Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 18-33

HANOVER PARK WATER RECLAMATION PLANT

FISCHER FARM MONITORING REPORT FOR

THIRD QUARTER 2018

November 2018

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

CECIL LUE-HING RESEARCH AND DEVELOPMENT COMPLEX
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Edward W. Podczerwinski, P.E.
Director of Monitoring and Research

November 26, 2018

Mr. Roger Callaway
Illinois Environmental Protection Agency
Bureau of Water
DWPC Compliance Section #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9274

Dear Mr. Callaway:

Subject: Hanover Park Water Reclamation Plant - Illinois Environmental Protection Agency Permit No. 2016-SC-61315, Monitoring Report for July, August, and September 2018

The attached tables contain the monitoring data for the Hanover Park Water Reclamation Plant (WRP) Fischer Farm site for July, August, and September 2018 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2016-SC-61315. Analytical data for well water samples collected during the quarter are presented in Table 1.

Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from the farm fields was sampled in July and September 2018, and data for these samples are presented in Table 2. The volumes of drainage water returned to the WRP during the second quarter were estimated as 3.4, 3.5, and 4.4 million gallons in July, August, and September, respectively. The analytical data for lagoon supernatant and liquid biosolids applied to Fischer Farm fields in July, August, and September are presented in Tables 3, 4, and 5. The volume of supernatant and associated dry weight of biosolids applied are shown in Table 6. Field and water monitoring locations are presented in Figure 1.

An investigation of Well 7 is ongoing to help determine the reason for high NH_3 levels observed in the well. Three supplemental monitoring wells were installed in July 2017 to monitor groundwater and determine the source of NH_3. Sampling from the supplemental monitoring wells occurred in July, August, and September 2018.

The data reported are as follows:

Table 1 Analysis of Water From Monitoring Wells W-3, W-5, W-6, W-7, and W-8 at the Hanover Park Fischer Farm Site Sampled on September 18, 2018.

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Table 2 Analysis of Combined Surface and Subsurface Drainage From the Fischer Farm Site Returned to the Hanover Park Water Reclamation Plant During July and September 2018.

Table 3 Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During July 2018.

Table 4 Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During August 2018.

Table 5 Analysis of Liquid Biosolids Applied to Fields at the Hanover Park Fischer Farm Site During September 2018.

Table 6 Volumes and Dry Weights of Lagoon Supernatant and Liquid Biosolids Applied to Fields During July, August, and September 2018 at the Hanover Park Fischer Farm Site.

Figure 1 Map of Fields and Wells at the Hanover Park Fischer Farm Site of the Metropolitan Water Reclamation District of Greater Chicago.

Very truly yours,

Albert E. Cox
Environmental Monitoring and Research Manager
Monitoring and Research Department

AC:DB:cm
Attachments
cc/att: Mr. J. Patel, Manager, IEPA – Des Plaines
Mr. J. Colletti, USEPA, Region 5
Mr. P. Kuefler, USEPA, Region 5
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TABLE 1: ANALYSIS OF WATER FROM MONITORING WELLS W-3, W-5, W-6, W-7, AND W-8 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON SEPTEMBER 18, 2018

Parameter	Unit	Monitoring Well No.				
		W-3	W-5	W-6	W-7	W-8
pH		7.5	7.8	7.8	7.9	8.3
EC	mS m^{-1}	90	70	72	136	546
Cl^-	mg L^{-1}	13	16	17	41	8.0
SO_4^{2-}	"	151	104	120	191	62
Alkalinity as $CaCO_3$	"	407	313	301	608	268
TKN	"	<1.0	<1.0	<1.0	52	<1.0
NH_3-N	"	<0.50	<0.50	<0.50	54	0.51
NO_2+NO_3–N	"	0.50	<0.25	<0.25	<0.25	<0.25
Total P	"	<0.10	<0.10	<0.10	0.28	<0.10
Cd	"	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.008	0.002	0.003	0.002	0.002
Fe	"	6.58	1.73	1.58	8.03	0.793
Mn	"	0.148	0.015	0.032	0.230	0.026
Ni	"	0.002	<0.001	<0.001	0.002	0.001
Zn	"	0.059	<0.005	<0.005	0.686	<0.005

