Appendix

Annual Report

July 1, 2024 - June 30, 2025

Appendix A

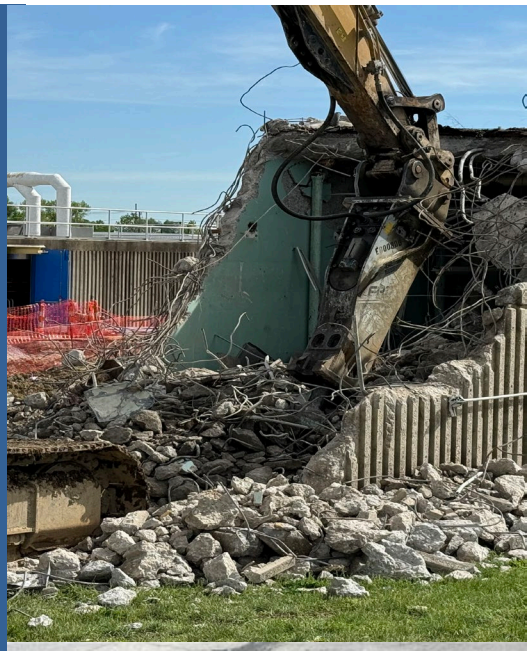
Short Term Action Plan

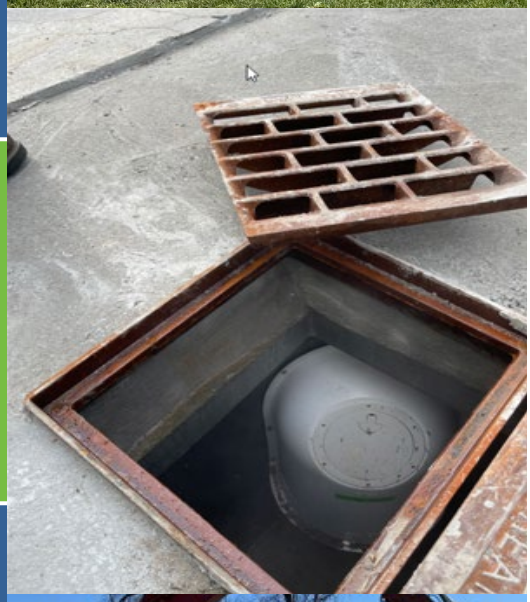
Odor Mitigation

FY25 - FY26

msd
Safe, clean waterways

clAIRity
PROGRAM





ODOR MITIGATION

SHORT-TERM ACTION PLAN

FY25 – FY26

Submitted October 14, 2024

Background

Pursuant to the provisions of the Second Amended Agreed Board Order No. 21-01 with the Louisville Metro Air Pollution Control Board, MSD submits this Short-Term Action Plan. Louisville and Jefferson County Metropolitan Sewer District (MSD) is a regional utility for wastewater, storm water, and flood protection services. MSD manages three utilities in one (***#3UtilitiesInOne)*** to provide efficient, effective services to protect the region's people and property. On September 18, 2024, MSD entered the Second Amended Agreed Board Order (ABO) with the Louisville Metro Air Pollution Control Board to focus on odor mitigation in its water quality treatment centers and collections systems. Although odors are a natural part of wastewater and managing it can be challenging, MSD is committed to improving odors within the communities it serves. MSD can only address odors that are within their purview and responsibility. As part of this Short-Term Action Plan, MSD provides a summary of activities conducted during July 1, 2023 and June 30, 2024 to provide additional details on our progress to date. This period represents Fiscal Year 24 for MSD. MSD Fiscal Years start July 1 of each year and conclude on June 30 of the following year.

Fiscal Year 24 (FY24) Update

In FY24, MSD focused on customer communications, odor response, catch basin inspections, catch basin replacements, and other projects as outlined in this section.

Customer Communications

This summer MSD focused its efforts on communications and community outreach with its clAIRity program. MSD sent letters, sent post cards, participated in a segment on MetroTV, presented at the mayor's press conference, and ran an op-ed in the Courier Journal to inform the community on how to contact us, how we respond to odor complaints, and to provide updates on current and future projects for odor mitigation. MSD clAIRity meetings (a total of five were scheduled in 2024; three already conducted and the remaining two scheduled for later October) engaged with customers and answered odor related questions. MSD also reached out to the church community to further communicate with the neighborhoods most impacted. MSD continues to maintain its clAIRity webpage with information pertinent to odors. As is outlined in the ABO, MSD will look for additional opportunities to further enhance its existing webpage and engagement opportunities.

Odor Response

MSD actively responds to odor complaints received from the community. Concerns related to odors are received by phone call, MSD clAIRity webpage, Metro 311, Smell My City, and e-mail. MSD reviews concerns and creates a service request in our system for our employees to investigate. MSD strives to respond within 24 hours from receipt of an odor complaint. This summer MSD changed its protocol when responding to odor reports. If a customer calls to report an odor and provides their name and number, MSD contacts the customer to confirm receipt of the odor report and provide an update on the findings and actions taken. Some of the actions MSD takes to respond to odor concerns include flushing sewer mains and manholes, cleaning and deodorizing catch basins, and replacing missing or damaged catch basin plugs. In addition to these activities performed on site, MSD takes actions to improve odors by adjusting chemical feeds and replacing filter media at our pump stations and treatment facilities.

Catch Basins

Catch basins are curbside openings that collect rainwater and direct it to separate storm or combined sewer systems. As part of its regular maintenance, MSD cleans and maintains catch basins in the combined system. On average MSD cleans nearly 2,300 catch basins a month. Catch basins, especially in the combined system, that are untrapped can allow odors to escape to ambient air. MSD estimates that it has roughly 20,000 catch basins in its combined system.

Catch Basin Inspections

As part of its odor mitigation efforts in FY24, MSD inspected 5,281 catch basins in the combined system and identified those that required repairs and those that should be replaced. Roughly 22% of the catch basins inspected were identified for replacement. The number of catch basin replacements identified by neighborhood is listed in Table B-1. Please note that some of the numbers below differ from the original reports. With a focus placed on maximizing spend on replacing catch basins that could allow odors to escape, further investigations identified additional replacements in some areas and a reduction in others.

Neighborhood	# Inspected	# Identified for Replacement
Park DuValle	319	20
California (including Maple Street)	925	75
Chickasaw	746	79
Shawnee	1142	174
Taylor Berry	817	43
Russell	1332	747
Total	**5,281**	**1,138**

Table B-1

Catch Basin Replacements

MSD is actively working to bid, award, and complete catch basin replacements. In FY24, MSD expended $374,000 to replace twenty catch basins identified in Park DuValle. Replacements in the California neighborhood also began with 15 of the 75 identified catch basins being replaced at roughly $300,000.

Projects

New Biosolids Facility

MSD is updating its facility to include Thermal Hydrolysis Process (THP) technology as part of the U.S. EPA and the Kentucky Energy and Environment Cabinet Consent Decree requirement to improve the ability to treat biosolids at the Morris Forman Water Quality Treatment Center (MFWQTC). THP is a process technology applied in wastewater treatment plants with anaerobic digestion. Thermal hydrolysis exposes sewage sludge to high temperature and pressure to make solids more digestible. The new process will minimize the need to landfill solids and will provide some reduction in odor emissions to neighboring communities. This is a multi-year project projected to be completed in FY28. This year contractors started demolition activities on-site.

Sedimentation Basin Rehabilitation

MSD continued its primary sedimentation rehabilitation project that is part of the U.S. EPA and the Kentucky Energy and Environment Cabinet consent decree requirement. The project includes rehabilitating and replacing the primary sedimentation basins at the MFWQTC. Both influent and effluent channels, the east headworks influent channel, the aerated channel, the bypass channel, will be covered. The improvements to the primary sedimentation basins and the covering of key assets will assist with containing odors and decrease odor emissions in this area of the treatment facility. This is a multi-year project in progress and is projected to be completed in FY26.

Grand Avenue Pump Station

The Grand Avenue Pump Station is at the east end of the Morris Forman service area. This pump station has a dual-bed carbon adsorber system to control odors. Sampling conducted during the Odor Control Master Plan developed by AECOM (identified as pump station #2), indicated that the system was meeting performance requirements, but odor and hydrogen sulfide (H_2S) levels were elevated. MSD investigated the unit and determined the carbon media had reached the end of its useful life. In FY24, MSD replaced the carbon media and levels returned to acceptable ranges. The carbon media for the dual-bed carbon adsorber system was added to the Preventative Maintenance (PM) schedule and will be tested every two years to evaluate its effectiveness and replace if necessary.

In addition to the two year PM, a 6-month check of the system's differential pressure will also be conducted to determine if we are experiencing saturation or clogging indicating the need for a more immediate media change. No further action is required or planned at the Grand Avenue Pump Station.

FY25 – FY26 Planned Projects

This Short-Term Action Plan outlines the projects planned for fiscal years 2025 and 2026. This plan covers odor mitigation activities from July 1, 2024 through June 30, 2026. The projects listed in this Short-Term Action Plan are part of MSD's capital budget that was reviewed and approved by the MSD Board on May 28, 2024. Following finalization of the ABO, the MSD Board was updated on the projects outlined in this Short-Term Action Plan. Any project listed in section I.A.1. of the ABO and not identified in this Short-Term Action Plan will be addressed in the Medium-Term or Long-Term Action Plan. This Short-Term Action Plan is organized into the same four categories as outlined in the ABO which are Treatment, Collection System, Pump Stations, and Catch Basins.

Historical data on odor complaints illustrates that odors are most prevalent in the combined system where both wastewater and stormwater are carried in the same pipes. The combined system is served by the MFWQTC and is designated by the yellow boundary lines in Figure 1. The MFWQTC treats on average 100 million gallons per day. The western part of the service area served by the MFWQTC has reported the highest frequency of odor concerns. MSD's focus for this Short-Term Action Plan will be on the areas most impacted as indicated by the red circle in Figure 2.

Figure 1

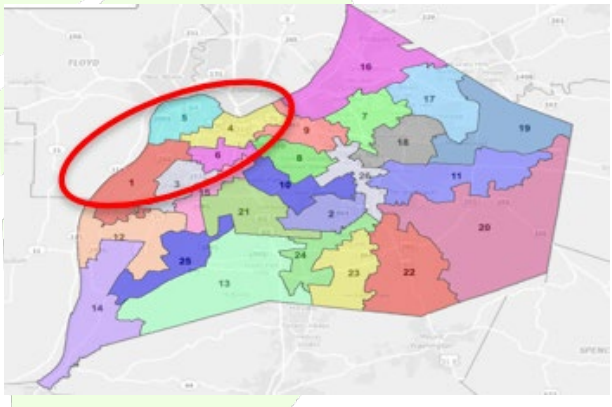


Figure 2

I. Treatment

The treatment category covers projects specific to our Water Quality Treatment Centers (WQTCs). MSD operates five WQTCs in Jefferson County. Wastewater travels from homes, businesses, and properties to these centers before being released into local waterways (Figure 1). The respective WQTC for each project is noted in parentheses in Tables T-1 and T-2. Table T-1 outlines the capital expenditures and projected start and end dates for the planned projects that are part of our consent decree work with the U.S. EPA and the Kentucky Energy Environment Cabinet that support our odor mitigation efforts. Table T-2 outlines the additional odor projects not related to the consent decree with estimated expenditures and projected start and end dates.

Consent Decree Projects	FY25-FY26 Estimated Expenditures (millions)	Projected Start Date	Projected End Date
1. New Biosolids Facility (Morris Forman)	$60.0	In Progress	9/30/2028
2. Sedimentation Basin Rehabilitation (Morris Forman)	$11.5	In Progress	12/31/2025

Table T-1

1. ***New Biosolids Handling Facility / Thermal Hydrolysis Pretreatment (THP)***
   MSD will continue developing its new biosolids processing facility using the Thermal Hydrolysis Process (THP) at the MFWQTC. The project team plans to finalize the THP system design and side stream parameters with the engineer of record in FY25. This is a multi-year project that aims to improve solids handling and reduce odor emissions at the plant and surrounding areas. The final project will include an ammonia scrubber placed upstream of the existing odor control device and a carbon absorber placed downstream. At project completion and after all components are in service and acclimated, performance testing will be conducted on the odor control device to determine effectiveness and next steps, if needed. The project is expected to be completed in FY29 with expenditures of $60 million for FY25 and FY26. The total estimated cost for the life of the project is $255 million.

2. ***Sedimentation Basin Rehabilitation***
   MSD will continue its consent decree work with the U.S. EPA and the Kentucky Energy and Environment Cabinet for the primary sedimentation rehabilitation at the MFWQTC. As stated in the FY24 Update, this project includes rehabilitating and replacing the primary sedimentation basins and covering key assets. This project will contain odorous air and send it to the existing Biological Odor Control (BOC) system for treatment. This project started in FY20 and is expected to be completed in FY26. At project completion and after all components are in service and acclimated, performance testing will be conducted on the BOC to determine effectiveness and next steps, if needed. The projected expenditure for FY25 and FY26 is $11.5 million, with a total estimated cost of $46 million over the life of the project.

Projects (Not Consent Decree related)	FY25-FY26 Estimated Expenditures (millions)	Projected Start Date	Projected End Date
A. Southwest Pump Station Gas Monitoring and Odor Control	$0.8	In Progress	6/30/2025
B. Odor Management Plan (Derek R. Guthrie)	$0.2	In Progress	12/31/2024
C. Hydrogen Sulfide (H_2S) Removal – Digester Gas (Morris Forman)	$8.0	In Progress	6/30/2026
D. Dissolved Air Flotation Thickener (DAFT) Rehabilitation (Morris Forman)	$18.1	In Progress	12/31/2026

Table T-2

A. *Southwest Pump Station Gas Monitoring and Odor Control*

MSD is finalizing a new odor control system at the Southwest Pump Station (SWPS). This system uses a biotrickling filter to treat odorous air, replacing the old carbon adsorption system. In addition to the areas treated by the previous system, the new system includes odorous air from Splitter Structure No. 1 (SP1) and the Dumpster Room. Currently in the acclimation phase, it is designed to remove 99% of inlet hydrogen sulfide when completed. A gas monitoring system will track hydrogen sulfide levels at the inlet and outlet. This technology will help mitigate odors and reduce impacts on the Bells Lane community. At project completion and after all components are in service and acclimated, performance testing will be conducted on the odor control device to determine effectiveness and next steps, if needed. This project began in 2021 and is projected to be completed by June 2025 with an estimated expenditure of $800,000 in FY25 and $2.84 million for the project's life.

B. *Odor Control Management Plan (Derek R. Guthrie)*

MSD contracted with AECOM to conduct a study of odors in our treatment centers and collection systems. Phase 2 of the Odor Control Management Plan work focuses on Derek R. Guthrie in the southern part of our service territory. Consistent with the prior plan developed for the MFWQTC, AECOM will evaluate current performance, identify potential odor sources, evaluate existing odor control systems, conduct sampling, and develop recommendations for treatment technologies. This plan will help identify odor problem areas and suggest solutions, guiding our approach to odor control around the Derek Guthrie Water Quality Treatment Center (DRGWQTC). The project is expected to be complete by December 31, 2024 with an estimated expenditure of $200,000. Once finalized, MSD will review AECOM's recommendations, develop a response, and prioritize actions within budget constraints. MSD will reevaluate the need for identified actions as system improvements occur.

C. *Hydrogen Sulfide (H_2S) Removal – Digester (Morris Forman)*

The MFWQTC has four anaerobic digesters which use naturally occurring microorganisms in the digesters' oxygen free environment to break down organic matter. As the organic matter breaks down, digester gas is produced. Recent sampling found high hydrogen sulfide (H_2S) levels present in the digester gas. To comply with the Federally Enforceable District Origin Operation Permit (FEDOOP), MSD will install a Hydrogen Sulfide Removal System that reduces the hydrogen sulfide concentrations in the digester gas prior to end use. This hydrogen sulfide adsorption system will utilize three (3) or four (4) vessels containing media. As the digester gas passes through the approximately 50,000 pounds of media in each vessel, the hydrogen sulfide in the digester gas reacts with the media. The goal of this project would be to reduce hydrogen sulfide concentrations in the digester gas which will allow use of digester gas to supplement fuel for dryers and reduce the amount of gas flared. The project is expected to be complete by June 30, 2026, with an estimated expenditure of $8 million.

D. *Dissolved Air Flotation Thickener (DAFT) Rehabilitation (Morris Forman)*

The Dissolved Air Flotation Thickener (DAFT) system and its Main Equipment Building (MEB) exhaust at the MFWQTC have been identified as odor sources. MSD will perform a rehabilitation of the DAFT and MEB exhaust. This project will evaluate and determine the best odor mitigation technologies for this area. Improving odors in this process will enhance overall air quality at the MFWQTC. Once the odor device is in service, performance testing will confirm if it meets design specifications. MSD will monitor for odors once the project is complete to determine effectiveness and next steps, if needed. The total spend through FY24 is $950,000. The projected expenditure in FY25 & FY26 is $18.1 million. The project will continue through the end of December 2026 (FY27) and will have expenses in the Medium-Term Action Plan. Total estimated expenditures for the life of the project are $20 million.

II. Collection System

The collection system routes wastewater from homes, businesses, and industries to Water Quality Treatment Centers (WQTCs). MSD operates both combined and separate sewer systems. This Short-Term Action Plan focuses activities on the combined systems. Table C-1 lists the projects to be

completed in this Action Plan within the collection system with estimated expenditures and projected start and end dates.

Projects	FY25 – FY26 Estimated Expenditures	Projected Start Date	Projected End Date
E. Western Outfall Sewer Shed Studies	$200,000	7/1/2024	6/30/2025
F. Ohio River Force Main Technology Study	$50,000	7/1/2025	6/30/2026
G. Grand Avenue Pump Station Chemical Use Study	$50,000	1/1/2025	6/30/2026

Table C-1

E. Western Outfall Sewer Shed Studies

The Western Outfall, a gravity sewer starting in the southwestern central business district, runs west along Broadway toward the Ohio River and then runs south to the MFWQTC. MSD has experienced high odor complaints along this system. AECOM documented in the Odor Control Master Plan that this system tends to run at positive pressure, which causes an increase in the release of odorous air. MSD will conduct a study to determine if changing the pressure in the system to negative will minimize the escape of odorous air. MSD will install a temporary unit along the gravity sewer line to create negative pressure conditions. In addition to the pressure study, MSD will develop a wastewater odor model using the WATS (Wastewater Aerobic / Anaerobic Transformations in Sewers) sewer process model. WATS simulates changes in conditions (i.e., aerobic, anoxic, and anaerobic) within the sewer system to determine the impact on odors. The WATS model will be used to run what-if scenarios to determine the effectiveness of different treatment methods. MSD will review recommendations from both the negative pressure pilot study and the WATS model to identify next steps. Further actions for system improvements will be prioritized within budget constraints. The Western Outfall studies outlined above are projected to be completed in FY25 with an expenditure of $200,000.

F. Ohio River Force Main Technology Study

The Ohio River Force Main runs between the Ohio River and I-71 beginning near US 42 and I-265 and discharges to the Ohio River Interceptor (ORI) in downtown Louisville at Hancock and Main. After discharging into the ORI, wastewater flow is conveyed west towards the MFWQTC for treatment. Previously, MSD utilized the WATS modeling to identify treatment method(s) and location(s) for the Ohio River Force Main. From the result, MSD installed an oxygen injection facility at the Barbour Lane Pump Station and currently feeds Bioxide (calcium nitrate) at Mockingbird Valley to treat part of the force main. MSD will update the WATS model and collaborate with consultant(s) to evaluate the effectiveness of the current treatment practices and explore additional options for increased results further down the force main. MSD will review recommendations and determine the next steps. Further actions identified for system improvements will be prioritized within budget constraints. The Ohio River Force Main Technology Study is projected to be completed in FY26 with $50,000.

G. Grand Avenue Pump Station Chemical Use Study

AECOM recommended a pilot study at the Grand Avenue Pump Station in the Morris Forman Odor Control Master Plan. Currently, Bioxide (calcium nitrate) is used at the Grand Avenue Pump station to minimize sulfides in the Grand Avenue Force Main. Although Bioxide is effective for some part of the sewer system, MSD desires to improve odors further down the force main. The chemical use study will explore alternative chemicals at the Grand Avenue Pump Station and identify options that may be more effective at reducing sulfides and deterring the formation of hydrogen sulfide in the sewer system and provide a larger impact further down the main. MSD will review recommendations and determine the next steps. Further actions identified for system improvements will be prioritized within

budget constraints. The Grand Avenue Pump Station Chemical Use Study is projected to be completed in FY26 with $50,000.

III. Pump Stations

Pump stations are utilized in gravity sewer systems to lift (pump) wastewater to a higher elevation when the route followed by a gravity sewer would require the sewer to be laid at an insufficient slope or at an impractical depth. Lift stations vary in size and type depending upon the quantity of wastewater to be handled and the height it must be lifted. Some MSD pump stations have been identified as sources of odor. Table C-2 lists the project that will be performed in the short-term at an MSD pump station with estimated expenditure and projected start and end dates.

Projects	FY25 – FY26 Estimated Expenditures	Projected Start Date	Projected End Date
H. Starkey Pump Station - Evaluate options for odor mitigation technology	$50,000	7/1/2025	6/30/2026

Table C-2

H. Starkey Pump Station - Evaluate options for odor mitigation technology

The Starkey Pump Station (PS) is on the northern end of the Morris Forman service area, east of downtown and currently lacks odor control technology. Starkey PS has a small footprint with a large volume of air being ventilated which can lead to an increase in odors. Unfortunately, there is limited space for a traditional carbon or biological odor control solution at this pump station. MSD will engage with consultant(s) to assess potential options for odor control treatment systems. MSD will review recommendations and determine the next steps. Further actions identified for system improvements will be prioritized within budget constraints. The Starkey Pump Station project to evaluate odor mitigation technology is projected to be completed in FY26 with a $50,000 expenditure.

IV. Catch Basins

MSD will continue to inspect the catch basins in the combined system with a focus on the target areas identified in Figure 2. MSD will also continue its work to rehabilitate and replace the catch basins listed below in Table CB-1 with estimated expenditures and projected start and end dates.

Projects	FY25-FY26 Replacement #	FY25 – FY26 Estimated Expenditures (millions)	Projected Start Date	Projected End Date
I. Catch Basin Inspections	N/A	$0.6	Ongoing	N/A
J. Catch Basin Replacements				
1. California Neighborhood *	60	$1.3	In Progress	6/30/2025
2. Chickasaw Neighborhood*	79	$1.2	1/1/2025	12/31/2025
3. Shawnee Neighborhood	174	$3.0	10/1/2024	6/30/2025
4. Taylor Berry Neighborhood	43	$0.86	12/1/2024	12/31/2025
5. East Market (Nulu)**	19	$0.40	10/15/2024	12/31/2024

Table CB-1

***Grant funded**

****Part of Louisville Metro downtown beautification project.***

I. Catch Basin Inspections

MSD is actively inspecting catch basins within the combined system to determine repair needs and identify those for replacement. Repairs are scheduled for completion by MSD field crews while replacement work is bundled into smaller jobs to bid out to contractors. MSD plans to inspect roughly 4,200 catch basins per year. These inspections are the first step to reducing odors from catch basins located at the edge of customer properties.

J. Catch Basin Replacements

Catch basin replacements in fiscal years 2025 and 2026 will be targeted for completion as outlined in Table CB-1. These replacements will include installing trapped catch basins to deter odors from escaping the sewer system.

1. *California Neighborhood*: In the California neighborhood, 925 catch basins were inspected, and 75 were identified for replacement. In FY24, 15 catch basins were replaced, and the remaining 60 will be replaced in FY25 with an estimated expenditure of $1.3 million.

2. *Chickasaw*: In the Chickasaw neighborhood, 746 catch basins were inspected, and 79 were identified for replacement in FY25 and FY26, with an estimated expenditure of $1.2 million.

The replacements in the California and Chickasaw neighborhoods are grant-funded, which could impact their timing.

3. *Shawnee*: In the Shawnee neighborhood, 1,142 catch basins were inspected, and 174 were identified for replacement in FY25, with an estimated expenditure of $3.0 million.

4. *Taylor Berry*: In the Taylor Berry neighborhood, 817 catch basins were inspected, and 43 were identified for replacement in FY25 and FY26, with an estimated expenditure of $860,000.

5. *East Market (Nulu):* Louisville Downtown Development initiated a beautification project in the Nulu area of East Market. To align with this effort and to minimize multiple traffic disruptions for construction work, 19 catch basins in this area will be replaced as part of this project in FY25, with an estimated expenditure of $400,000.

MSD expects to see a decrease in customer odor complaints specific to these catch basins that will now be trapped. However, trapped catch basins that are dry can still release odors. Therefore, MSD will periodically inspect the catch basins and add water as needed to contain odors.

V. Summary

While sewer odors will never be completely eliminated, MSD is committed to reducing their impact on the community. Odor mitigation has been made a priority, with significant funding allocated for the next few years. This Short-Term Action Plan estimates spending over $71 million on consent decree projects (Table S-1) and nearly $35 million on projects not related to the consent decree (Table S-2) that support odor mitigation over the next two fiscal years. Several projects listed in this Action Plan span multiple years, and the estimated expenditures in Tables S-1 and S-2 are totals for fiscal years 2025 and 2026 only.

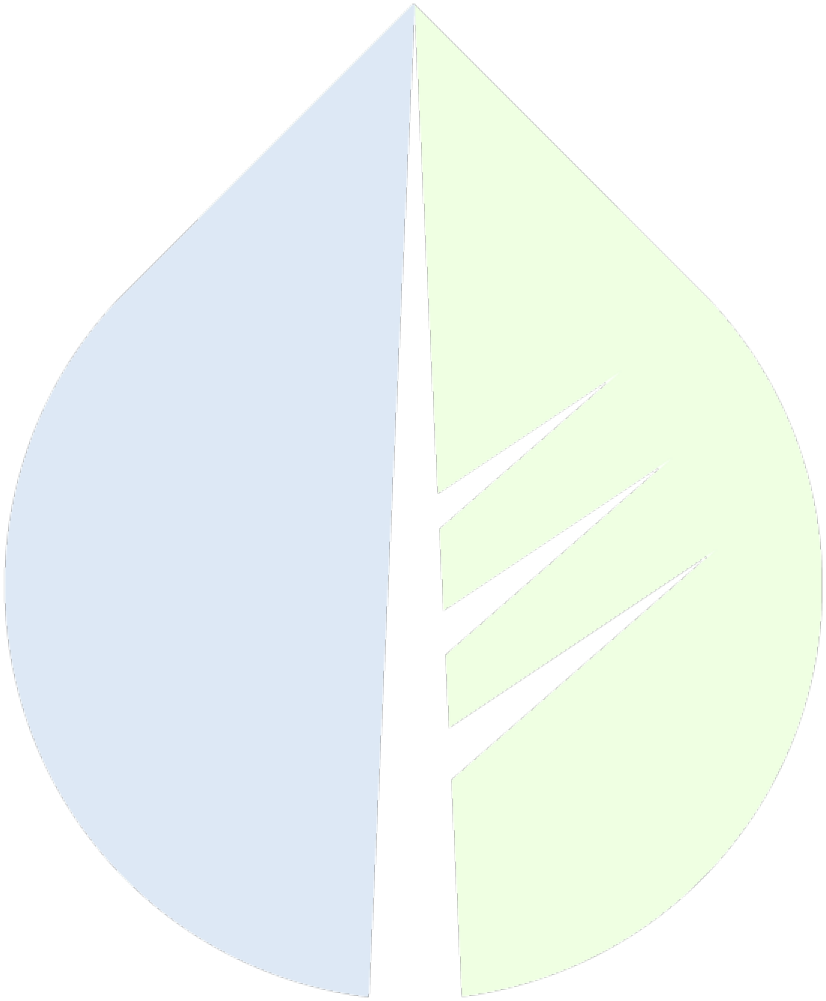
Summary of Estimated Expenditures
FY25 – FY26

Category		Short-Term Action Plan Projects ***Consent Decree Related***	FY25 - FY26 Estimate Expenditures (millions)
Treatment	1	New Biosolids Facility (Morris Forman)	$60.00
	2	Sedimentation Basin Rehabilitation (Morris Forman)	$11.50
Table S-1		**TOTAL**	**$71.50**

