Summary of Fehr Graham Engineering Analysis of Prairie Lakes Regional Detention Facility

Prairie Lakes Stormwater Detention Basin: What the Testing Revealed and How the Village Is Moving Forward

Over the past two years, Prairie Lakes Stormwater Detention Basin has been the subject of heightened attention, public concern, and media speculation. Questions about water discoloration, sediment, and alleged "toxicity," particularly in the Northwest Pond, prompted the Village of Homewood to take a careful, science-based approach to understanding what was happening beneath the surface.

This investigation began after Village staff observed a small sheen of oil that appeared at times on the northwest portion of Prairie Lakes. The Village immediately coordinated with Homewood Disposal to better understand the source and take proactive steps. As part of that effort, Homewood Disposal adjusted the cleanout schedule of its oil/water separator within the outflow system and evaluated truck parking locations to reduce the potential for runoff impacts.

These operational changes proved effective. Subsequent testing across multiple seasons, weather conditions, and locations throughout Prairie Lakes confirmed what regulators had already concluded: Prairie Lakes is not toxic, is functioning as designed, and does not pose a public health risk. No oil was detected in the pond during the most recent testing.
The Village will continue monitoring conditions and working closely with Homewood Disposal to address any future concerns.

What follows is a clear explanation of what was tested, what was found, and the steps the Village will take moving forward.

Testing Overview: What We Examined

To fully understand the health of Prairie Lakes, the Village hired Fehr Graham Engineering & Environmental of Aurora, IL to conduct one of the most comprehensive stormwater pond investigations the Village has ever established. Fehr Graham brings more than 50 years of experience partnering with municipalities, government agencies, and private entities to deliver data-driven solutions and long-term management strategies for watershed and stormwater systems. With a team of more than 250 professionals, Fehr Graham is uniquely equipped to address every aspect of this project. Watershed and stormwater management is a core area of their expertise, making them well suited to support the Village's needs.

Testing was intentionally completed during different seasons and under varying weather conditions so the results would reflect how the pond functions throughout the year, not just on a single day. Water samples were collected from several key locations, including the

main pond, the surrounding wetland biofilter areas, the pond's outlet structure, and the northwest outflow area connected to Homewood Disposal. This approach allowed the consultants to track how water enters the system, moves through natural filtration areas, and ultimately leaves the pond.

The testing first focused on basic indicators of overall water health. This included measuring oxygen levels, which are important for fish and aquatic life, as well as pH, temperature, and conductivity. These measurements showed that Prairie Lakes behaves like a typical stormwater detention basin, with normal seasonal changes and no unusual or concerning conditions.

Fehr Graham also analyzed nutrients and bacteria commonly found in stormwater systems. This included phosphorus and nitrogen, which can contribute to algae growth, and fecal coliform bacteria, which often increase after rain events. At times, especially following heavy rainfall or during hot summer weather, these levels were elevated. This is common in urban stormwater ponds and occurs when rain washes nutrients and animal waste into the system. Importantly, the testing showed that these levels generally decreased as water passed through the wetland biofilters before leaving the pond, demonstrating that the system is functioning as designed.

Metals were another important part of the analysis. Samples were tested for iron, low levels of mercury, lead, and arsenic. Elevated iron levels were found near the northwest outflow and in wetland areas, a key finding that helped explain the orange staining and sheen that originally raised public concern. This iron is naturally occurring and common in wetland environments.

Finally, the water was tested for a broad range of urban contaminants, including petroleum-related compounds, combustion byproducts from sources such as burned wood or fuel, and industrial chemicals like PCBs and volatile organic compounds. No petroleum contamination or industrial dumping was identified. These substances were either not detected at all or were found only at very low levels consistent with background conditions commonly found in developed urban areas.

Why the Water Looks Orange and has a "Sheen" in Some Areas

One of the most important conclusions from the testing was an explanation for the orange discoloration and sheen that can be seen near the northwest area of Prairie Lakes. While this appearance understandably raised concern, the investigation confirmed that it is not caused by oil, chemicals, or industrial pollution.

