S. generates over **13.8 million** tons (dry weight) of sludge annually.
- Sewage sludge contains contaminants such as heavy metals, pathogens, organic compounds, and forever chemicals like PFAS.
- Current disposal methods include incineration, landfilling, and water discharge, which:
- Pose risks to soil and water quality, and
- Contribute to greenhouse gas emissions, including CO2 and methane, harming the environment.

Wastewater Treatment Process



Final product: Sludge cake

- Upon sludge cake production, the sludge is dewatered to **70%** moisture using a belt press.
- Currently, dewatered sludge is disposed of through incineration, landfill, or water discharge.
- These methods of disposal of sludge contaminate soil and water with heavy metals and "forever chemicals" like PFAS, and release GHG such as CO2 and methane to the atmosphere. Therefore, an efficient technology to address this issue is urgently needed.

Sewage Sludge Management

- **Introducing SoilLogia**: Revolutionizing sewage sludge management with the innovative **Reclyzer™** technology, which sustainably converts sewage sludge into a unique biochar through an advanced pyrolysis process.

1. Environmental Benefits

- Converts sludge into biochar, effectively diverting CO_2 and methane emissions from inefficient disposal methods and locking them into a stable form.
- Each ton of biochar stores the equivalent of **2.3 tons of CO_2**, with the potential to remain stable in soils for thousands of years, supporting long-term climate solutions.
- Aligns with net-zero goals and offers carbon credits for industries aiming to offset their emissions.
- Contributes to public health initiatives by eliminating offensive odors, heavy metals, pathogens, and PFAS contaminants from sludge.

2. Product Value

- Acts as a soil amendment to enhance physical, chemical, and biological properties, improving overall soil health and addressing soil degradation issues while reducing reliance on synthetic fertilizers.
- Boosts crop productivity by recycling essential nutrients back into the soil.
- Transforms waste into a valuable resource, effectively closing the loop on sludge disposal challenges.
- Reduces soil care costs for farmers, offering an economical and sustainable solution.

Advanced Pyrolysis System

- The advanced pyrolysis system required to scale biochar production is the BST-50 from **Beston Group Co., LDA**. This system operates continuously, running 24/7, and processes **15 tons** of feedstock per hour.

a) Required Facility and equipment

b) 3D layout of BST-50 advanced pyrolysis system

1. Dewatered sludge

2. Dried sludge

3. Sludge-biochar

Carbon Credits

- SoilLogia requires **108,000 tons** of raw sludge (dry matter) per year to produce **46,440 tons** of Reclyzer™ Biochar annually using the BST-50 pyrolysis system. The yield conversion from raw sludge to biochar is 43-60%.

1. Raw sludge (108,000 tons per year)

Disposal Technique	CO2 eq per ton of raw sludge	Total CO2/year avoided
Incineration	0.5 tons	164,250 tons
Landfill	1 ton	328,500 tons
Water Discharge	0.8 tons	262,800 tons

- By converting raw sludge into Reclyzer™ Biochar, we prevent a minimum of **164,250 tons of CO2 equivalent per year** from being released into the atmosphere.

2. Reclyzer™ Biochar (46,440 tons per year)

Product	Tons CO2 equivalent per ton of biochar	Tons CO2 eq sequestered
Reclyzer Biochar	2.3	105,492.80

- By producing at least 46,440 tons of Reclyzer™ Biochar annually, we sequester over 100,000 **tons of CO2 equivalent per year.** We aim to sequester over 10x by 2030.

Location of the Project

- The project will be in the state of Delaware (USA), with raw sludge sourced from nearby wastewater treatment facilities in Kent County (DE), Pennsylvania, and Maryland to meet operational needs.
- The facility will be built on land in Georgetown (DE), which is yet to be acquired. The quality control laboratory will also be housed at this site.
- The administrative headquarters will be in a rented office, either in Dover or Wilmington (DE), to accommodate office staff and management functions.

Market Opportunity

- **Rising Demand:** Increasing awareness of net-zero initiatives and sustainable soil solutions is driving demand for organic amendments.
- **Market Size**: Carbon offset market was at $331.8B in 2022 → $1.6T by 2028 (31% CAGR); Soil amendments market: $6B in 2023 → $11.1B by 2030 (9.3% CAGR).
- **Target Segments**: Corporations offsetting emissions; Farmers and landscapers aiming to improve soil health, and municipalities aiming to efficiently dispose of sewage sludge.
- **Competitive Edge**: Our advanced pyrolysis technology maximizes carbon capture and nutrient recovery, aligning with regulations and sustainability goals. We improve soil health while simultaneously generating carbon credits.

Business Model

- **Revenue Streams**: Carbon credits and Reclyzer™ sales.
- **Pricing**: Reclyzer™ at **$0.40/lb**.; Carbon credits at **$250/ton CO_2 eq.**
- **Distribution**: Direct sales and wholesale partnerships.
- **Scalability**: Start in Delaware, Pennsylvania, Virginia and Maryland; expand to other states.
- **Partnerships**: Collaborate with governments, wastewater facilities, tech companies, farmers, retailers, and universities.

Traction

- **Achievements:** Developed Reclyzer™ biochar and successfully completed field trials**;** Established partnerships with wastewater facilities to secure raw material sourcing.
- **Current Progress:** Validating the carbon credit market through verification and licensing processes; Engaging with farmers to adopt Reclyzer™ biochar, empowering them to improve soil health while earning additional income from carbon credits.
- **Next Steps:** Forge partnerships with corporations aiming to offset their carbon emissions, expanding market reach and impact.

Financial Projections

- **Year 1:** Establish the production facility and build relationships with initial customers. The goal is to achieve the break-even point by year-end, leveraging projected demand and growth.
- **Years 2 and 3:** Expand production capacity by scaling from **1 to 10 pyrolysis systems** across additional states and markets. Hire additional team members to support operational growth and explore opportunities for further market expansion.
- Refer to the table below for detailed cost and revenue projections:

Year	$ Total Costs	$ Carbon Credits Sales	$Biochar Sales	$Total Revenue
1	5,139,500.00	24,840,000.00	34,560,000.00	67,350,000.00
2	10,415,120.00	124,200,000.00	172,800,000.00	297,000,000.00
3	16,831,000.00	248,400,000.00	345,600,000.00	594,000,000.00

Funding Request

- We are seeking **$5,653,450.00** in funding to scale production and operations in **Year 1**. The funds will be allocated as follows:

Item	Total
Land Purchase	460,000.00
Facility Construction	300,000.00
ICP-AES (for chemical testing)	150,000.00
Quality Control Equipment	4,500.00
BST-50 Reactor + Dryer	2,000,000.00
Operational Costs	1,446,000.00
Salaries	765,000.00
Contingency (10%)	513,950.00
Total Investment	**$5,653,450.00**

- **The buffer fund of $513,950.00** will be used to address unexpected needs or fluctuations in cash flow.

Closing & Call to Action

- Join us in revolutionizing soil health, waste management, and net-zero carbon initiatives with Reclyzer™. Together, we can turn waste into wealth while building a sustainable future.
- Now is the time to be part of an innovative solution tackling critical global challenges. We offer the following investment options:

1. Carbon Credit Purchase: Secure a future supply of carbon credits at a fixed price by investing today.

2. Equity Stake: Gain an equity stake in Reclyzer™ biochar sales by investing fully or partially in the funds required to build our production facility and acquire the advanced pyrolysis system.

3. Combined Option: Choose both an equity stake and a carbon credit purchase for a comprehensive investment approach.

Be a catalyst for change—invest in Reclyzer™ today and shape the future of sustainability.

Media Engagement

- **USA Today:** Reclyzer Biochar – Transforming Waste into Wealth: SoilLogia's Mission to Foster Climate Health Without Compromise. Learn more
- **Economic Insider:** Transforming Waste into Opportunity: Antonio Timoteo, Ph.D., Advances Soil Health and Net-Zero Carbon Goals with SoilLogia LLC. Learn more
- **Quantum Commodity Intelligence:** Biochar Start-up Seeks $6 Million in Seed Funding for Flagship Plant. Learn more
- **Biochar Today:** SoilLogia to Raise $6M in Seed Funding to Scale Sustainable Biochar Production. Learn more

Management

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