Category		Short-Term Action Plan Projects	FY25 - FY26 Estimated Expenditures (millions)
Treatment	A	Southwest Pump Station Gas Monitoring and Odor Control	$0.80
	B	Odor Management Plan (Derek R. Guthrie)	$0.20
	C	Hydrogen Sulfide (H_2S) Removal- Digester Gas (Morris Forman)	$8.00
	D	Dissolved Air Flotation Thickener (DAFT) Rehabilitation (Morris Forman)	$18.10
Collection System	E	Western Outfall Sewer Shed Studies	$0.20
	F	Ohio River Force Main Technology Study	$0.05
	G	Grand Avenue Pump Station Chemical Use Study	$0.05
Pump Stations	H	Starkey Pump Station - Evaluate options for odor mitigation technology	$0.05
Catch Basins	I	Catch Basin Inspections	$0.60
	J	California Neighborhood Catch Basin Replacements	$1.30
		Chickasaw Neighborhood Catch Basin Replacements	$1.20
		Shawnee Neighborhood Catch Basin Replacements	$3.00
		Taylor Berry Neighborhood Catch Basin Replacements	$0.86
		East Market (Nulu)	$0.40
Table S-2		**TOTAL**	**$34.81**

Conclusion

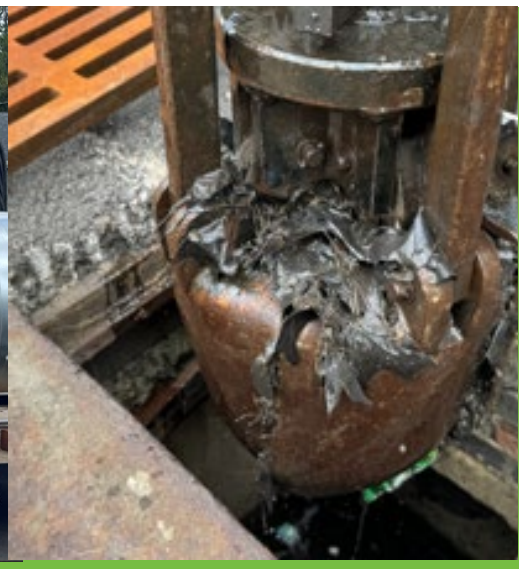
MSD is committed to completing the projects as outlined in this plan. However, significant increases in project costs, contractor availability, material shortages, or other extenuating factors could impact the timing of these projects. MSD will document any variations to this Short-Term Action Plan in its Mid-Year and Annual reports as changes are identified. A Mid-Year Report will be provided by March 31 of each year, covering progress made between July 1st and December 31st of the prior year. An Annual Report will be provided by September 30 for both fiscal years 2025 and 2026. MSD enhanced its customer communications and odor response efforts during the 2024 Odor Season. MSD will continue to actively respond to odor concerns and explore opportunities to expand its community engagement for the upcoming 2025 Odor Season.



Appendix B

Mid-Year Report

July 1, 2024 – December 31, 2024



Mid-Year Report

Odor Mitigation

July 1, 2024-December 31, 2024

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Background

Reducing the frequency and intensity of odors is one of MSD's top priorities. MSD acknowledges that when temperatures are high and conditions are dry, odors can increase and become more noticeable. While sewer odors will always exist, MSD is committed to mitigating their impact on the community.

On September 18, 2024, MSD entered into the Second Amended Agreed Board Order No. 21-01 (Agreed Order) with the Louisville Metro Air Pollution Control Board. The Agreed Order outlines requirements for developing Action Plans, updating MSD's dedicated order webpage, hosting of community meetings, and providing Mid-Year and Annual Reports.

Pursuant to the Agreed Order, MSD submitted its two-year Short-Term Action Plan on October 14, 2024. This plan outlines odor mitigation activities from July 1, 2024, to June 30, 2026 and was submitted to the Louisville / Jefferson County Mayor, Louisville / Jefferson County Metro Council, MSD Board, Louisville Metro Air Pollution Control Board, and the Louisville Metro Air Pollution Control District. Notice of the proposed Short-Term Action Plan was posted to the odor webpage and made available for public comment. No comments were received. Thirty days after the posting, the Short-Term Action Plan was considered final, and a copy can be found in Appendix A.

Also pursuant to the provisions of the Agreed Board Order, MSD submits this Mid-Year Report covering progress from July 1, 2024 – December 31, 2024.

Community Engagement

MSD continues to utilize its clAIRity program to inform the community of its progress on odor mitigation efforts. To more effectively alert customers of a potential increase in odors, MSD has designated June through October as "Odor Season" and developed additional response activities specific to this period when odors are more prevalent. These activities are outlined in the Odor Response Standard Operating Procedures (SOP) available on the odor webpage.

Community Meetings

During the 2024 Odor Season, MSD held five clAIRity meetings to update the community on engagement efforts, odor response, and odor mitigation projects. A total of 52 persons attended. The table below provides the date, location, address, and the number of attendees for each meeting.

Date	Location	Address	# Attendees
April 23, 2024	MSD Central Maintenance Facility	3050 Commerce Center Place	32
June 26, 2024	Western Library	604 S. 10th Street	4
August 27, 2024	Shawnee Library	3912 W. Broadway	7
October 15, 2024	MSD Central Maintenance Facility	3050 Commerce Center Place	1
October 24, 2024	Norton Healthcare Goodwill Opportunity Center	2820 W. Broadway	6

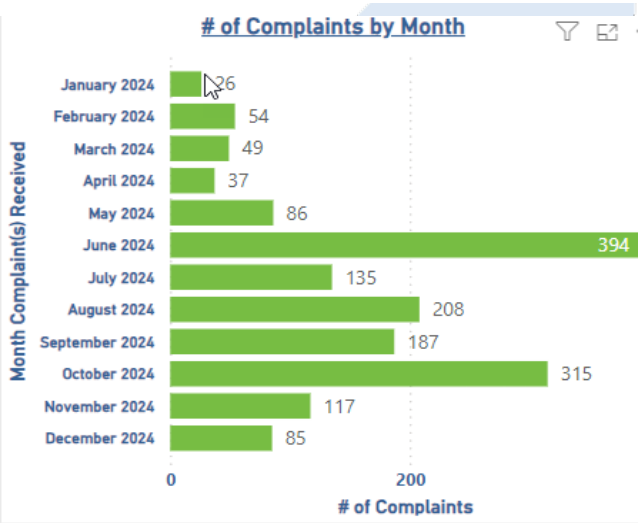
Although questions received during the 2024 meetings were answered, they were not documented. Pursuant to the Agreed Order, starting in 2025, all questions and answers will be documented and included in reporting.

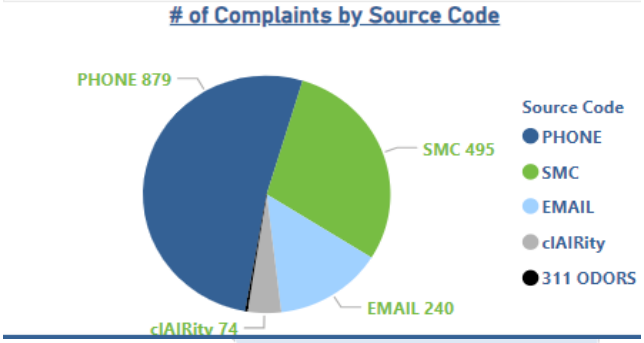
To further inform and engage with the community, MSD attended additional meetings. MSD personnel participated in Metro Council district meetings and neighborhood meetings which included local churches. MSD also provided written monthly odor updates to the Louisville / Jefferson County Mayor's office and to Metro Council Members. The monthly clAIRity reports for July 2024 through December 2024 can be found in Appendix B.

Odor Response

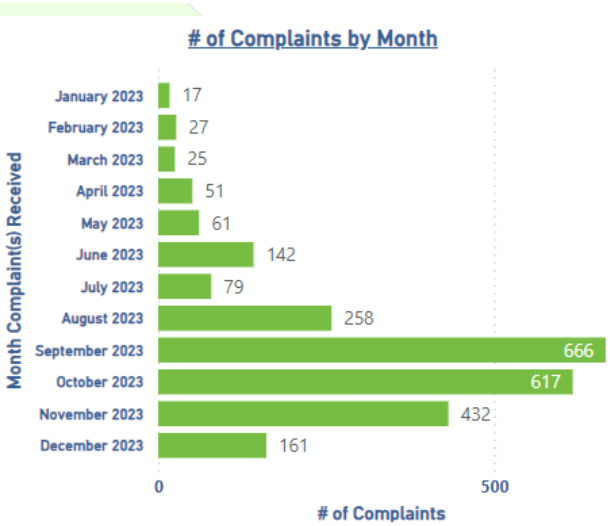
MSD continues to track and respond to odor complaints received daily. MSD strives to respond to all odor complaints within 24 hours. Odor complaint logs can be found on the odor webpage. MSD experienced a 33% reduction in odor complaints in 2024 compared to 2023. The total odor complaints this year (2024) were 1,693 compared to 2,536 last year (2023). Below are bar charts of the complaints by month and pie charts indicating how the complaints were received for each year. MSD is actively developing a dashboard that will make it easier to search odor complaints by date, street name, and Metro Council district. Once completed, the new dashboard will be available on the odor webpage.

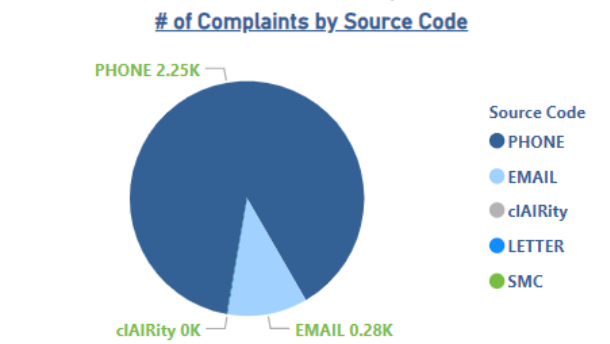
2024 Odor Complaints
Total = 1,693





2023 Odor Complaints
Total = 2,536





In 2024, MSD increased its focused on improving the customer experience related to odors which included customer call backs, customer letters, on-site meetings, and updates to online reporting functionality. During this reporting period, MSD performed 263 follow up odor calls and sent 547 letters to customers.

Short-Term Action Plan Project Updates

A comprehensive list of all projects in the Short-Term Action Plan is provided in the conclusion. The updates included in this report focus on projects that were in progress or projected to start during the reporting period. These projects are listed below. For each project, the scope, mid-year update, and projection for the next 6 months are provided and organized by category. The identifiers listed corresponds to those established in the Short-Term Action Plan.

Category	Identifier	Project
Treatment	1	New Biosolids Facility (Morris Forman)
Treatment	2	Sedimentation Basin Rehabilitation (Morris Forman)
Treatment	A	Southwest Pump Station Gas Monitoring and Odor Control
Treatment	B	Odor Management Plan (Derek R. Guthrie)
Treatment	C	Hydrogen Sulfide (H2S) Removal – Digester Gas (Morris Forman)
Treatment	D	Dissolved Air Flotation Thickener (DAFT) Rehabilitation (Morris Forman)
Collection System	E	Western Outfall Sewer Shed Studies
Catch Basins	I	Catch Basins Inspections
Catch Basins	J1	California Neighborhood
Catch Basins	J3	Shawnee Neighborhood
Catch Basins	J4	Taylor Berry Neighborhood
Catch Basins	J5	East Market (Nulu)

Treatment

1. New Biosolids Handling Facility / Thermal Hydrolysis Pretreatment (THP)

Scope

MSD will continue developing its new biosolids processing facility using the Thermal Hydrolysis Process (THP) at the Morris Forman Water Quality Treatment Center (MFWQTC). The project team plans to finalize the THP system design and sidestream parameters with the engineer of record in FY25. This is a multi-year project that aims to improve solids handling and reduce odor emissions at the plant and surrounding areas. The final project will include an ammonia scrubber placed upstream of the existing odor control device and a carbon absorber placed downstream. At project completion and after all components are in service and acclimated, performance testing will be conducted on the odor control device to determine effectiveness and next steps, if needed.

Mid-Year Update

During the period of July 1, 2024, through December 31, 2024, submittals for all major long-lead equipment items were submitted by the Design-Builder and reviewed by the Owner (MSD). Piping modifications were completed to allow for demolition and removal of the existing Sodium Hypochlorite Building and the Thickened Sludge Holding Tanks. Several new process areas of the Thermal Hydrolysis Process (THP) including THP Electrical Building (Area 15), Sidestream Treatment (Area 85), Boiler Building (Area 45), Cake Receiving (Area 30), and THP (Area 40) encompass this area and are now accessible for excavation and foundation construction. The existing floating roof for Digester #3 was removed (Digester #3 is currently out of service) and a new fixed cover is being fabricated on-site. A new natural gas service main was

installed on-site along with a new metering station to facilitate demolition of the old metering station. The existing incinerator stack (which has long been unused and out of service) was demolished and removed. A new polymer dilution water piping system was installed for the centrifuges in the main equipment building to allow increased sludge throughput anticipated for the THP System. During the period covered by this report, MSD expended $35.59 million. The total estimated cost for the life of the project is $255 million. The project is still on track for completion on or before the date established in the Short-Term Action Plan (September 30, 2028). As of December 31, 2024, this project is approximately 30.5% complete.

Projection for the Next 6 Months

During the next six months, work will continue in the following areas:

- Area 15 – THP Electrical – Excavation, Lower-Level Footings and Walls
- Area 28 – Cake Loadout – Piping & Electrical Complete and Ready for Start-up with initiation of Operations.
- Area 35 – Cake Silos – Excavation and Slab on Grade.
- Area 40 – THP & HEX – Excavation and Foundations
- Area 45 – Boiler Building – Excavation and Base Slab Placement
- Area 50 – Digester #3 Coating and Rehab
- Area 80 – Odor Control – Concrete Slab, Precast Wall Panels, and Roof to be initiative.
- Area 85 – Sidestream Treatment – Excavation and Base Slab Placements

2. Sedimentation Basin Rehabilitation

Scope

MSD will continue its consent decree work with the U.S. EPA and the Kentucky Energy and Environment Cabinet for the primary sedimentation rehabilitation at the MFWQTC. This project includes rehabilitating and replacing the primary sedimentation basins and covering key assets. This project will contain odorous air and send it to the existing Biological Odor Control (BOC) system for treatment. This project started in FY20 and is expected to be completed in FY26. At project completion and after all components are in service and acclimated, performance testing will be conducted on the BOC to determine effectiveness and next steps, if needed.

Mid-Year Update

The contractor completed majority of the rehabilitation in the primary influent channel, including the installation of new air headers and diffusers, as well as the knee walls within the channel that support the new gates and stop logs. The contractor also completed the rehabilitation and commissioned the equipment in the South Pump Station and Sedimentation Basins 3 and 4. Most of the rehabilitation in the primary effluent channel was completed and work began on the demolition of the equipment in Sedimentation Basins 1, 2, and the North Pump Station. During the period covered by this report, MSD expended $2.8 million. The total estimated cost for the life of the project is $34.68 million. The projected completion date is August 31, 2025. As of December 31, 2024, this project is approximately 65% complete.

Projection for the Next 6 Months

The new odor control equipment and associated piping is expected to be installed by the end of June 2025. A portion of the rehabilitation of Sedimentation Basins 1 and 2 will be completed by the end of June including architectural and structural repairs and installation of new tracks for the traveling bridges. Rehabilitation of the North Pump Station will begin during this period and the installation of new pumps and associated pipework is expected to be completed.

A. Southwest Pump Station Gas Monitoring and Odor Control

Scope

MSD is finalizing a new odor control system at the Southwest Pump Station (SWPS). This system uses a biotrickling filter to treat odorous air, replacing the old carbon adsorption system. In addition to the areas treated by the previous system, the new system includes odorous air from Splitter Structure No. 1 (SP1) and the Dumpster Room. It is designed to remove 99%of inlet hydrogen sulfide when completed. A gas monitoring system will track hydrogen sulfide levels at the inlet and outlet. This technology will help mitigate odors and reduce impacts on the Bells Lane community. At project completion and after all components are in service and acclimated, performance testing will be conducted on the odor control device to determine effectiveness and next steps, if needed.

Mid-Year Update

The installing contractor worked with the equipment manufacturer in making adjustments to improve the performance of the biotrickling filter/bioscrubber. These included fine-tuning the nutrient feed, freshwater cycle frequency and duration, and the recirculation frequency and duration. The installing Contractor continues to maintain the odor control system until performance testing is completed and the system is handed over to MSD. During the period covered by this report, MSD expended $20,000. The total estimated cost for the life of the project is $3 million. The projected completion date is June 30, 2025. As of December 31, 2024, this project is approximately 90% complete.

Projection for the Next 6 Months

Once analysis is complete, performance testing will be conducted. At completion of the project, staff will be trained.

B. Odor Control Management Plan (Derek R. Guthrie)

Scope

MSD contracted with AECOM to conduct a study of odors in our treatment centers and collection systems. Phase 2 of the Odor Control Management Plan work focuses on Derek R. Guthrie in the southern part of our service territory. Consistent with the prior plan developed for the MFWQTC, AECOM will evaluate current performance, identify potential odor sources, evaluate existing odor control systems, conduct sampling, and develop recommendations for treatment technologies. This plan will help identify odor problem areas and suggest solutions, guiding our approach to odor control around the Derek Guthrie Water Quality Treatment Center (DRGWQTC). Once finalized, MSD will review AECOM's recommendations, develop a response, and prioritize actions within budget constraints. MSD will reevaluate the need for identified actions as system improvements occur.

Mid-Year Update

AECOM has completed its study of the Derek R. Guthrie Water Quality Treatment Center and the surrounding collection system. MSD expended a total of $242,000. The final completion date for this project was prior to the date referenced in the Short-Term Action Plan (December 31, 2024).

MSD reviewed the recommendations and developed a response. The response includes a clarification section to improve the understanding and accuracy of the information in the report, a summary of each recommendation with its response, and a list of actions to be prioritized and incorporated in future action plans. The final AECOM report will be posted to the odor webpage under Mitigation Projects and the Management Response is included in Appendix C. Pursuant to the Second Amended Air Pollution Control

Board Order No. 21-01, section I.C.4, MSD completed a Project Certification letter and submitted it to the MSD Board during the January 27, 2025, board meeting; a copy of the letter can be found in Appendix D.

The table below (extracted from the Management Response) summarizes MSD's planned actions based on the AECOM Derek R. Guthrie Odor Control Master Plan Report.

#	Location	Action(s)
7.1.1	East and West Influent Screen Chambers (DRGWQTC)	1. Rebalance the flow in the East and West Carbon Absorbers. 2. Sample each bed of carbon and replace carbon if underperforming.
7.1.2	Grit Facilities (DRGWQTC)	1. Rebalance the flow in the carbon unit. 2. Sample each bed of carbon and replace carbon if underperforming.
7.1.4	Dewatering Building (DRGWQTC)	Hire a firm to design an odor control system and evaluate current HVAC system for improvements.
7.2.1	Sample ID#5 Force Main Chemical Injection (Collection System)	Complete existing project for the Admiral Way Pump Station that will include odor control technology.
7.2.2	Sample ID#1 Interceptor (Collection System)	Continue to monitor odors in the area and explore a negative pressure pilot if high odors are detected from the sewer system.
7.3.1	Pump Station #2	Continue to monitor for odors and determine appropriate actions to be added to future Action Plans, if needed.
7.3.2	Pump Station #3	Continue to monitor odor complaints in the area and discuss with property owner if further action is required.
7.3.3	Pump Station #1	Evaluate facility and determine next steps for installing odor control technology.

Projection for the Next 6 Months

The items listed in the table above will be prioritized and incorporated into future Action Plans as deemed appropriate, contingent upon budgetary constraints. MSD will reassess the need for these actions as system improvements are made.

C. Hydrogen Sulfide (H2S) Removal – Digester Gas (Morris Forman)

Scope

The MFWQTC has four anaerobic digesters which use naturally occurring microorganisms in the digesters' oxygen free environment to break down organic matter. As the organic matter breaks down,digester gas is produced. Recent sampling found high hydrogen sulfide (H_2S) levels present in the digester gas. To comply with the Federally Enforceable District Origin Operation Permit (FEDOOP), MSD will install a Hydrogen Sulfide Removal System that reduces the hydrogen sulfide concentrations in the digester gas prior to end use. This hydrogen sulfide adsorption system will utilize three (3) or four (4) vessels containing media. As the digester gas passes through the approximately 50,000 pounds of media in each vessel, the hydrogen sulfide in the digester gas reacts with the media.The goal of this project would be to reduce hydrogen sulfide concentrations in the digester gas which will allow use of digester gas to supplement fuel for dryers and reduce the amount of gas flared.

Mid-Year Update

Between July 1, 2024, and December 31, 2024, the detailed design documents were finalized, the design documents were advertised, a pre-bid meeting occurred at the project site, bids were opened, and a

contractor was selected for the project. Bids were opened on August 20, 2024, and a Notice to Proceed was issued to The Walsh Group on November 4, 2024. A pre-construction meeting took place between the Owner (Louisville MSD), Engineer (Hazen and Sawyer), and Contractor (The Walsh Group) on November 22, 2024. Through the rest of 2024, the Contractor then proceeded to compile and submit shop drawings for materials with long lead times such as the digester gas plug valves and the prefabricated electrical building. During the time period covered by this report, MSD expended $943,558. The total estimated cost for the life of the project is $8 million. The projected completion date is July 2026. As of December 31, 2024, the project is approximately 7% complete.

Projection for the Next 6 Months

Through June 2025, the Contractor expects to demolish the abandoned equipment, install the buried utilities, excavate, and install electrical handholes and ductbanks, and prepare the site for the installation of the large equipment concrete foundation pads.

D. Dissolved Air Flotation Thickener (DAFT) Rehabilitation (Morris Forman)

Scope

The Dissolved Air Flotation Thickener (DAFT) system and its Main Equipment Building (MEB) exhaust at the MFWQTC have been identified as odor sources. MSD will perform a rehabilitation of the DAFT and its MEB exhaust. This project will evaluate and determine the best odor mitigation technologies for this area. Improving odors in this process will enhance overall air quality at the MFWQTC. Once the odor device is in service, performance testing will confirm if it meets design specifications. MSD will monitor for odors once the project is complete to determine effectiveness and next steps, if needed.

Mid-Year Update

The design consultant worked on the 90% design submittal during this period and presented the 90% design in December of 2024. Additional scope was added to the project during this period which included an odor control system for the DAFT room. The additional scope also included the demolition of an abandoned area that will now be the location of the new odor control equipment. During the period covered by this report, MSD expended $114,947. Budget expended to date is $1.23 million. The total estimated cost for the life of the project is $20 million. The projected completion is in the Spring of 2027. As of December 31, 2024, this project is at 90% of design.

Projection for the Next 6 Months

The design for this project is expected to be completed in the first quarter of the year. This project will be bid, and a bidder will be selected and issued a Notice to Proceed (NTP) to begin construction by June 2025.

Collection System

E. Western Outfall Sewer Shed Studies

Scope

The Western Outfall, a gravity sewer starting in the southwestern central business district, runs west along Broadway toward the Ohio River and then runs south to the MFWQTC. MSD has experienced high odor complaints along this system. AECOM documented in the Odor Control Master Plan that this system tends to run at positive pressure, which causes an increase in the release of odorous air. MSD will conduct a study to determine if changing the pressure in the system to negative will minimize the escape of odorous air. MSD will install a temporary unit along the gravity sewer line to create negative pressure conditions. In

addition to the pressure study, MSD will develop a wastewater odor model using the WATS (Wastewater Aerobic / Anaerobic Transformations in Sewers) sewer process model. WATS simulates changes in conditions (i.e., aerobic, anoxic, and anaerobic) within the sewer system to determine the impact on odors. The WATS model will be used to run what-if scenarios to determine the effectiveness of different treatment methods. MSD will review recommendations from both the negative pressure pilot study and the WATS model to identify next steps. Further actions for system improvements will be prioritized within budget constraints.

Mid-Year Update

Pressure Study

MSD contracted with Webster Environmental Associates, Inc. (WEA) to perform pressure studies along the Western Outfall. Studies were conducted at 24th and Maple Streets and Varble Avenue. Maple Street is at the eastern end of the outfall while Varble is far west. These locations were selected due to their proximity to odor concern areas, low traffic conditions, and ease of access. Letters were distributed to those properties that could be negatively impacted, notifying our customers of potential odors during testing. A copy of the letter can be found in Appendix E. During the tests, a fan system was ducted to a manhole to exhaust air from the sewer. The pressure in the sewer was monitored upstream and downstream to determine if a negative pressure could be maintained and to determine the zone of influence. Successful capturing of air to maintain a negative pressure would allow for the treatment of odorous air prior to release into the atmosphere. Details from both tests are being reviewed and will be analyzed along with the WATS modeling to determine next steps.

WATS Sewer Process Model

The WATS sampling plan and campaign were completed for the Western Outfall sewer between the intersection of South 16th Street and West Breckenridge Street and the intersection of Broadway and Southwestern Parkway. The sampling campaign included flow composite, vapor phase sulfide, liquid phase dissolved sulfide, temperature, and pH sampling. Analyses of the liquid samples were performed by third-party laboratories and included testing for BOD, COD, ffCOD (filtered and floc COD), VFA (volatile fatty acids), and others. Hydraulic model information for this portion of the Western Outfall was also obtained and the sewer process model used to estimate sulfide generation was developed. Calibration of the sewer process model has begun, using the laboratory analyses and field data obtained from the sampling campaign.

During the period covered by this report, MSD expended $329,000. The total estimated cost for the life of the project is $430,000. The projected completion is June 30, 2025. As of December 31, 2024, this project is approximately 60% complete.

Projection for the Next 6 Months

During the next 6 months, MSD will utilize information from the pressure tests and the WATS modeling to explore treatment options. Small pilots may be used to further assess their effectiveness.

Catch Basins

I. Catch Basin Inspections

Scope

MSD is actively inspecting catch basins within the combined system to determine repair needs and identify those for replacement. Repairs are scheduled for completion by MSD field crews while replacement work

is bundled into smaller jobs to bid out to contractors. MSD plans to inspect roughly 4,200 catch basins per year. These inspections are the first step to reducing odors from catch basins located at the edge of customer properties.

Mid-Year Update

Previously, 5,281 catch basins were inspected and 1,147 were identified for replacement. During the period covered by this report, MSD continued to inspect catch basins in the neighborhoods most impacted. An additional 3,768 were inspected and 1,011 were identified for replacement. A total of $158,000 was expended, during the period covered by this report, to perform inspections. The total inspected to date is 9,049 with 2,158 replacements identified. The table below provides details by neighborhood.

CATCH BASIN INSPECTIONS COMPLETED			
Neighborhood	**# Inspected**	**Inspection Status**	**# Identified for Replacement**
Prior to July 1, 2024			
Park DuValle	319	Completed	20
California (3 phases)	925	Completed	84*
Chickasaw	746	Completed	79
Shawnee	1,142	Completed	174
Taylor Berry	817	Completed	43
Russell	1,332	Completed	747
TOTALS:	**5,281**		**1,147**
July 1, 2024 - December 31, 2024			
Old Louisville	1,176	Completed	411
Limerick	246	Completed	166
Park Hill	564	Completed	177*
Parkland	434	Completed	186
East Market / Nulu	284	Completed	71
Cherokee Triangle	300	**In Progress**	TBD
Portland	50	**In Progress**	TBD
Central Business District	714	**In Progress**	TBD
TOTALS:	**3,768**		**1,011**
GRAND TOTALS:	**9,049**		**2,158**

**The number of catch basins initially identified for replacement has changed due to a more extensive review of the inspection results.*
TBD = Inspections in this neighborhood are in progress and a final replacement number is yet to be determined.

Projection for the Next 6 Months

Catch basin inspections will continue in 2025 with focus in the Portland, Central Business District, Algonquin, Beechmont, and South Louisville neighborhoods. We are projected to spend approximately $180,000 on inspections between January and June of 2025.

J. Catch Basin Replacements

Scope

Catch basin replacements in fiscal years 2025 and 2026 will be targeted for completion in identified neighborhoods. These replacements will include installing trapped catch basins to deter odors from escaping the sewer system.

1. *California Neighborhood*: In the California neighborhood, 925 catch basins were inspected, and 84 were identified for replacement. In FY24, 15 catch basins were replaced, and the remaining 69 will be replaced in FY25 with an estimated expenditure of $1.3 million. The replacements in the California neighborhoods are grant-funded, which could impact their timing.

2. *Shawnee*: In the Shawnee neighborhood, 1,142 catch basins were inspected, and 174 were identified for replacement in FY25, with an estimated expenditure of $3.0 million.

3. *Taylor Berry*: In the Taylor Berry neighborhood, 817 catch basins were inspected, and 43 were identified for replacement in FY25 and FY26, with an estimated expenditure of $860,000.

4. *East Market (Nulu):* Louisville Downtown Development initiated a beautification project in the Nulu area of East Market. To align with this effort and to minimize multiple traffic disruptions for construction work, 19 catch basins in this area will be replaced as part of this project in FY25, with an estimated expenditure of $400,000.

MSD expects to see a decrease in customer odor complaints specific to these catch basins that will now be trapped. However, trapped catch basins that are dry can still release odors. Therefore, MSD will periodically inspect the catch basins and add water as needed to contain odors.

Mid-Year Update

The total number of catch basins replaced in the Park DuValle, California, East Market (Nulu), and Shawnee neighborhoods is in the table below. All twenty of the catch basins identified in Park DuValle were completed in early 2024. The remaining replacements occurred during the reporting period.

CATCH BASIN REPLACEMENTS		
Neighborhood	**# To Replace**	**# Replaced**
Park DuValle	20	20
California (3 phases)	84	55
East Market (Nulu)	19	13
Shawnee	174	20
TOTALS:	**297**	**108**

- *California Neighborhood*: In the California neighborhood, the remaining 29 catch basins are projected to be completed by June 30, 2025. As of December 31, 2024, total expenditures are $997,000.
- *East Market (Nulu):* The remaining six (6) catch basins will be completed in the first quarter of 2025. The total cost estimate is $334,600.
- *West Main Street:* Nine (9) catch basins are to be replaced in this area by June 30, 2025, with an estimated expenditure of $135,000.
- *Shawnee*: In the Shawnee neighborhood, the remaining 154 catch basins will be a focus for 2025 with a target completion of December 31, 2025. As of December 31, 2024, total expenditures are $296,000.
- *Taylor Berry*: Catch basin replacements in Taylor Berry are projected to start in 2025. All 43 identified for replacement are on target to be completed by December 31, 2025, with an estimated expenditure of $860,000.

Projection for the Next 6 Months

Catch Basin replacements will continue in 2025 with work in the Nulu, California, West Main Street, Shawnee, and Taylor Berry neighborhoods.

Additional Project

Main Diversion Biofilter

During the reporting period, MSD completed a project at the Main Diversion to improve odors. A biofilter at the grit structure was identified as a source of odors at this site. The biofilter had exceeded its useful life and required replacement. The drainage team conducted a site visit and developed a comprehensive plan to remove the existing material and weeds, wash down the filter bed, and install new material. Additionally, the team installed soaker houses to improve its performance in reducing odors in the vicinity of the Main Diversion.

Conclusion

This Mid-Year Report highlights the progress MSD made in the first six months of the Short-Term Action Plan, illustrates our heightened focus on community engagement, and provides an update on odor complaints and response activities. MSD is committed to actively responding to odor concerns and pursuing mitigation methods to improve odors in our community.

Although this report focuses on the projects scheduled to start during the reporting period (July 1, 2024 – December 31, 2024), the table below summarizes the progress, budget, and expenditures to date for all projects identified in the Short-Term Action Plan. This table will serve as a visualization of project progress until an “electronic dashboard visualization” can be developed, as outlined in Section II A of the Agreed Order.

This Mid-Year Report will be presented to the MSD Board on March 22, 2025. Following the MSD Board review, the report will be distributed to the recipients (as identified in Section IV of the Agreed Order) and posted to the odor webpage prior to the March 31, 2025, deadline.

MSD will continue to work on the projects listed in the table below and, pursuant to the Agreed Order, will provide an Annual Report by September 30, 2025.

Short-Term Action Plan Project Update							
Category	**Identifier**	**Project**	**FY25 - FY26 Budget (millions)**	**FY25 Mid-Year Expenditures (millions)**	**% Complete**	**Projected Completion Date**	**Status**
Treatment	1	New Biosolids Facility (Morris Forman) - ***Consent Decree Project***	$60.00	$35.589	30.5%	30-Sep-28	Under construction
Treatment	2	Sedimentation Basin Rehabilitation (Morris Forman)- ***Consent Decree Project***	$11.50	$2.818	65%	31-Aug-25	Under construction
Treatment	A	Southwest Pump Station Gas Monitoring and Odor Control	$0.80	$0.020	90%	30-Jun-25	Finalizing performance testing
Treatment	**B**	**Odor Management Plan (Derek R. Guthrie)**	**$0.20**	**$0.242**	**100%**	**N/A**	**Complete**
Treatment	C	Hydrogen Sulfide (H_2S) Removal- Digester Gas (Morris Forman)	$8.00	$0.944	7%	31-Jul-26	Under construction
Treatment	D	Dissolved Air Flotation Thickener (DAFT) Rehabilitation (Morris Forman)	$18.10	$0.115	0%	30-Apr-27	Project is at 90% design
Collection System	E	Western Outfall Sewer Shed Studies	$0.43	$0.329	60%	30-Jun-25	Study/tests in progress
Collection System	F	Ohio River Force Main Technology Study	$0.05	$0.000	0%	30-Jun-26	Projected start July 1, 2025
Collection System	G	Grand Avenue Pump Station Chemical Use Study	$0.05	$0.000	0%	30-Jun-26	Projected start April 1, 2025
Pump Station	H	Starkey Pump Station - Evaluate options for odor mitigation technology	$0.05	$0.000	0%	30-Jun-26	Projected start October 1, 2025
Catch Basins	I	Catch Basin Inspections	$0.60	$0.158	N/A	N/A	This work will continue annually throughout the service area
Catch Basins	J1	California Neighborhood Catch Basin Replacements	$1.30	$0.997	65%	30-Jun-25	Under construction
Catch Basins	J2	Chickasaw Neighborhood Catch Basin Replacements	$1.20	$0.000	0%	31-Dec-25	Projected start July 1, 2025*
Catch Basins	J3	Shawnee Neighborhood Catch Basin Replacements	$3.00	$0.296	11%	31-Dec-25	Under construction
Catch Basins	J4	Taylor Berry Neighborhood Catch Basin Replacements	$0.86	$0.000	0%	31-Dec-25	Projected start May 1, 2025
Catch Basins	J5	East Market (Nulu)	$0.40	$0.335	68%	1-Mar-25	Under construction

*Chickasaw Catch Basin Replacements - Construction for 35 of the 79 total catch basins is projected to start July 1, 2025. The remaining 44 catch basins are grant-funded and may take longer to begin.

Appendix C

Monthly clAIRity Reports

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

MSD's clAIRity Update – June 14, 2024

MSD's clAIRity Program is our ongoing work to mitigate the natural odor related to organic materials that decompose as a part of wastewater treatment and management. This monthly brief provides updates on the status of various projects under the clAIRity initiative over the past month.

MSD readies for 'Odor Season'

As we approach warmer, drier months, MSD is preparing for our "Odor Season" that typically runs June through October. These periods of dry weather can increase sewer odors when the large, 160-year-old combined sewer system and catch basin inlets start to dry up and let odors escape. During this time, you will likely notice more MSD crews in areas that are experiencing these concerns. On top of our construction work to address odors, you will see our team cleaning and deodorizing catch basins, putting water in the system through water trucks and continuing our partnership with Louisville Water to turn on hydrants where it can help the situation.

Response to Odor Reports

In May, MSD received 84 requests for service related to odor. The requests came from 19 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. The majority of service calls were related to odors surrounding catch basins or manhole covers, and MSD crews on-site cleaned and deodorized the units. In one case, MSD crews flushed a sewer main, while three service calls resulted in catch basins needing plugs. Investigation of another request found no odor detected from catch basins because they were trapped and holding water, indicating potential ambient air odor from another source.

California Neighborhood Projects Boosted with Grant

In the California neighborhood, a $250,000 grant from Heaven Hill – which operates a distillery in the neighborhood – is contributing to an overall $734,000 group of projects that will replace 40 catch basins in the area. Many catch basins in the combined sewer system do not have "traps" – similar to the curved pipe under your kitchen sink designed to prevent odors from escaping, and California is one of several priority neighborhoods across West Louisville where MSD is systematically identifying and replacing untrapped catch basins. With several catch basins in California already replaced, the second phase of the California project is expected to go to bid in July. These basin replacement projects will complement the $16.5 million project recently completed to rehabilitate the sewer line under Maple Street.

Upcoming clAIRity Community Meeting

MSD is hosting the next "clAIRity" community meeting on Wednesday, June 26 and encourages community members to attend to learn more about odor mitigation and have their voice heard. The meeting will address the factors that contribute to odor, along with detailing the multiple processes and projects MSD has in place to manage odor. See below for the list of upcoming meetings:

- **Wednesday, Jun. 26**, 6-7 p.m. at Western Library, 604 S. 10th Street
- **Tuesday, Aug. 27**, 6-7 p.m. at Shawnee Library, 3912 W. Broadway
- **Tuesday, Oct. 15**, 6-7 p.m. at MSD Central Maintenance Facility, 3050 Commerce Center Place
- **Thursday, Oct. 24**, 1-2 p.m. at Norton Healthcare Goodwill Opportunity Center, 2820 W. Broadway

For more information or to report an odor, visit LouisvilleMSD.org/odor or call 502.540.6000.

About MSD

The Louisville/Jefferson County Metropolitan Sewer District (MSD) works to achieve and maintain clean, environmentally safe waterways for a healthy and vibrant community. More than 670 employees provide wastewater management, drainage and flood protection services across the 376 square miles of Louisville Metro and wastewater service in portions of Bullitt and Oldham Counties. In addition to operating and maintaining Louisville Metro's sewer system, floodwall system, water quality treatment centers and flood pumping stations, MSD invests in hundreds of infrastructure improvement projects each year, plants more than 1,000 trees and other vegetation annually to enhance water filtration and reduce runoff and provides numerous outreach programs to inform and educate the community about protecting our waterways.

700 West Liberty Street | Louisville, KY 40203-1911
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MSD's clAIRity Update – July 15, 2024

MSD's clAIRity Program is our ongoing work to mitigate the natural odor related to organic materials that decompose as a part of wastewater treatment and management. This brief provides updates on the status of various projects under the clAIRity initiative over the past month.

Exceptionally dry June prompts spike in odor reports

The community experienced just 1.78 inches of rain this June, down 65 percent from June of last year with 4.99 inches of rainfall, as well as the 30-year June average of 4.68 inches. With this lack of rain, MSD saw the expected increase in odor reports with 400 service requests from 27 different ZIP codes, each resulting in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary. In one case, the report was investigated and identified as a private industrial source. Investigation of another case found a missing plug in the catch basin, so MSD crews deodorized the basin and replaced the plug.

Periods of dry weather increase sewer odors as catch basin inlets start to dry up and let odors escape. This issue often is evident in areas served by the community's 160-year-old combined sewer system, where wastewater and stormwater flow through the same underground pipes. Throughout Odor Season, MSD is increasing the number of crews in areas that are experiencing heightened odors. On top of the construction work to replace catch basins, you will see our team cleaning and deodorizing catch basins, putting water in the system through water trucks and continuing our partnership with Louisville Water to turn on hydrants where it can help the situation.

How to address odors inside your home

Hydrogen sulfide (H_2S) is the natural odor that results from decomposition of sewage and other materials. While odor is an inevitable part of wastewater management, MSD works daily to manage and minimize odor across our system and underground infrastructure. In addition, there also are several mitigation measures in and around your home that can help reduce odor.

- *Downspouts*: Some downspouts are connected directly to the sewer system, creating another pathway for odor from the combined sewer line. Disconnect your downspout from the sewer drain and seal the open sewer drain connection. Ideally you can add a rain barrel to catch roof runoff.
- *Basement drains*: These residential septic traps are connected directly to the sewer system. Maintain or repair the residential septic trap located under the basement floor drain.
- *Sewer vents*: The small round pipes you typically see on roofs are sewer vents designed to assist your indoor plumbing with airflow, allowing waste to flow freely through the system. These can become clogged and malfunction, requiring maintenance.
- *Infrequently used sinks*: Like catch basins along streets and sidewalks, the pipes underneath sinks can dry out if not used frequently. Flush sinks with water for a couple minutes to address this.

clAIRity community meetings continue

MSD hosted a "clAIRity" community meeting on Wednesday, June 26 where residents were invited to learn more about odor mitigation and have their voice heard. The meeting addressed MSD's current and planned odor management projects, the factors that contribute to odor, along with detailing the multiple processes and initiatives MSD has in place to manage odor. Similar meetings are planned throughout Odor Season, including:

- **Tuesday, Aug. 27**, 6-7 p.m. at Shawnee Library, 3912 W. Broadway
- **Tuesday, Oct. 15**, 6-7 p.m. at MSD Central Maintenance Facility, 3050 Commerce Center Place
- **Thursday, Oct. 24**, 1-2 p.m. at Norton Healthcare Goodwill Opportunity Center, 2820 W. Broadway

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MSD's clAIRity Update – August 15, 2024

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July Odor Reports Down

MSD received 132 service requests related to odor during July, a decrease from the 400 requests in June. The requests came from 25 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary. MSD is also utilizing a 3,500-gallon water truck to add water to the system in high odor complaint areas.

The community experienced 5.91 inches of rain this July, which is 30 percent greater than the 30-year average for July and a significant increase compared to last July's rainfall of 3.77 inches.

Catch Basin Replacement Continuing in Several Neighborhoods

"Untrapped" and outdated catch basins can be a source of odor. The second phase of basin replacements in the California neighborhood is complete and a third phase along Maple Street is going out for construction bids this month. In the Taylor-Berry neighborhood, MSD identified 54 catch basins needing replacement or repair and this work will go out for construction bids in September.

MSD in the Community

MSD continues to engage the community regarding its efforts to mitigate odor. On Tuesday, July 30, Mayor Craig Greenberg hosted his weekly press conference at MSD's new main office building in the Park Hill neighborhood. MSD Executive Director Tony Parrott joined the mayor to share updates with the media and the community on the clAIRity Program.

In addition, the MSD team is meeting with church groups, nonprofit organizations and other community stakeholders, to hear directly from those who are experiencing odors. These small-group meetings are an opportunity for community groups to have direct conversations with MSD officials. To request a visit to your community group please reach out to CustomerRelations@LouisvilleMSD.org.

MSD's series of clAIRity meetings throughout the community continue to provide opportunities for residents to learn more about MSD's mitigation efforts taking place across the region, express concerns and submit odor reports. Upcoming community meetings include:

- **Tuesday, Aug. 27**, 6-7 p.m. at Shawnee Library, 3912 W. Broadway
- **Tuesday, Oct. 15**, 6-7 p.m. at MSD Central Maintenance Facility, 3050 Commerce Center Place
- **Thursday, Oct. 24**, 1-2 p.m. at Norton Healthcare Goodwill Opportunity Center, 2820 W. Broadway

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About MSD

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MSD's clAIRity Update – September 15, 2024

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Biofilter improvements made

MSD uses various methods to mitigate odors at our facilities, including advanced biofilter technology that uses natural processes to break down odor-causing substances. At the MSD Main Diversion Structure, where three major interceptor pipes converge before reaching the Morris Forman Water Quality Treatment Center, a biofilter recently underwent an upgrade to improve its efficiency. The drainage team replaced the old filter material and cleaned the system, then installed a new filter made from recycled wood chips. These chips, along with added soaker hoses, help maintain the microorganisms that break down the bacteria responsible for unpleasant odors, keeping the system effective and environmentally friendly.

Catch basin work advances

A number of construction projects are underway to replace "untrapped" and outdated catch basins that can be a source of odor. The first two phases of projects in the Shawnee neighborhood are set to begin this month with completion targeted in May. The bidding process is underway for more basin replacement projects in California, Chickasaw, and Taylor Berry neighborhoods. In total, MSD is on pace to have replaced 422 catch basins by the end of 2025.

Response to odor complaints during dry conditions

The combined sewer system is designed to be self-cleaning, using rain and water used by homes and businesses to keep underground pipes flowing to our treatment centers, reducing the buildup of odorous gas. When the community experiences dry spells – like this August with less than one inch of rain compared to the 30-year average of over 3.5 inches – MSD systematically deploys water trucks to add additional water into the system for areas experiencing odor.

Additionally during August, MSD responded to 215 service requests related to odor, up from July's 132 requests. The requests came from 26 ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manholes where necessary. In one case, an MSD crew member found and removed an obstruction in the line.

MSD in the Community

MSD's clAIRity program continues to engage the community regarding our efforts to mitigate odor. The MSD team is meeting with church groups, nonprofit organizations, and other community stakeholders, to hear directly from those who are experiencing odors. These small-group meetings are an opportunity for community organizations to have direct conversations with MSD officials and to provide input about their experiences with odor. To request a visit to your community group please reach out to CustomerRelations@LouisvilleMSD.org.

MSD's series of clAIRity meetings throughout the community continue to provide opportunities for residents to learn more about MSD's mitigation efforts taking place across the region, express concerns and submit odor reports. Upcoming community meetings include:

- **Tuesday, Oct. 15**, 6-7 p.m. at MSD Central Maintenance Facility, 3050 Commerce Center Place
- **Thursday, Oct. 24**, 1-2 p.m. at Norton Healthcare Goodwill Opportunity Center, 2820 W. Broadway

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MSD's clAIRity Update – October 11, 2024

MSD's clAIRity Program is our ongoing work to mitigate the natural odor related to organic materials that decompose as a part of wastewater treatment and management. This monthly brief provides updates on the status of various projects under the clAIRity initiative over the past month.

Catch basin work advances in additional neighborhoods
A number of construction projects are underway to replace "untrapped" and outdated catch basins that can be a source of odor. The first two phases of projects in the Shawnee neighborhood are underway, which includes updating 202 catch basins. A construction bid will soon be awarded for the Maple Street phase of the California neighborhood, and the bidding process is underway for basin replacement projects in the Chickasaw and Taylor Berry neighborhoods. In total, MSD is on pace to have replaced 422 catch basins by the end of 2025.

Additionally, MSD's work to update catch basins along East Market Street in NuLu is occurring concurrent with Metro Public Works' streetscaping project in the area. While MSD works to replace 19 catch basins along the one-mile stretch from Brook Street to Baxter Avenue, Public Works is simultaneously extending sidewalks, planting trees, adding bike lanes and installing public furniture and art. Collaboration between our agencies is reducing construction inconveniences while resulting in a more inviting streetscape for residents, employees and visitors.

Response to odor reports
During September, MSD responded to 197 service requests related to odor, down from August's 215 requests. The requests came from 26 ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manholes where necessary. In one case, an MSD crew member found and repaired a damaged manhole lid.

Additionally, September brought much-needed rain to help flush MSD's underground network of pipes. While the majority of September's 6.71 inches of rain occurred toward the end of the month, it was in stark comparison to less than one inch of rain in total during the previous month, which results in the flow of wastewater and stormwater in our underground pipes to slow down, allowing odors to increase. MSD continues to respond to dry periods by systematically deploying water trucks to flush the system where needed.

Large capital project has odor reduction benefits
Construction continues with MSD's $255 million investment in our Morris Forman Water Quality Treatment Center on Algonquin Parkway. This facility is critical to our mission as it treats wastewater from approximately two-thirds of the community and is Kentucky's largest wastewater treatment facility. Over the next two years, MSD will install a $255 million state-of-the-art biosolids processing facility at Morris Forman WQTC, which will increase capacity, improve efficiency and sustainability and help reduce odors from the plant.

MSD in the Community
Don't miss your chance to attend one of MSD's final two clAIRity meetings this year, and be part of the conversation about ongoing efforts to reduce odor in our community. These meetings provide an opportunity to hear directly from MSD officials, share your experiences and learn more about the steps being taken to address odor issues across the region. Your input is invaluable, and these small-group discussions ensure that your voice is heard:

- **Tuesday, Oct. 15**, 6-7 p.m. at MSD Central Maintenance Facility, 3050 Commerce Center Place
- **Thursday, Oct. 24**, 1-2 p.m. at Norton Healthcare Goodwill Opportunity Center, 2820 W. Broadway

In addition, the MSD team welcomes the opportunity to engage with church groups, nonprofit organizations and other community stakeholders who would like to learn more about our clAIRity program initiatives. To request a visit, please reach out to CustomerRelations@LouisvilleMSD.org.

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MSD's clAIRity Update – November 15, 2024

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MSD responds to a drier-than-normal October

The combined sewer system is designed to be self-cleaning, using rain and water used by homes and businesses to keep underground sewer pipes flowing to our treatment centers, reducing the opportunity for odors to build up. However, this October ranked as one of the top 5 driest on record, with less than one inch of rain compared to the 30-year October average of over 3.6 inches. To address this unusually dry weather, MSD systematically deployed water trucks to add additional water into the system in areas experiencing odor issues.

During October, MSD responded to 337 service requests related to odor, up from September's 197 requests. The requests came from 30 ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manholes where necessary. In one case, an MSD crew member found the catch basin had a broken plug and submitted it for repair. In another instance, one service request resulted in MSD identifying 14 catch basins that needed deodorizing.

Big investments, responsive action and a commitment to fresh air

The end of October marks the close of the typically warm, dry months of summer that we have designated odor season. But our work to mitigate odor across the MSD system is ongoing. We are pleased to see incremental progress from these efforts as odor reports are down 23% January through October 2024, compared to the same time frame last year.

Our work has involved $16 million in sewer system upgrades across several neighborhoods and preventative maintenance completed for 22,525 catch basins since January. By the end of next year, 410 catch basins that have been identified as contributing to frequent odor will have been completely replaced with new equipment to better serve the community.

Our team monitors and responds to system needs all year long, because odor management never stops. Every dollar spent, every catch basin replaced – and every call answered – reflects our ongoing commitment to making life better for our customers.

As part of this commitment, MSD hosted five clAIRity community meetings during odor season, providing residents with the opportunity to learn more about our ongoing odor-reduction efforts. These meetings allowed attendees to hear directly from MSD officials, share experiences and learn more about the steps being taken to address odor issues across the region. Feedback from these small-group discussions is important in helping shape our future actions.

In addition to MSD-hosted community meetings, our team continues to welcome the opportunity to engage with church groups, nonprofit organizations and other community stakeholders who would like to learn more about our clAIRity program initiatives. To request a visit, please reach out to CustomerRelations@LouisvilleMSD.org.

For more information or to report an odor, visit LouisvilleMSD.org/odor or call 502.540.6000.

About MSD
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MSD's clAIRity Update – December 13, 2024

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November Odor Reports Down with Increased Rainfall

November brought much-needed rain to help flush MSD's underground network of pipes. The community saw a total of 7.2 inches of rain, which is an 81 percent increase from last year's 1.32 inches and significantly higher than the 30-year average of 3.44 inches. To put this into perspective, two inches of rain generates approximately two billion gallons of water over our community. In contrast, Louisville Water's daily customer consumption stands at 150 million gallons. This means it would take a full two weeks of all the water Louisville Water's customers use to match the cleansing effect of a single substantial rainfall.

Alongside the rainfall, MSD crews responded to 120 service requests related to odor in November, down from October's 337. These requests came from 25 ZIP codes and prompted thorough investigations and targeted actions, including cleaning, deodorizing and flushing sewer mains, catch basins and manholes where needed. In two notable cases, MSD crews discovered a force main break near a residence and discharge from a private pump station—both promptly addressed to minimize impact.

Catch Basin Replacement Program Makes Strides in 2024

MSD continues to make significant strides in reducing ambient odors by systematically replacing untrapped catch basins. In 2024, 18 catch basins were replaced in the Park DuValle neighborhood, and 55 in the California neighborhood, with an additional 20 slated for completion by June 2025. Work is also underway to replace 174 catch basins in the Shawnee neighborhood and 122 across the Chickasaw and Taylor Berry neighborhoods by the end of 2025. Additionally, 19 catch basins in the NuLu neighborhood along East Market Street are set for replacement by year-end.

By May 2025, MSD will have invested nearly $4 million to replace 295 untrapped catch basins in the California, Park DuValle and Shawnee neighborhoods. Beyond these efforts, MSD has identified 874 additional catch basins for replacement in the Chickasaw, Russell and Taylor Berry neighborhoods, with work progressing through budgeting and contractor procurement phases.

To further showcase these proactive efforts, MSD has created curb markers that will be placed on all new and repaired catch basins, reinforcing our commitment to mitigating odors and improving infrastructure across the community.

Modernizing Kentucky's Largest Wastewater Treatment Facility

MSD is investing $255 million in the Morris Forman Water Quality Treatment Center, Kentucky's largest wastewater treatment facility, to enhance its biosolids processing system.These significant upgrades will enhance capacity, improve efficiency and increase sustainability, while also addressing odor mitigation. As part of this investment, the Primary Sedimentation Basin Rehabilitation project is on schedule for completion in late spring to early summer 2025. Sedimentation basins 3 and 4 are now operational following completed work, and crews have begun removing old equipment from basins 1 and 2.

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New media has been installed in the Bio-Organic Control (BOC) for odor management and is now being prepared for operation, ductwork for odor control has been replaced, and influent channel weirs have been covered. Construction is also underway on the new Thermal Hydrolysis Process (THP), which will enhance biosolids treatment and integrate with the Rotary Drum Dryers to produce Louisville Green, an organic-based nitrogen fertilizer. Additionally, the gas monitoring and odor control project at the Southwestern Pump Station has been completed and is being prepared for service, while MSD has begun designing odor control improvements for the Bells Lane Wet Weather Treatment Facility.

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MSD's clAIRity Update – January 15, 2025

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December Odor Reports Down with Increased Rainfall

This past December, our community received 3.81 inches of rain, a 51 percent increase from December 2023's 1.86 inches. With the increased rain, odor reports continued to decline for the fifth consecutive month. MSD received 92 service requests related to odor throughout December, down from 120 in November. The requests came from 21 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary. In a few cases, all MSD assets were checked and no odor was detected.

clAIRity Community Meetings Returning in 2025

In 2024, MSD brought its clAIRity Community Meetings to several neighborhoods to foster discussions with the community about odor management. The meetings provided a space for residents to share their experiences, voice concerns and learn about MSD's ongoing and planned efforts to reduce odors, including updates on current projects and initiatives. We're pleased to share that the clAIRity community meetings will return in 2025. We are currently in the process of identifying dates and locations, and will share them well in advance.

In addition, MSD continues to engage with smaller groups, such as churches, nonprofits and other local organizations, for more personalized discussions. If your group would like to host MSD for a conversation tailored to your group, you can request a visit by emailing CustomerRelations@LouisvilleMSD.org.

2025 Project Preview at Morris Forman

The $255 million, multi-year construction project underway to enhance our biosolids processing at the Morris Forman Water Quality Treatment Center will take several strides during 2025.

For the rehabilitation of the facility's primary sedimentation equipment, basins 1 and 2 are being prepped for construction, with completion expected by late spring 2025. We also will complete this year the hydrogen sulfide removal from the digester gas that fuels the dryer system. This work will cut utility costs and reduce emissions. Meanwhile, construction is underway to build a thermal-hydrolysis system that, when complete, will process biosolids in a way that supports long-term sustainability. This system will result in Class A material – meeting strict regulations for the highest quality level of treated sludge that may be used as a natural fertilizer or soil additive.

Our work at Morris Forman will also add to the community's resiliency and preparedness. We are enhancing the facility's electrical reliability by modernizing two load centers and adding a backup for another. Also, during the dry season, we will begin construction of a gate at the facility's final pumping station that will create the proper redundancies to further protect the community from Ohio River flooding. Together this extensive work at Kentucky's largest water treatment facility is improving our operations particularly in biosolids handling, while also enhancing the environment for the community.

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MSD's clAIRity Update – February 14, 2025

MSD's clAIRity Program is our ongoing work to mitigate the natural odor related to organic materials that decompose as a part of wastewater treatment and management. This monthly brief provides updates on the status of various projects under the clAIRity initiative over the past month.

Odor Control Study for Second Treatment Center Complete

MSD is proactively addressing odor control through a systematic review of our five regional water quality treatment centers. This work involves a third-party engineering-consulting firm AECOM conducting a thorough analysis of each facility to identify where odor management tactics will have the greatest impact. The second of five studies is now complete, with the completion of the analysis of MSD's Derek R. Guthrie Water Quality Treatment Center in southwestern Jefferson County. MSD has drafted a response to the study and is beginning to prioritize projects and put budgetary plans in place to implement the identified changes. The Derek R. Guthrie study comes after the Morris Forman Water Quality Treatment Center study was completed in 2023 and work to implement those identified improvements is now underway. Next, MSD will expand this evaluation to the Hite Creek and Cedar Creek Water Quality Treatment Centers.

Catch Basin Replacements Moving Forward

"Untrapped" and outdated catch basins can be a source of odor, and MSD is leading an extensive series of projects to identify and replace them. MSD's efforts to replace catch basins in NuLu and the California neighborhood are making significant progress. The NuLu project, which replaced 19 catch basins along East Market Street, was completed in early February. This work was conducted in conjunction with Louisville Metro Public Works' streetscaping efforts, reducing construction impacts while enhancing the area's infrastructure.

In the California neighborhood, MSD has been systematically replacing untrapped catch basins through three project phases. Phase 1 and Phase 2 of this project have been completed, which replaced 55 catch basins. Now, work is set to continue with Phase 3 of this project, which will replace an additional 20 catch basins focused along Maple Street. Contractor procurement is complete, and construction is expected to begin this month. These efforts build on previous investments in the area, including a $16.5 million sewer line rehabilitation project under Maple Street, ensuring long-term improvements to the neighborhood's drainage system.

January Weather and Odor Reports

This past January, our community received 3.33 inches of total precipitation, a 49 percent decrease from last January's 6.53 inches. MSD responded to 46 service requests related to odor throughout January, down from 92 in December. The requests came from 17 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary.

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MSD's clAIRity Update – March 14, 2025

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Your Voice Matters: Join the 2025 clAIRity Community Meetings

MSD's clAIRity Community Meetings are returning to foster discussions with the community about odor management projects to ensure community feedback plays a key role in shaping our strategies.

The first meeting in this year's series will take place on Tuesday, April 22, where attendees will have the opportunity to ask questions, share their experiences and hear updates on MSD's ongoing and planned efforts to reduce odors. Discussions will cover the factors that contribute to odor, the steps MSD is taking to address them and the multiple efforts underway to reduce their impact.

Mark your calendar for the upcoming meetings:

- Tuesday, April 22 | 6-7 p.m.
- Tuesday, June 24 | 6-7 p.m.
- Thursday, August 28 | 6-7 p.m.
- Tuesday, October 14 | 6-7 p.m.
- Thursday, October 30 | 6-7 p.m.

All meetings will be held at **MSD's new office, at 1600 W. Hill Street, in the Park Hill neighborhood,** and will include a virtual option for those unable to attend in person.

In addition, the MSD team is meeting with church groups, nonprofit organizations and other community stakeholders, to hear directly from those who are experiencing odors. These small-group meetings are an opportunity for community groups to have direct conversations with MSD officials. To request a visit to your community group please reach out to CustomerRelations@LouisvilleMSD.org.

For more information or to report an odor, visit LouisvilleMSD.org/odor or call 502.540.6000.

February Weather and Odor Reports

In February our community received 6.84 inches of total precipitation, more than four times the precipitation in February 2024 which saw 1.63 inches of rain, and more than double the 20-year average of 3.27 inches. MSD responded to 71 service requests related to odor throughout February, up from 46 in January. The requests came from 16 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary.

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MSD's clAIRity Update – April 15, 2025

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MSD's Flood Response in Motion

While mitigating odor is part of MSD's daily commitment to public health and safety, the first two weeks of April also demanded an all-hands-on-deck response to historic flooding across our community.

MSD's comprehensive flood protection system includes 26.1 miles of floodwall and earthen levee designed to safeguard the community from Ohio River flooding. Since April 2, MSD has been hard at work, activating critical components of this system to get ahead of rising river levels. Crews closed floodgates, installed floodwall closures and brought pump stations online in a coordinated, proactive response. The Ohio River crested a week later on April 9 at 36.63 feet, making this the 8th highest flood in Louisville's recorded history.

Here's a look at what MSD mobilized during the event:

- All 16 flood pump stations, 65 floodgates and 7 floodwall closures were activated
- More than 12.5 billion gallons of stormwater were pumped out through the system
- More than 170 MSD employees worked around the clock to protect lives and property
- Since the devastating 1997 flood, MSD has invested in infrastructure that added nearly 1 billion gallons of storage capacity to better handle events like this

Whether addressing odor or responding to a flood, MSD's mission remains the same: to protect the health and safety of the communities we serve – every day, and especially when it matters most.

Your Voice Matters: Join the 2025 clAIRity Community Meetings

MSD's clAIRity Community Meetings are back again this year, starting next Tuesday, April 22, to foster meaningful conversations with the community about odor management. Attendees will have the opportunity to ask questions, share experiences and hear updates on MSD's ongoing and upcoming efforts to reduce odors. Discussions will focus on the factors contributing to odor and the steps MSD is taking to minimize their impact.

Your insight is invaluable and helps shape our ongoing efforts to minimize odors across the community. Mark your calendar and plan to join us for the upcoming meetings:

- Tuesday, April 22 | 6-7 p.m.
- Tuesday, June 24 | 6-7 p.m.
- Thursday, August 28 | 6-7 p.m.
- Tuesday, October 14 | 6-7 p.m.
- Thursday, October 30 | 6-7 p.m.

All meetings will be held at MSD's new office, located at 1600 W. Hill Street in the Park Hill neighborhood, with a virtual option available for those unable to attend in person.

March Odor Reports

MSD responded to 79 service requests related to odor throughout March, up from 71 in February. The requests came from 20 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary.

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

MSD's clAIRity Update – May 15, 2025

MSD's clAIRity Program is our ongoing work to mitigate the natural odor related to organic materials that decompose as a part of wastewater treatment and management. This monthly brief provides updates on the status of various projects under the clAIRity initiative over the past month.

Let's Keep the Conversation Going: clAIRity Community Meetings Continue
MSD kicked off this year's clAIRity Community Meetings with a great discussion on April 22, and there's more to come. These meetings are a key part of how we keep the community informed and involved in our work to reduce odors.

Four meetings remain in 2025, and each one is a chance to share your experience, ask questions and hear directly from MSD experts about the steps we're taking to manage odors and improve air quality.

Mark your calendar for the upcoming meetings:

- Tuesday, June 24 | 6–7 p.m.
- Thursday, August 28 | 6–7 p.m.
- Tuesday, October 14 | 6–7 p.m.
- Thursday, October 30 | 6–7 p.m.

All meetings take place at MSD's new office (1600 W. Hill Street in the Park Hill neighborhood) and include a virtual option.

MSD is also available to existing meetings hosted by faith based organizations, nonprofits and neighborhood groups across the community. If you'd like to schedule a conversation with MSD at your next group meeting, please contact us at CustomerRelations@LouisvilleMSD.org.

For more details or to report an odor, visit LouisvilleMSD.org/odor or call 502.540.6000.

April odor reports down with increased rainfall
The community experienced 9.42 inches of rain this April, a 91 percent increase from last April and doubled the 30-year average of 4.93 inches.

To put this into perspective, two inches of rain generates approximately two billion gallons of water over our community. In contrast, Louisville Water's daily customer consumption stands at 150 million gallons. This means it would take a full two weeks of all the water Louisville Water's customers use to match the cleansing effect of a single substantial rainfall, like what we saw in April.

Along with increased rain, MSD received 54 service requests related to odor during April, a decrease from the 79 requests in March. The requests came from 21 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary.

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

MSD's clAIRity Update – June 13, 2025

MSD's clAIRity Program is our ongoing work to mitigate the natural odor related to organic materials that decompose as a part of wastewater treatment and management. This monthly brief provides updates on the status of various projects under the clAIRity initiative over the past month.

MSD Crews in Action This Odor Season

As summer heat sets in, MSD is taking proactive steps to manage seasonal sewer odors during what we call "Odor Season," which typically runs from June through October. Warmer, drier conditions can cause parts of our 160-year-old combined sewer system to dry out, allowing odors to escape from catch basins and manholes. This year, we've launched new preventive maintenance schedules to regularly flush and clean catch basins and manholes where odor is frequently reported throughout the season.

In addition to our field crews' work of cleaning and deodorizing catch basins, using water trucks to rehydrate dry areas, and coordinating hydrant flushing with Louisville Water, we're also exploring new odor-reduction methods. As part of this effort, Webster Environmental Associates (WEA) recently conducted a pressure test on 45th Street, a location with frequent odor complaints and convenient access. Using a fan system to draw air out of the sewer, WEA monitored pressure changes to evaluate whether this technique could help reduce odors long-term.

Stay Connected: clAIRity Community Meeting Schedule

There are four more clAIRity community meetings this year, and each is an opportunity to share your experience, ask questions and hear directly from MSD experts about the steps we're taking to manage odors and improve air quality. Mark your calendar to join us virtually or in-person at MSD's new office (1600 W. Hill Street in the Park Hill neighborhood):

- Tuesday, June 24 | 6–7 p.m.
- Thursday, August 28 | 6–7 p.m.
- Tuesday, October 14 | 6–7 p.m.
- Thursday, October 30 | 6–7 p.m.

MSD is also available to existing meetings hosted by faith based organizations, nonprofits and neighborhood groups across the community. If you'd like to schedule a conversation with MSD at your next group meeting, please contact us at CustomerRelations@LouisvilleMSD.org.

For more details or to report an odor, visit LouisvilleMSD.org/odor or call 502.540.6000.

May Weather and Odor Reports

In May our community received 4.33 inches of total precipitation, a 29 percent decrease from last May's 6.07 inches and a 16 percent decrease from the 20-year average of 5.16 inches. MSD responded to 85 service requests related to odor throughout May, up from 54 in April. The requests came from 21 different ZIP codes, and each resulted in an MSD crew investigating and responding as appropriate. For the majority of service calls, MSD crews on-site cleaned, deodorized and flushed with water the nearby sewer mains, catch basins or manhole covers where necessary.

Appendix D

Community Meeting Agendas

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

Community Meeting Agenda

Meeting date: Tuesday, August 27, 6-7 p.m.
Location: Shawnee Library
3912 W Broadway, Louisville, KY 40211

Purpose: Provide updates about MSD's continued efforts to mitigate odor and engage the community through the clAIRity program.

Welcome

About MSD and the clAIRity Program

What Causes Sewer Odors?
- Information MSD-related odors compared to non-MSD sources

Mitigation Methods
- Approaches MSD uses to combat odors

Water Quality Treatment Centers
- Information regarding MSD's treatment centers, with a focus on the improvements underway at Morris-Forman WQTC

The Combined Sewer System
- Providing an understanding of differences between combined and separate sewer systems, and how that can impact odor.

Outside Factors
- How dry weather and water consumption levels impact odor

MSD's Ongoing Responses and Outreach
- An update of MSD's current responses to odor reports, how it is engaging in the community, and how the public can report concerns to MSD

Q&A
- MSD will facilitate a discussion period; meeting attendees may ask questions verbally or by submitting questions in writing on provided cards

Meeting Conclusion
- MSD representatives are also available before and after the meeting to speak directly with customers.

For more information or to report an odor,
visit LouisvilleMSD.org/odor or call 502.540.6000.

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

Community Meeting Agenda

Meeting date: Tuesday, October 15, 6-7 p.m.
Location: MSD Central Maintenance Facility
3050 Commerce Center Place

Purpose: Provide updates about MSD's continued efforts to mitigate odor and engage the community through the clAIRity program.

Welcome

About MSD and the clAIRity Program

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Q&A
- MSD will facilitate a discussion period; meeting attendees may ask questions verbally or by submitting questions in writing on provided cards

Meeting Conclusion
- MSD representatives are also available before and after the meeting to speak directly with customers.

For more information or to report an odor,
visit LouisvilleMSD.org/odor or call 502.540.6000.

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

Community Meeting Agenda

Meeting date: Tuesday, October 24, 1-2 p.m.
Location: Norton Healthcare Goodwill Opportunity Campus
2820 W. Broadway, Louisville, KY 40211

Purpose: Provide updates about MSD's continued efforts to mitigate odor and engage the community through the clAIRity program.

Welcome

About MSD and the clAIRity Program

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- An update of MSD's current responses to odor reports, how it is engaging in the community, and how the public can report concerns to MSD

Q&A
- MSD will facilitate a discussion period; meeting attendees may ask questions verbally or by submitting questions in writing on provided cards

Meeting Conclusion
- MSD representatives are also available before and after the meeting to speak directly with customers.

For more information or to report an odor,
visit LouisvilleMSD.org/odor or call 502.540.6000.

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

Community Meeting Agenda

Meeting date: Tuesday, April 22, 6-7 p.m.
Location: MSD's New Office - 1600 W. Hill Street, Louisville, KY, 40210

Purpose: Provide updates about MSD's continued efforts to mitigate odor and engage the community through the clAIRity program.

Welcome

About MSD and the clAIRity Program

What Causes Sewer Odors?
- Information MSD-related odors compared to non-MSD sources

Odor Reports & Combine Sewer System Overview
- A look at current odor reports and an overview of our combined sewer system

Potential Odor Pathways
- Overview of potential sewer odor pathways in the home and how to reduce them

Water in the System
- The importance water plays in the sewer system

Mitigation Methods
- Approaches MSD uses to combat odors at MSD facilities and in the field

Short Term Action Plan
- Update on MSD's investments across four key areas – treatment facilities, collection systems, pump stations and catch basins – to reduce wastewater odors across the community

Q&A
- MSD will facilitate a discussion period; meeting attendees may ask questions verbally or by submitting questions in writing on provided cards

Meeting Conclusion
- MSD representatives are also available before and after the meeting to speak directly with customers

For more information or to report an odor,
visit LouisvilleMSD.org/odor or call 502.540.6000.

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

Community Meeting Agenda

Meeting date: Tuesday, June 24, 6-7 p.m.
Location: MSD's New Office - 1600 W. Hill Street, Louisville, KY, 40210

Purpose: Provide updates about MSD's continued efforts to mitigate odor and engage the community through the clAIRity program.

Welcome

About MSD and the clAIRity Program

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- A look at current odor reports and an overview of our combined sewer system

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For more information or to report an odor,
visit LouisvilleMSD.org/odor or call 502.540.6000.