TABLE 2: ANALYSIS OF COMBINED SURFACE AND SUBSURFACE DRAINAGE FROM THE FISCHER FARM SITE RETURNED TO THE HANOVER PARK WATER RECLAMATION PLANT DURING JULY AND SEPTEMBER 2018

Date[1]	Sump	NH_3-N	TSS[2]	BOD_5
		---------- mg L^{-1} ----------		
07/10/2018	East	58	15	12
07/10/2018	West	38	69	69
07/31/2018	East	236	109	128
07/31/2018	West	42	23	20
09/18/2018	East	91	32	31
09/18/2018	West	29	8.0	5.0
09/25/2018	East	49	7.0	4.0
09/25/2018	West	13	6.0	9.0

[1]Pump houses were inaccessible for sampling in August due to pumps being replaced.
[2]Total suspended solids.

TABLE 3: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING JULY 2018

Constituent	Unit	Concentration[1]
pH		7.9
Total Solids	%	0.14
Total Volatile Solids[2]	"	57
Volatile Acids[3]	mg L^{-1}	<5.0
TKN	"	330
NH_3-N	"	281
Total P	"	59
Cd	"	<0.001
Cr	"	<0.002
Cu	"	0.032
Mn	"	0.193
Ni	"	0.021
Pb	"	<0.001
Zn	"	0.043

[1]Mean of two samples.
[2]Total volatile solids as a percentage of total solids.
[3]As acetic acid.

TABLE 4: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING AUGUST 2018

Constituent	Unit	Concentration[1]
pH		7.8
Total Solids	%	0.12
Total Volatile Solids[2]	"	51
Volatile Acids[3]	mg L^{-1}	<5.0
TKN	"	341
NH_3-N	"	324
Total P	"	67
Cd	"	<0.001
Cr	"	<0.002
Cu	"	0.038
Mn	"	0.223
Ni	"	0.018
Pb	"	<0.001
Zn	"	0.056

[1]Mean of two samples.
[2]Total volatile solids as a percentage of total solids.
[3]As acetic acid.

TABLE 5: ANALYSIS OF LIQUID BIOSOLIDS APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING SEPTEMBER 2018

Constituent	Unit	Concentration[1]
pH		7.4
Total Solids	%	3.2
Total Volatile Solids[2]	"	69
Volatile Acids[3]	mg kg^{-1}	294
TKN	"	72,437
NH_3-N	"	27,319
Total P	"	27,514
Cd	"	2.1
Cr	"	34
Cu	"	833
Mn	"	592
Ni	"	32
Pb	"	22
Zn	"	886

[1]Mean of two samples.
[2]Total volatile solids as a percentage of total solids.
[3]As acetic acid.

TABLE 6: VOLUMES AND DRY WEIGHTS OF LAGOON SUPERNATANT AND LIQUID BIOSOLIDS APPLIED TO FIELDS DURING JULY, AUGUST, AND SEPTEMBER 2018 AT THE HANOVER PARK FISCHER FARM SITE

Field	Date	Biosolids Type	Volume (Gallons)	Dry Weight (Tons)
1	07/06/18	Supernatant	250,000	1.67
2	07/17/18	Supernatant	400,000	1.83
5	08/01/18	Supernatant	450,000	2.25
6	09/04/18	Biosolids	1,500,000	190
6	09/05/18	Biosolids	1,250,000	176
5	09/06/18	Biosolids	1,250,000	171
5	09/07/18	Biosolids	750,000	54
3	09/07/18	Biosolids	1,000,000	73
2	09/09/18	Biosolids	1,250,000	126
1	09/10/18	Biosolids	1,000,000	196
Total			9,100,000	992

FIGURE 1: MAP OF FIELDS AND WELLS AT THE HANOVER PARK FISCHER FARM SITE OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO