

---

# Louisville Green Program Performance Report for 2023

Revision Date: 03-25-2024



Revision Number: 002

---

## Introduction

Louisville Green’s Management Team consists of Managers and Administrators throughout the Biosolids value chain from pretreatment to land application. This report summarizes performance and progress of the Louisville Green Management System in 2023.

NOTE: Due to the failure in April 2020, there was not any Louisville Green Production in 2021. An emergency dryer project was started to replace two of the dryer trains. Production began mid-year 2022. Production was limited in 2023 due to commissioning issues.

## Biosolids Summary Information and Marketer Performance

A Monthly Solids Summary spreadsheet is used to monitor the distribution of Louisville Green, the landfill of Dewatered Biosolids and Landfilled Product.

The following table summarizes the yearly distribution of Louisville Green.

Year	Total Tons Distributed	Landfilled Tons	% of Marketable Material Distributed
2019	7,522	804	100
2020	944	203	100
2021	0	0	0
2022	5383	1889	99
<b>2023</b>	6221	298	100

**Table 1.0**



---

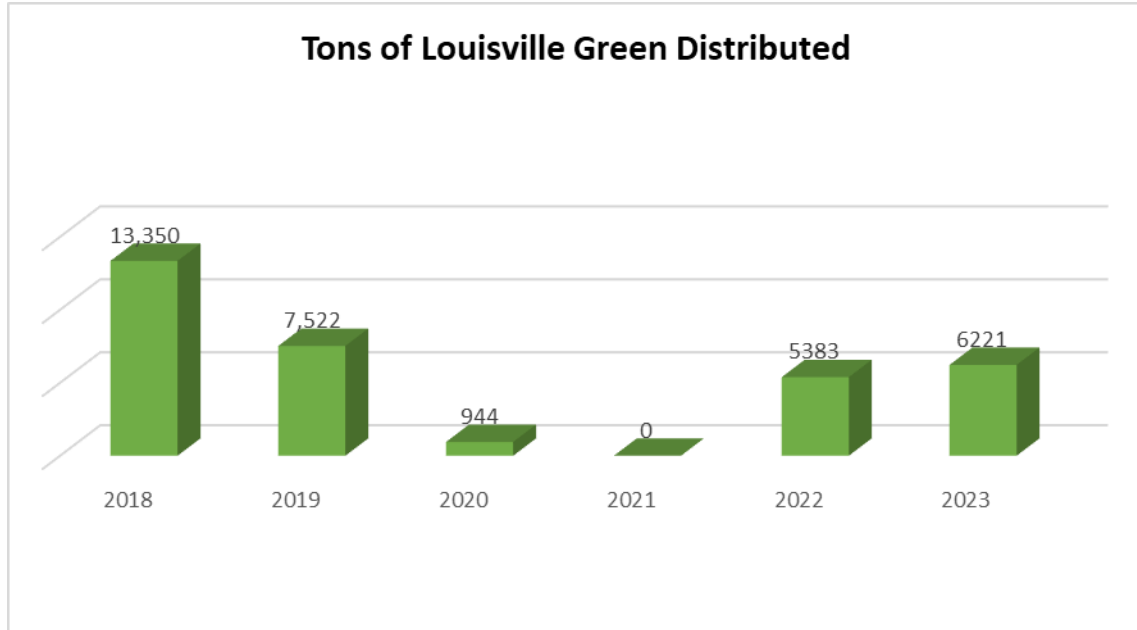
# Louisville Green Program Performance Report for 2023

Revision Date: 03-25-2024



Revision Number: 002

---



**Figure 1.0**

Of the 6221 tons distributed, 91% was used for agriculture in Kentucky, 9% was used for agriculture in other states.

Less than 1% of Louisville Green produced in 2023 was sent to the landfill. Non-Marketable product was recycle bin material cleaned out of the process. Beneficial Use of 99% saved MSD approximately \$560,000 in landfill fees. In addition, 350,000 cubic feet of landfill space was saved by beneficially using the wastewater solids and helping the environment.



# Louisville Green Program Performance Report for 2023

Revision Date: 03-25-2024



Revision Number: 002

## Approximate Landfill Cost Savings Associated with Land Application

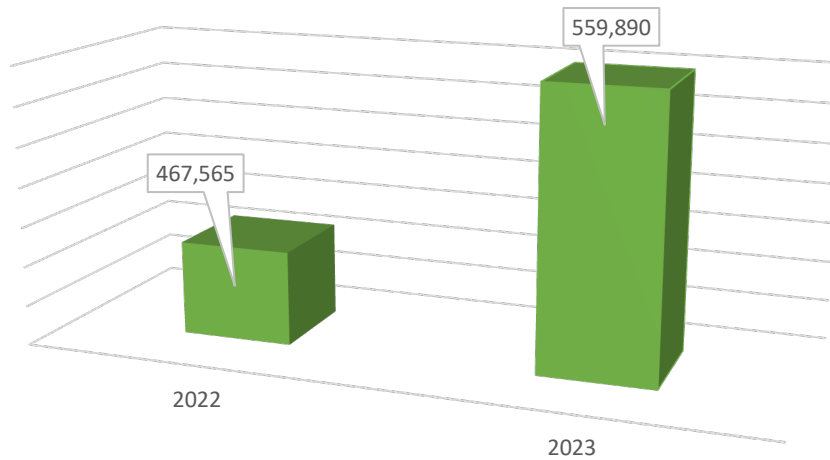


Figure 2.0



## **Hazardous Materials and Pretreatment Program**

The pretreatment program issues an annual program performance report to state and federal authorities every year as part of their regulatory requirements. The report is due on March 1<sup>st</sup> of each year. Copies of the report will be available for 2023 and may be requested by contacting the Pretreatment Administrator.

## **Regulatory Compliance**

All permit parameters for Louisville Green that was land applied were within State and Federal limits throughout 2023.

## **Morris Forman Laboratory**

The Laboratory performs the analyses for Louisville Green and all regulatory required analytical services for the following programs: KPDES, Pretreatment and Compliance, and the MS4 Permit. In addition, the laboratory provides technical support and analyses for the Consent Decree Program.

In 2023 the Morris Forman laboratory maintained full certification for wastewater analysis from the Commonwealth of Kentucky Energy and Environment Cabinet.

Table 2 is the lab's performance for the Wastewater Performance Results:

Year	Number of Acceptable Test Results	Number of Un-Acceptable Test Results	Percentage of Test Results Correctly Analyzed	Study Number
<b>2023</b>	<b>187</b>	<b>3</b>	<b>98.4%</b>	<b>WP-335 and WP-342</b>
2022	377	13	96.7%	WP 328 and WP 333-338
2021	56	3	94.6%	WP 312-314
2020	57	1	98.2%	WP 302-305
2019	62	2	96.8%	WP-290
2018	55	3	94.8%	#279-279
2017	74	3	95.9%	#266-268

**Table 2.0**

## **Progress Towards Goals and Objectives**



Goals and Objectives for 2023 were;

**Goal: Continually enhance the biosolids process to improve communication, efficiency, quality, and sustainability through 2024.**

**Objective 1:** Implement an improved **Preventive Maintenance System for New Dryers**, creating Preventative Maintenance Work Orders by July 1, 2023 for new dryer trains, and having 80% of required Work Orders completed within their lifecycle for the first year of dryer operation ending June 30, 2024.

**Result: Carried over into 2024 due to TAMP timeline issues.**

**Objective 2:** Avoid landfill costs and reduce risk to end user of Biosolids by creating a **training program for the Industrial Waste Department** by December 31, 2023 and measure results after training.

**Result: Goal pushed to Dec 31, 2024.**

**Objective 3:** At the Morris Forman Water Quality Treatment Center, **help to improve process control by updating all outdated process SOPs by December 31, 2023.**

**Result: Progress made on SOPS, Hazen Dryer SOPS. Pushed goal to July 31<sup>st</sup>, 2024.**

**Objective 4:** **Implement a new Biosolids Process**, at the Morris Forman Water Quality Treatment Facility, by December 31, 2025 to produce 70 dry tons per day of biosolids.

**Result: Progress made, goal deadline changed to July 31, 2028.**

### **Actions Taken as a Result of Input from Interested Parties**

Farmers, Fertilizer Blenders, and the General Public.

### **MSD Board**

Board Training for the Louisville Green Management system was conducted on 09/25/2023.

### **Public Participation**

Public participation continued at a low level in 2023. No public press releases were made for Louisville Green in 2023.



## **Training Program**

### **Training Program**

During 2023, the MSD Training Department provided training to employees whose work is related to MSD wastewater operations. A sample of that training is listed in the table below.

<b>Courses</b>	<b>Number of hours</b>
Fire Prevention & Controls	25
Forklift and other Equipment	44.5
General & Industrial Safety	1148
Laboratory or Sampling Training	8.5
Leadership Training	30
Louisville Green	93
Organizational Policy & Procedures	366
Plant SOP/Process Training	701
Process Equipment Training	255
Sewer Overflow Response Protocol (SORP) Related	288
Storm Water Permit Training	80
Technology	52

Several of these courses are accepted by the Kentucky Division of Water as credit hours for maintaining wastewater licenses in the state of Kentucky. All training is tracked in the Employee Training Records Database. By tracking the training progress of each operator at Morris Forman WQTC, an individual's achievements towards certification in particular areas of the plant are effectively monitored and communicated.

Overall, MSD wastewater licensees have collectively logged over 3,000 training hours, primarily in operations, equipment, and safety procedures.

#### **Accomplishments from the Training Department included:**

- Continued utilization of eLearning training modules
- Continued implementation of annual safety awareness trainings
- Successfully updated all CEU hours to the state database
- Conducted quarterly meetings with critical MSD departments

#### **Community Outreach Participation included:**

ROADEO

Red Cross Blood Drive

MSD Cares Fundraising Events and Activities



Toys for Tots Collection Drive

Apprenticeship Program

## **Management Review**

The Management Review of the Louisville Green Management System for 2023 was conducted in March of 2024. Reviewers continue to be pleased with the Louisville Green Management System.

**Add any additional notes here post meeting.**

## **Internal and 3<sup>rd</sup> Party Audit Results**

During 2023, the Louisville Green Management System was re-certified as Platinum status with NBP by undergoing an external reverification audit January 10-12, 2023, by NSF.

The audit identified zero major nonconformances, zero minor nonconformances and eight opportunities for Improvement.

MSD Internal Audit department also conducted an audit in December 2023. The audit identified zero major nonconformances, zero minor nonconformances and one opportunity for Improvement.

The next audit in the cycle will be an internal audit by MSD IA Dept.

## **Nonconformances and Corrective Actions**

### **External Audit:**

#### **Opportunities for Improvement:**

Requirement 5.6 – Consider morphing measurability of Objective 4 from producing 70 dry tons per day of biosolids to reducing the quantity of biosolids sent to landfill to zero.

Corrective action 109 created to address this opportunity. Management team decided to not change the goal as the primary goal should be to produce enough solids to meet dryer design capacity.

Requirement 5.6 – Consider rewording the Objective related to pretreatment to: *Avoid landfill costs and reduce risk to end user of Biosolids by creating a training program for the Industrial Department by Dec 31<sup>st</sup>, 2023, and measure results after training, to reflect the originally intended goal of Reducing the Concentration of Molybdenum at the influent to the plant to less than 0.15 mg/l.*

(Note: it was observed that if the influent is below this concentration level the molybdenum concentration in the pellets does not exceed the value requiring it to be diverted to the landfill.)

Corrective action 107 created to address this opportunity. The 0.15 mg/l limit is subjective and depends on flow and solids loading. The goal was changed, but to goal to align with auditor suggestions of tracking influent moly to determine if training is working, not to stay under a certain ceiling.

Requirement 5.6 – Consider at some time in the future establishing a goal and objective for optimizing the production of methane gas from the digesters. The gas produced by the digesters and used at the plant represents a cost savings associated with expenditures for natural gas.



Corrective action 110 created to address this opportunity. From the corrective action, 2024 goal objective 5 was created to track the construction of the digester gas hydrogen sulfide removal technology.

Requirement 5.6 – Consider having the public relations personnel develop a goal and objective that directly relates to the “relations with interested parties” outcome area. This was first identified as an opportunity for improvement in the external audit of June 2018 and then again in the external audit of November 2019. Due to the failure to produce product it was decided to delay this goal until the startup of production again, which occurred in 2022.

Corrective action 111 created to address this opportunity. A goal was created to create a yearly program summary sheet for interested party outreach.

Requirement 5.6 – Consider developing a goal and objective for specifically improving the ratio of planned preventive maintenance (routine work orders) activities to unplanned maintenance (corrective work orders) activities; e. g. the number of labor hours expended in completing preventive maintenance activities verses the number of labor hours expended in completing corrective work orders.

Corrective action 112 created to address opportunity. Goal already created and in place to track dryer work orders.

Requirement 8.1 – Consider including in the operator training program a field visit to a Louisville Green farm application site to reinforce the understanding by operators that their plant product is beneficially used and the importance of maintaining the highest quality product for their customers.

Corrective action 113 created to address this opportunity. Process support supervisor will connect with farmers for spring inspections and create videos of fields/usage of Louisville green. Will ask training about adding this to the end of the yearly Louisville Green training.

Requirement 11.2 – While Louisville conducts training and field exercises to evaluate the effectiveness of emergency preparedness and response procedures for hazardous materials, they have not conducted similar exercises for incidents related to biosolids, to include preparation of written after action reports addressing corrective actions required and preventive actions proposed to eliminate recurrence of problems.

Corrective action 108 created to address this opportunity. A biosolids tabletop was completed in October 2023 by the Emergency Response and Preparedness Department.

Requirement 12.2 – Clarify in the Louisville Green Management System Manual Element 12 procedure #4 that the official controlled version of documents are converted to .pdf files and placed on the M drive so they may not be altered by unauthorized individuals.

Corrective action 114 created to address this opportunity. Official controlled documents on the M drive are in a secure file that only management has access to. Placing them in the files that the operators have access to in PDF format was not a security measure, it was for ease of process flow and the operators accessing it. We will not change the manual.

**Internal Audit:**





**Opportunities for Improvement:**

**Element 11 – Emergency Preparedness and Response**

Element 11 addresses the Emergency Preparedness and Response requirements of the NBP BMP, including establishing and maintaining Emergency Preparedness and Response Plans and Procedures, reviewing, and evaluating the effectiveness of emergency preparedness and response procedures, maintaining emergency response equipment on site as well as having it readily available, and requiring contractors to establish and maintain Emergency Preparedness and Response Plans and Procedures.

Auditor: While no non-conformances were noted, and a tabletop exercise was performed in 2023, participating in regular tabletop exercises to simulate emergencies to improve emergency preparedness and response time offers an opportunity for improvement. During the internal audit, the process support supervisor stated the exercise was helpful. However, there are no plans to perform another exercise in 2024. Internal Audit believes a yearly tabletop emergency exercise would benefit the Louisville Green Management Team and plant personnel.

Corrective action 115 created to address this opportunity. Emergency Response and Preparedness Department has agreed to conduct Biannual tabletop exercises at Morris Forman in the fall as a part of their program training practices.

