



Quarterly Report 2022-Q3

DECEMBER 2022

Odor Task Force



Executive Summary

Per City of Kalamazoo Commission action taken September 2020, the Odor Task Force presents this Quarterly Report for the second quarter, 2022. The members of the Odor Task Force continue to work collaboratively to develop solutions to community concerns with odors generated within the control of the members. Odor Task Force meetings are scheduled on an adjusting basis to accommodate the dynamic schedules of the members. In quarter three of 2022 one Odor Task Force meeting was held.

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HISTORY

Formally originated in 2018, the Odor Task Force (OTF) is a technical workgroup of members from Graphic Packaging International, Inc., community committees, local and State agencies, elected officials, and the City of Kalamazoo. The primary goal of the OTF is to provide a collaborative forum to discuss the community's concerns with and potential mitigation efforts regarding industrial odors emitted from the City of Kalamazoo Water Reclamation Plant (KWRP) and Graphic Packaging International, Inc. (GPI) as both industrial facilities have the potential to emit odors of differing compounds and of differing concentrations. Odors emitted to or generated within a community falls under the regulatory jurisdiction of the Michigan Department of Environment, Great Lakes, and Environment (EGLE) Air Quality Division.

CITY OF KALAMAZOO PRIOR ACCOMPLISHMENTS

Investments have been made completing projects leading up to the origination of the OTF. Various investments in treatment processes operations of increased byproduct hauling offsite and point source chemical treatments have been piloted with some implemented as part of the current odor mitigation efforts. The City has continued its investment in capital improvement projects specifically targeted at odor emission mitigation. Currently under construction, is the construction of four carbon scrubbers to treat odors at the source of generation, one of which is currently operational. In addition, the KWRP implemented the EnviroSuite odor management with e-Nose monitoring technology for the real-time monitoring, historic investigation and forecasting of the fugitive odor transmission of those generated at the KWRP. In the pursuit of continuous odor source identification and mitigation opportunities, the KWRP commissioned J&H to conduct an initial study to identify additional point sources of odors within City owned infrastructure followed by a detailed odor analytical report also conducted by J&H. Pilot trials of various chemical treatments to mitigate emitted odors has also been conducted with varying degrees of success. These are only a few of the prior accomplishments and investment commissioned and completed by the City.

The first quarter of 2021 brought several milestone accomplishments in the mitigation of emitted odors from the KWRP. The KWRP expanded the Envirosuite sensor network with the addition of three community monitoring locations; The Northside Association; Krom / Prouty Park; and Rockwell Park. The three additional sensors came online January 20th 2021. The Rockwell Park sensor experienced early technical difficulties which were rectified February 13th 2021. At Envirosuite's recommendation, all deployed sensors were updated to the current model in January 2021. The City Manager's Office approved a 1-year Pilot with SmartCover for the deployment of their H2Scents real time sanitary sewer H2S monitoring. The community online odor complaint form has received additional refinement prior to deployment with the inclusion of sanitary sewer network on the form. With the end of the first quarter 2021, the Envirosuite system now has year over year datasets for comparison and evaluation. The focus of the first quarter of 2021 was on actional data obtainment and data source diversification.

The KWRP has several investments underway, proposed, and in the planning phases to aid in the identification and mitigation of odors emitted from the KWRP and City owned sanitary sewer collections system. The remaining three KWRP process point source carbon scrubbers underwent startup and began beneficial use in Q2 2021, a quarter ahead of schedule. The biofilter treatment technology request for proposal was issued with procurement recommendation submitted to Commission for approval in early Q3 2021. Continued management and monitoring of hauling offsite of process byproducts along with the monitoring and source investigation utilizing the EnviroSuite system. The deployment of the SmartCover H2Scents Pilot has been completed. Staff is currently monitoring the deployment sites to gain confidence in the technology and data. Chemical treatment of the KWRP's dewatered solids and screenings continues. The KWRP continues scoping to determining if studies are necessary to determine if odors are being generated and emitted into the community from additional sanitary sewer interceptors owned by the City. The inclusion of an additional three community monitoring locations is also in the scoping phase to determine potential value-added data set locations which fit into the goals of the program. The community online odor complaint form is in final draft stage. The web link has been shared with the

Environmental Concerns Committee as well as select community members to beta test form before full scale launch.

Michigan Department of Health and Human Services (MDHHS), in partnership with Michigan Department of Environment, Great Lakes, and Energy (EGLE) and Environment Protection Agency (EPA), performed air sampling within the community. The agencies utilized the Agency for Toxic Substances and Disease Registry (ATSDR) for technical assistance. A community townhall meeting, coordinated by the above partnership, was scheduled.

- The biofilter treatment technology procurement recommendation was approved by City Commission in early Q3 2021.
- The biofilter treatment technology construction bid has been publicly posted with a bid opening early Q3 2021 and an anticipated recommendation submittal to City Commission Q4 2021.
- The biofilter design team determined a previously scoped fan study wouldn't bring the anticipated value to the Project as previously believed. As the design continued to develop, the team determined the existing planned infrastructure design requirements achieve the goals of the Project without incurring the additional cost to nor resultant delay to the Project.
- The City is proceeding forward with the biofilter project under a Michigan Department of Environment, Great Lakes and Energy – Air Quality Division Permit to Install exemption as detailed in the Air Permit to Install Exemption Handbook, Michigan Air Pollution Control Rules, R336.1278-R336.1291 (Rules 278 – 291) February 2020, specifically R336.1285 Permit to install exemptions; Rule 285(2)(f).
- The City conducted a three week, 9/13/2021 – 10/1/2021, H2S Odor Logger air sampling data capture in the region near Krom Prouty Park. Results are anticipated to be provided in the next Quarterly Report.
- The City conducted a one-week laboratory air sampling data capture which included grab samples every two hrs, 7am – 7pm on 9-20, 9-21, 9-22, and 9-23, The City also conducted 24 hour composites laboratory air sampling data capture on 9-20, 9-21, 9-22, and 9-23.

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- Continued management and monitoring of hauling offsite of process byproducts along with the monitoring and source investigation utilizing the EnviroSuite system.
 - The data from the SmartCover H2Scents Pilot has been reviewed with possible H2S level timings aligning with industrial discharges. Further investigation into possible connections is required prior to determining a source.
 - Chemical treatment of the KWRP’s dewatered solids and screenings continues.
 - The inclusion of an additional five EnviroSuite community monitoring locations has been determined to provide value added data set locations which fit into the goals of the program. The deployment locations are expected to be based on community input through various communication medium.
 - The community online odor reporting form has been finalized. Beta testing provided great feedback for implementation into the final product. A citizen is encouraged to report an observed odor via the website:
<https://observation.envirosuite.com/Kalamazoo/>

When we started pulling data from EnviroSuite, we pulled the H2S Raw data value to use in our data comparisons. In January 2021 three new monitors were ordered. When we added these monitors to the data pull, the H2S Raw value was also the value that was used for the data comparisons. In recent talks with EnviroSuite we have learned that the new monitors don’t function the same as the older ones. Due to “communication limitations” the value that is in the raw data is scaled to 0 – 250 which actually corresponds to a 0 – 1000 ppb value. Enclosed is all of the data that for January 2021 through August 2021 showing the multiplying by 4 of the raw value to get the ppb value. Values for Krom and Prouty are not considered reliable for 7/1/21 through 8/31/21 per EnviroSuite. Values for the Northside monitor are not considered reliable as of 3/25/21 per EnviroSuite.

Michigan Department of Health and Human Services (MDHHS), in partnership with Michigan Department of Environment, Great Lakes, and Energy (EGLE) and Environment Protection Agency (EPA), performed air sampling within the community. The agencies utilized the Agency for Toxic Substances and Disease Registry (ATSDR) for technical assistance. A community townhall meeting, coordinated by the above

partnership, is scheduled for October 5th, 2021. More information may be obtained from the website: https://www.michigan.gov/egle/0,9429,7-135-3310_70314_102145-00.html

- The KWRP continued the venture in fugitive odor reduction.
- The online odor complaint form, in conjunction with the existing H2Scents in sewer sensors along with the Envirosuite sensors, has been used to aid in developing future operational and investment needs to mitigate fugitive emissions from City infrastructure.
- Beta testing the Kalamazoo Community Odor Observation Collaboration website to publicly view 15-minute average sensor readings from the Envirosuite system.
- Obtained approval for an additional five (5) Envirosuite sensors to be deployed within the community.
- Received bids for the Biofilter construction. Received bids were over budget. City intends to rebid in next quarter after design refinement is complete.
- Coordination with Envirosuite to ship, install, and activate requested additional community sensors.
- Re-bid Biofilter Construction
- Partner with Consultant to evaluate fugitive odors on two sanitary sewer interceptors, Spring Valley Interceptor & Davis Creek Interceptor
- Continued coordination with Envirosuite to ship, install, and activate and maintain existing and requested additional community sensors.
 - Envirosuite data may be found here:
 - <https://es2.envirosuite.com/monitoring/city-of-kalamazoo/kalamazoo-cooc>
 - Report an Odor here:
 - <https://observation.envirosuite.com/Kalamazoo/>
- Bid opening for Biofilter construction rebid, recommendation to unencumber project funds, see Appendix C.
 - Biofilter will be reassessed upon re-routing of Graphic Packaging Inc.'s industrial discharge, anticipated substantial completion of construction: Q3 2023.
- Kalamazoo Water Reclamation Plant Drone sampling

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- Michigan Department of Health and Human Services (MDHHS), in partnership with Michigan Department of Environment, Great Lakes, and Energy (EGLE) and Environment Protection Agency (EPA) drone air sampling.
 - Results may be found here:
 - <https://gis.kalamazoocity.org/portal/apps/webappviewer/index.html?id=82de5460d42c466492e540655e5fbad2>

CITY OF KALAMAZOO CURRENT QUARTER ACCOMPLISHMENTS

- Continued coordination with Envirosuite to ship, install, and activate and maintain existing and requested additional community sensors.
 - Envirosuite data may be found here:
 - <https://es2.envirosuite.com/monitoring/city-of-kalamazoo/kalamazoo-cooc>
 - Report an Odor here:
 - <https://observation.envirosuite.com/Kalamazoo/>
- MDHHS, EGLE, EPA drone air sampling follow-up meeting has been postponed to a later date to be schedule.
- Kick-off meeting on alignment opportunities for Graphic Packaging’s industrial wastewater discharge reroute.
- Wager passive air carbon filter unit for River Interceptor odor remediation delivered to Harrison Facility.
- Held kick-off meeting with SeweX to begin modeling of potential odors from within the Davis and River Interceptors.
 - Group collaboration meetings held between multiple vendor partners to leverage existing City investments for value added outputs.

CITY OF KALAMAZOO UPCOMING ANTICIPATED ACCOMPLISHMENTS

- Be provided preliminary model from SeweX.
- Purchase necessary long lead time material for GPI's industrial wastewater discharge reroute.
- Winterization of exterior Remedia misting system. Remedia to continue to be dosed into the cake pump hoppers for direct blending into the biosolids & top dressing of the hauling trucks.
- Continue to study Residual Biosolids Sustainable Alternatives.

GRAPHIC PACKAGING INTERNATIONAL, INC UPDATE



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Kalamazoo Board Mill
Resident Mill Manager
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Date: September 9, 2022

RE: 2022 3rd Quarter Odor Management Update

As required in Resolution No. 20-50, provision 3, Graphic Packaging International, LLCs ("Graphic Packaging") is providing our 3rd quarter 2022 Odor Management Update to the Kalamazoo City Administration for submission to the City of Kalamazoo Commissioners. This report covers the period of June 2022 through August 2022.

Included in this update are the minutes (Graphic Packaging portion) of the recent Odor Task Force meeting, current status of the Nuisance Minimization Plan for Odors (NMPO) submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the clarifier and wastewater treatment plant operations update, and the Envirosuite system update.

Odor Task Force Meeting & Minutes

Meeting held May 4, 2022:

Graphic Packaging International - Project Status Update - Gregg Lanternier said that they have been making coated paper since February. They continue to fine-tune and optimize the process, and have entered a standard operating period. They continue to finish up the project, in terms of the building, parking lots, the truck scale, and etc.

GPI Envirosuite System Update - Gregg said that battery life issues continue to be an issue on a couple of their units. The issue seems to be due to faulty solar chargers, and one unit was damaged when the wind blew over its solar panels. Currently they have all of their 16 units functioning, but they are working with Envirosuite to obtain a better service plan, better upgrades, and overall better results. They are currently having to manually charge the batteries, and then swap them out as needed on the 2 units that the solar chargers aren't keeping charged.

