Downers Grove Sanitary District

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Providing a Better Environment for South Central DuPage County

March 5, 2025

Illinois Environmental Protection Agency
Division of Water Pollution Control
Sent Electronically to: EPA.PrmtSpecCondtns@Illinois.gov

Subject: IL0028380 Special Condition 17.E
Wastewater Treatment Center Phosphorus Discharge Optimization Plan
2025 Progress Report

To Whom It Concerns:

Special Condition 17 of permit IL0028380 requires the Downers Grove Sanitary District to submit an annual progress report on its Phosphorus Discharge Optimization Plan (PDOP). The PDOP, submitted in July 2017, evaluates source reduction measures, operational improvements, and minor low-cost facility modifications to optimize reductions in phosphorus discharges from the wastewater treatment center (WWTC). This letter serves as the District's 2025 PDOP annual progress report, in compliance with Special Condition 17, Paragraph E. This report is due by March 31, 2025.

WWTC Phosphorus Removal Performance

The WWTC total phosphorus (TP) monitoring data for calendar year 2024 is summarized in Table 1 on the next page.

A summary of the monthly and annual average WWTC TP monitoring data since the PDOP was completed is provided in Table 2 for comparison. The baseline data, which was collected prior to any phosphorus removal optimization efforts, is also presented.

Table 1. 2024 WWTC Total Phosphorus Monitoring Data

	INFLUENT		EFFLUENT		
	CONCN mg/l	LOAD lbs/day	CONCN mg/l	LOAD lbs/day	FRACTION REMOVED
Jan-24	2.97	379	1.43	178	0.53
Feb-24	4.33	339	2.45	183	0.46
Mar-24	3.55	338	2.18	212	0.37
Apr-24	3.32	388	2.03	212	0.45
May-24	6.27	610	2.30	229	0.62
Jun-24	6.23	544	3.20	269	0.51
Jul-24	5.21	387	3.22	230	0.41
Aug-24	5.50	367	3.66	253	0.31
Sep-24	5.94	335	4.14	226	0.33
Oct-24	6.84	343	4.27	212	0.38
Nov-24	3.95	322	2.81	204	0.37
Dec-24	5.99	348	3.80	210	0.40
Average	5.01	392	2.96	218	0.43
Maximum	6.84	610	4.27	269	0.62
Minimum	2.97	322	1.43	178	0.31

Table 2. Historic WWTC Total Phosphorus Annual Average Monitoring Data

	INFLUENT		EFFLUENT			
	CONCN mg/l	LOAD lbs/day	CONCN mg/l	LOAD lbs/day	FRACTION REMOVED	NOTES
Baseline*	4.81	365	3.07	229	0.37	
2017	5.62	414	2.99	217	0.48	RAS fermenter in service
2018	5.43	448	2.48	208	0.52	RAS fermenter in service
2019	4.68	434	2.16	201	0.53	RAS fermenter in service
2020	5.33	418	2.90	228	0.45	RAS fermenter in service
2021	5.72	405	3.33	238	0.40	RAS fermenter in service
2022	5.12	373	2.91	200	0.46	RAS fermenter removed from service in July
2023	5.14	369	2.94	219	0.40	
2024	5.01	392	2.96	218	0.43	

*Baseline data was collected from July 2012 to July 2013

WWTC Influent Reduction Measures

The influent phosphorus load to the District's Wastewater Treatment Center (WWTC) in 2024 was consistent with the previous few years, giving the District no reason to suspect any user has significantly increased their phosphorus discharge. Therefore, no special sampling of industrial users or surcharge customers was done in 2024.

Phosphorus is a sampling parameter in the regular surcharge sampling program for the few users that were previously tested.

WWTC Effluent Reduction Measures

Sidestream Enhanced Biological Phosphorus Removal

The 2022 Progress Report on the WWTC PDOP indicated that the return activated sludge (RAS) fermenter which the District had been operating in an attempt to do sidestream enhanced biological phosphorus removal had impacted our ability to always meet our total suspended solids (TSS) permit limits and had made meeting our ammonia permit limits challenging. Based on the data presented in the 2022 PDOP report, it was not clear whether the sidestream EBPR was working. The District decided to remove the RAS fermenter from service in July 2022. As can be seen in Table 2 above, the average effluent TP concentration and the percent removal of phosphorus in 2022 were comparable to the previous five years regardless of the RAS fermenter only being in service for half the year. The average effluent TP concentration and the percent removal of phosphorus in 2023 and 2024 were within the range recorded during the years when the RAS fermenter was in service. The impact, if any, of removing the RAS fermenter may become more apparent in the future once the District has collected more data.

The District's commitment to the goals set forth in in the PDOP remain. Sampling to collect data to recalibrate a BioWin model of the WWTC started in December 2024. Once recalibrated, the model will then be used to reevaluate the potential to optimize biological phosphorus removal.

We trust that this letter report satisfies the requirements in Special Condition 17 for a PDOP progress report. As required by Special Condition 17, this report has been posted to the District's website.

If you have any questions or comments, please contact me at the above address and phone.

Very Truly Yours,

Amy R. Underwood, P.E.
General Manager

cc: Board of Trustees
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