Instead, the discoloration is the result of naturally occurring iron in the soil. Iron is commonly found underground in this region and dissolves into groundwater. When that groundwater is pumped to the surface and comes into contact with air, the iron reacts and forms a visible orange residue. Harmless iron-oxidizing bacteria create the orange staining and thin sheen that can sometimes be seen on the water. This is a well-documented and common process in wetlands and stormwater systems across Illinois and the Midwest. Although it can look unusual or concerning, it is not toxic, does not pose a risk to public health, and does not indicate contamination.

What Sediment Testing Revealed

In addition to testing the water, Fehr Graham also examined the sediment (the material that settles at the bottom of the pond) and surrounding wetlands. Sediment testing is important because it helps determine whether pollutants are building up over time and whether they could eventually affect water quality.

The testing found that small amounts of certain compounds linked to historic land use and combustion were present in limited sediment areas. These same compounds were found in multiple locations around the pond, not just near a single outflow. This pattern is significant because it indicates the material is likely tied to the site's past use as a racetrack and to long-standing urban development in the surrounding area, rather than to any current pollution source.

Most importantly, these sediment findings are not impacting the pond's water quality. Based on the testing results, Fehr Graham concluded that dredging or sediment removal is not necessary at this time, as disturbing the sediment could do more harm than good and would not meaningfully improve water conditions.

Is Sediment Building Up in the Pond?

To better understand how sediment behaves over time, Fehr Graham also mapped the pond bottom to measure how much material has accumulated. This pond-bottom mapping showed encouraging results.

Most of the pond contains very little sediment buildup, and the areas with slightly higher accumulation are limited and expected in a system like Prairie Lakes. The wetland plants surrounding the pond are doing their job by trapping sediment before it reaches the main

body of water. Overall, the detention basin is stable and functioning exactly as it was designed to.

Is Prairie Lakes Toxic?

Based on all testing, analysis, and regulatory review, the answer is clear: **No.** Prairie Lakes does not meet any definition of a toxic waterbody. Water quality meets Illinois standards for its intended use, and there is no evidence of harmful exposure to people, pets, fish, or wildlife. This conclusion aligns with findings from both the Illinois Environmental Protection Agency and Fehr Graham's final environmental investigation.

What Fehr Graham Recommended and Why

Rather than recommending major construction, cleanup, or disruption of the pond, Fehr Graham proposed practical, targeted steps focused on education, monitoring, and long-term care.

Recommendation 1: Educational Signage

Because iron staining is visible and often misunderstood, one recommendation is to install educational signage explaining why the water may appear orange in certain areas and reassuring visitors that the condition is natural and harmless. Clear information can help prevent misinformation and unnecessary concern.

Recommendation 2: Continued Monitoring

Fehr Graham also recommended continued water quality monitoring at the pond's outlet structure, where water exits the system. This allows the Village to track conditions over time, confirm that the system continues to function properly, and verify that a one-time, low-level mercury detection observed after a storm does not represent an ongoing issue.

Recommendation 3: Algae Management

Algae growth was also addressed. Algae is common during hot weather and low-flow conditions in stormwater ponds. If algae becomes excessive, Fehr Graham recommends using non-toxic treatments applied carefully by qualified professionals to avoid harming fish or affecting oxygen levels in the water.

Recommendation 4: No Dredging at This Time

Importantly, Fehr Graham does not recommend dredging at this time. While some historic compounds were found in sediment, removing material could disturb naturally occurring conditions without providing a clear environmental benefit. Continued monitoring is the preferred and more responsible approach.

Recommendation 5: Fishing Awareness
To ensure the safety of all patrons, Fehr Graham also suggested maintaining awareness around fishing and mercury levels. If future testing shows consistent trends, the Village could consider guidance for certain fish species. At this time, fishing is allowed, but only *"catch and release"* is allowed.

Recommendation 6: Pre-treatment
The Village of Homewood is exploring options for treating the sump pump well discharge of Homewood Disposal to remove organic and inorganic materials which can cause discoloration in the Prairie Lakes system and to ensure that all discharged water continues to be compliant with all the appropriate IEPA surface water regulations.

Moving Forward with Confidence
The Prairie Lakes investigation confirms that the pond is healthy for its intended purpose, the stormwater system is functioning as designed, and claims of toxicity are not supported by scientific evidence.

The Village of Homewood will continue working closely with the Illinois Environmental Protection Agency, the Izaak Walton Preserve, and environmental professionals to ensure Prairie Lakes remains a safe, well-managed, and valued community asset for years to come.