Appendix E

Management Response:

Odor Master Plan (Derek Guthrie)

Derek R Guthrie Service Area Odor Control Master Plan

Management Response

As outlined in the Short-Term Action Plan, MSD contracted with AECOM to conduct a study of odors and develop odor control management plans. Phase 2 of this work focused on the Derek R. Guthrie Water Quality Treatment Center (DRGWQTC) and the associated pumping stations and collection system in the southern part of our service territory. Consistent with the prior plan developed for the Morris Forman Water Quality Treatment Center (MFWQTC), AECOM identified potential odor sources, conducted liquid and vapor sampling, evaluated existing odor control systems, and developed recommendations for odor treatment technologies.

Pursuant to the Odor Mitigation Short-Term Action Plan, MSD reviewed AECOM's recommendations outlined in the Derek R. Guthrie Service Area Odor Control Master Plan Final Report (Appendix A) and formulated this response to those recommendations. This response includes a clarification section to improve the understanding and accuracy of the information in the report, a summary of each recommendation with MSD's response, and a list of actions to be prioritized and incorporated in future action plans. MSD is committed to minimizing the impact of sewer related odors on our community and will continue to prioritize our efforts on the areas of most concern.

Clarifications

Clarification #1

The AECOM report states that MSD owns and operates 141 wastewater pumping stations within the Derek R. Guthrie Service Area. This AECOM number includes private owned and out of service pumping stations. At present, MSD owns and operates 37 pumping stations that are *in service* in the Derek R Guthrie service area.

Clarification #2

AECOM conducted sampling of the Derek R. Guthrie Collection System at five manholes (refer to Table 3-2 in AECOM report). According to AECOM, sampling locations were selected based on odor complaints which showed relatively high odor impacts on surrounding neighborhoods. MSD would like to clarify some specifics related to three of these manholes.

- Manhole (MH-105052) is at the Kramer's Lane Interceptor near Vogt Ave. Prior investigations by MSD of odor complaints in this area determined the source to be a nearby landfill.
- Manhole (MH-58837) is the discharge manhole of the Elderberry Ridge Pump Station which is a private facility that is not owned or operated by MSD.
- Manhole (MH-92007) is on the Admiral Way Pump Station Discharge. A project is in design for improvements to the Admiral Way Pump Station which will include an odor control solution.

AECOM's Recommendations / MSD Responses

AECOM's recommendations are summarized in Table 8-1 with the associated section number from the report.

Table 8-1 – Summary of Odor Control Technology Recommendations

#	Location	Recommended Odor Control Technology
	Derek R. Guthrie WQTC	
7.1.1	East and West Influent Screening Chambers	Replace existing media Evaluate options for even air flow split across the beds
7.1.2	Grit Facilities	New carbon media Replace unit with one air flow bed
7.1.4	Dewatering Buildings	Install new Biofilter unit Keep roll up garage doors closed as much as possible
	Collection System	
7.2.1	Sample ID #5 Force Main	Chemical Injection Unit
7.2.2	Sample ID #1 Interceptor	Negative Pressure Pilot Study
	Pump Stations	
7.3.1	Pump Station #2	Multi-layer carbon unit or hydroxyl generator
7.3.2	Pump Station #3	Multi-layer carbon unit or hydroxyl generator

 # 7.1.1 East and West Influent Screen Chambers (DRGWQTC)

AECOM Recommendation: "The recommended approach for the east and west carbon adsorbers is to evaluate options that allow a more even air flow split between the upper and lower beds in order to achieve an even air flow distribution across the beds which will optimize the unit performance."

MSD Response: MSD will rebalance the flow in the East and West Carbon Absorbers. MSD will also sample each bed of carbon and perform analytical testing to evaluate its effectiveness and replace the carbon if it is underperforming.

 # 7.1.2 Grit Facilities (DRGWQTC)

AECOM Recommendation: "A new replacement unit with one bed should be considered to allow a more even distribution over the media. In addition, the media design should be evaluated to analyze the optimum media type that provides the highest odor removal efficiency. The recommended improvements to the grit removal facilities should be considered a low priority item compared to other recommendations proposed since the unit is already performing above 90% removal efficiency."

MSD Response: MSD will rebalance the flow in the carbon unit. MSD will also sample each bed of carbon and perform analytical testing to evaluate its effectiveness and replace the carbon if it is underperforming.

 # 7.1.4 Dewatering Buildings (DRGWQTC)

AECOM Recommendation: "In order to treat the odors within the building, a biofilter unit, that is 36' by 14' in footprint, is recommended to be installed. Hoods are installed over the two lugger areas, and a total of 4 air intakes per hood are proposed to capture the foul air. In addition, the building should be put under slightly negative pressure, to keep the foul air within the building. The roll up garage doors should also remain closed as much as possible to allow the proposed odor control unit to perform as intended. The HVAC system will need to be evaluated for performance impacts with the roll up garage doors closed."

MSD Response: MSD will hire a firm to design an odor control system and evaluate current HVAC system for improvements.

 # 7.2.1 Sample ID#5 Force Main (Collections System)

AECOM Recommendation: "Sampling results in the force main showed high odor concentrations. Based on the high odor sampling results, and the odor complaints within the areas, chemical injection is the recommended technology to utilize within this force main. Alternative chemicals could be evaluated to determine which chemical may be more effective at reducing odor levels."

MSD Response: The sample was taken from the Admiral Way Pump Station Force Main. The Admiral Force Main discharge had relatively low BOD and TSS concentrations, a relatively high odor concentration, but low hydrogen sulfide concentration. A project is in design for the Admiral Way Pump Station that will include odor control technology that is expected to improve odors in the area.

 # 7.2.2 Sample ID #1 Interceptor (Collections System)

AECOM Recommendation: "The Sample ID #1 Interceptor has periods of time where it operates at a positive pressure, which means that odorous air is expelled from the sewer headspace at various manhole points along the pipe system during the positive pressure time periods. A negative pressure unit could be installed at one or more locations along the sewer to keep the pipe running at a negative pressure. Sample ID #1 interceptor is the recommended priority for a negative pressure pilot."

MSD Response: Sample ID#1 Interceptor is a relatively short interceptor that is located near a landfill on Vogt Avenue. It is not clear that odors reported along this segment of the collection system are attributable to the interceptor. In fact, the hydrogen sulfide reading obtained during sampling conducted by AECOM (Table 3-5) was low at 0.004 ppm. MSD will monitor odors in the area and if high odors are detected from the sewer system, MSD will consider a negative pressure pilot test.

7.3.1 Pump Station #2

AECOM Recommendation: "There are two (2) odor control systems recommended for odor level improvements. It is recommended that either a multi-layer carbon unit or a hydroxyl generator unit could be installed at this facility."

MSD Response: MSD will continue to monitor for odors and determine further actions to be added to future Action Plans, if necessary.

7.3.2 Pump Station #3

AECOM Recommendation: "There are two (2) odor control systems recommended for odor level improvements. Either a multi-layer carbon unit or a hydroxyl generator are recommended for installation at this facility."

MSD Response: This is a small lift station that is not tied to a force main. The facility is in the front yard of a customer's residence and additional equipment would require more yard space and is therefore not advisable. MSD will continue to monitor odor complaints in the area and reevaluate if there is a significant increase. Any decisions to pursue the recommendation will require discussions with the property owner.

 # 7.3.3 Pump Station #1

AECOM Recommendation: "Pump Station #1 was initially evaluated for potential odor control due to the high odor concentrations found during sampling. However, MSD is planning to decommission this pump station within the next five years. Therefore, spending capital cost on a new odor control unit that will be removed from services is not an economical choice. As a result, no odor control facilities are proposed at Pump Station #1."

MSD Response: MSD planned to decommission this pump station within the next five years. However, plans have changed, and Pump Station #1 will not be eliminated. MSD will evaluate this facility and determine next steps for installing odor control technology.

Summary

The table below summarizes MSD's planned actions based on the AECOM Derek R. Guthrie Odor Control Master Plan Report (Appendix A). The items listed in the table will be prioritized and incorporated into future Action Plans as deemed appropriate, contingent upon budgetary constraints. MSD will reassess the need for these actions as system improvements are made.

#	Location	Action(s)
7.1.1	East and West Influent Screen Chambers (DRGWQTC)	1. Rebalance the flow in the East and West Carbon Absorbers. 2. Sample each bed of carbon and replace carbon if underperforming.
7.1.2	Grit Facilities (DRGWQTC)	1. Rebalance the flow in the carbon unit. 2. Sample each bed of carbon and replace carbon if underperforming.
7.1.4	Dewatering Building (DRGWQTC)	Hire a firm to design an odor control system and evaluate current HVAC system for improvements.
7.2.1	Sample ID#5 Force Main Chemical Injection (Collection System)	Complete existing project for the Admiral Way Pump Station that will include odor control technology.
7.2.2	Sample ID#1 Interceptor (Collection System)	Continue to monitor odors in the area and explore a negative pressure pilot if high odors are detected from the sewer system.
7.3.1	Pump Station #2	Continue to monitor for odors and determine appropriate actions to be added to future Action Plans, if needed.
7.3.2	Pump Station #3	Continue to monitor odor complaints in the area and discuss with property owner if further action is required.
7.3.3	Pump Station #1	Evaluate facility and determine next steps for installing odor control technology.

Appendix F

Project Certification Letter:

Odor Master Plan (Derek Guthrie)

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

January 27, 2025

MSD Board
700 West Liberty, Street
Louisville, Kentucky 40203

Subject: Capital Project Certification
Second Amended Air Pollution Control Board Order No. 21-01
Odor Mitigation Short-Term Action Plan
Item #B - Odor Management Plan (Derek R. Guthrie)

Attention MSD Board:

Pursuant to the Second Amended Air Pollution Control Board Order No. 21-01, section I.C.4, upon completion of any project included in an Action Plan, MSD shall complete a Capital Project Certification and submit a copy to the MSD Board at its next regularly scheduled Board Meeting.

The following project was completed as outlined in the Odor Mitigation Short-Term Action Plan submitted on October 14, 2024:

Odor Management Plan (Derek R. Guthrie)

MSD contracted AECOM to conduct a study of odors and develop odor control management plans for our treatment centers and collection systems. The Derek R. Guthrie Service Area Odor Control Master Plan (i.e. Odor Management Plan) was completed, recommendations were reviewed by MSD, and a response was drafted by December 31, 2024. Please find attached a Management Response that includes a summary of the AECOM recommendations and the final report.

I certify that this document and all attached were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Sincerely,

Tony Parrott
Executive Director
Louisville / Jefferson County Metropolitan Sewer District

cc: Kellie Watson, MSD
Kimberly Reed, MSD
Brian Bingham, MSD

Appendix G

Project Certification Letter:

Western Outfall Sewer Shed Studies

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

September 22, 2025

MSD Board
700 West Liberty, Street
Louisville, Kentucky 40203

Subject: Capital Project Certification
Second Amended Air Pollution Control Board Order No. 21-01
Odor Mitigation Short-Term Action Plan
Item #E – Western Outfall Sewer Shed Studies

Attention MSD Board:

Pursuant to the Second Amended Air Pollution Control Board Order No. 21-01, section I.C.4, upon completion of any project included in an Action Plan, MSD shall complete a Capital Project Certification and submit a copy to the MSD Board.

The following project outlined in the Odor Mitigation Short-Term Action Plan that was submitted on October 14, 2024, is complete:

Western Outfall Sewer Shed Studies

MSD engaged Webster Environmental Associates and Jacobs Engineering to assess the feasibility and potential effectiveness of vapor phase and liquid phase treatment options within MSD's gravity sewer collection system. The objective of this initiative was to support odor control efforts. The data collection and evaluation phase of the study was completed on June 25, 2025.

I certify that this document and all attached were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Sincerely,

James A. Parrott
Executive Director
Louisville / Jefferson County Metropolitan Sewer District

cc: Kellie Watson, MSD
Kimberly Reed, MSD
Brian Bingham, MSD

Appendix H

Project Certification Letter:

California Neighborhood Catch Basin Replacements

Safe, clean waterways

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

September 22, 2025

MSD Board
700 West Liberty, Street
Louisville, Kentucky 40203

Subject: Capital Project Certification
Second Amended Air Pollution Control Board Order No. 21-01
Odor Mitigation Short-Term Action Plan
Item #J1 – California Neighborhood Catch Basin Replacements

Attention MSD Board:

Pursuant to the Second Amended Air Pollution Control Board Order No. 21-01, section I.C.4, upon completion of any project included in an Action Plan, MSD shall complete a Capital Project Certification and submit a copy to the MSD Board at its next regularly scheduled Board Meeting.

The following project outlined in the Odor Mitigation Short-Term Action Plan that was submitted on October 14, 2024, is complete:

California Neighborhood Catch Basin Replacements

MSD engaged Allterrain Paving & Contracting to replace untrapped catch basins with trapped catch basins in the California neighborhood as part of our ongoing odor mitigation initiative. A total of 925 catch basins were inspected, resulting in the replacement of 72 basins to improve air quality and system performance in the area.

I certify that this document and all attached were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Sincerely,

James A. Parrott
Executive Director
Louisville / Jefferson County Metropolitan Sewer District

cc: Kellie Watson, MSD
Kimberly Reed, MSD
Brian Bingham, MSD

Appendix I

Customer Notification Letter

msd
Safe, clean waterways

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

clAIRity PROGRAM

May 9, 2025

MSD clAIRity air testing project

South 45th Street to close to through traffic
between Winnrose Way and Dumesil Street during the test

MSD will conduct an air test on South 45th Street on May 13, 2025, in our continuing effort to minimize the natural odors associated with wastewater treatment. The test will begin at 7:30 a.m. and end at 4:30 p.m. Crews will attach a hose to a manhole on South 45th Street, just north of Winnrose Way, to pull air from the sewer line into a machine for testing.

During the test, South 45th Street will close to through traffic between Winnrose Way and Dumesil Street, with local access only.

Contractors will measure the ability to pull and modify air from one of MSD's largest sewer lines. The generator that powers the test will make some noise, and there may be additional odor in the immediate area as fans draw air out of the sewer.

The project is part of MSD's clAIRity odor control program, which includes multiple odor-reducing methods, including replacing catch basins, upgrading the Morris Forman Water Quality Treatment Center, and more. Additional information about the clAIRity program is available on our website at LouisvilleMSD.org/odor.

Questions?
If you have questions concerning the project, you may contact MSD Customer Relations at 502.540.6000, or via email at CustomerRelations@louisvillemsd.org.