GPI Odor Management Systems Update - Both the hydrogen peroxide and the liquid oxygen injection systems continue to be working well. They have lowered their clarifier discharge flow to about 2.0 million gallons per day, down from about 2.5 MGD a month or two ago. Looking to get the flow under 2.0 MGD eventually. Dose rates are stable in both odor management systems.

*Ryan asked about the larger rental unit for liquid O₂ addition. They said it is working well, and adding about 150# of liquid oxygen per hour. They're hoping to be able to cut back a bit on the dose on the more expensive peroxide addition system, now that the larger O₂ system is running. They plan on installing their own O₂ addition system eventually and stop renting the current system.

*Jim asked about their new water retention tanks being used. They have one more tank to put in service, and it should cut down their total wastewater discharge to KWRP by about an additional 150,000 gallons per day.

*Ryan asked about the GPI clarifier performance with the higher flow. They think it's working better with the increase in flow.

*Aaron W. asked if a new clarifier was installed. Not a new clarifier, but a “Clarified Water Tank” is being used to recycle clarified GPI effluent back to the plant. Aaron asked if there is any Envirosuite data that shows any related improvement. No change, due to the fact that it’s a contained tank. GPI is not noticing any recent changes, because they started out aggressively with the chemical treatment systems.

*Aaron W. also asked about the changes in flows lately. GPI’s flows have historically averaged about 0.8 million gallons per day before their expansion. Upon startup, the new flow was averaging about 2.5 million gallons per day (about a 300% increase). Currently, their flow averages about 2.0 MGD. They are hoping to get the flow down to 1.6 – 1.8 MGD in a few months (about double their historical flow). They were asked how this would affect odors by Aaron W. GPI indicated that the goal is to lessen odors as all of their changes go online.

Meeting held August 2, 2022:

Graphic Packaging International - Project Status Update - GPI has been producing paper with the new K2 machine since February. The project is pretty much complete, except for finishing off some punch list items, mainly like outdoor building finishing and landscaping, etc. They will be continuing into 2023 with some parking lot improvements, etc.

GPI Envirosuite System Update - Their 16 Envirosuite monitors are working well. Monitors #1 and 9 are having issues keeping the batteries charged. These are the older versions of the monitors that have a known issue, and will be upgraded to the newer version monitors soon. Aaron Wright asked about the data from the system. Tom said that they have all the data, and it will be made available.

GPI Odor Management Systems Update - Their two odor management systems (oxygen and peroxide) are performing well. They are currently doing an engineering review. The permanent O2 system will be pushed back into 2023. They are working out the details of the new system now, like oxygen truck deliveries, permits, etc.

Next meeting date - TBD

Nuisance Minimization Plan for Odors (NMPO)

Graphic Packaging continues to work with EGLE on the final draft of the NMPO.

Clarifier and Wastewater Treatment Plant Status

Graphic Packaging continues to optimize process chemistry to further reduce the potential for nuisance odors. Primary chemistry in use includes an Oxygen Injection System to increase the dissolved oxygen levels in the wastewater clarifier, as well as liquid Hydrogen Peroxide to the Wastewater Treatment Plant. Next step in the process is to install the permanent Oxygen Injection System in 2023 once engineering and final approvals are complete.

Envirosuite Monitoring System

Graphic Packaging continues to maintain the sixteen (16) monitor system. Graphic Packaging continues to work with Envirosuite to upgrade sensors and batteries as Envirosuite develops improved battery life models.

As outlined in the 2020 4th Quarter Odor Management Update submitted December 11, 2020, Graphic Packaging will continue to:

- Provide quarterly reports to the City of Kalamazoo summarizing our odor mitigation efforts.
- Continue to work with the community's Odor Task Force.
- Continue to remove sludge from the concrete pad along Paterson Street five to six days per week. Historically this was performed two or three days per week. This has reduced the potential for composting odors.
- Continue to add chemical treatments to the clarifier to reduce the potential for odor.
- Continue to use the Envirosuite monitoring network installed in September 2020 to monitor H₂S ambient air concentrations at various locations.
- Continue to work with consultants to finalize the operational practices to minimize odors from GPI's operations.

Appendices

The full report with appendices is available on the City's website at:

<https://www.kalamazoo.org/odor>