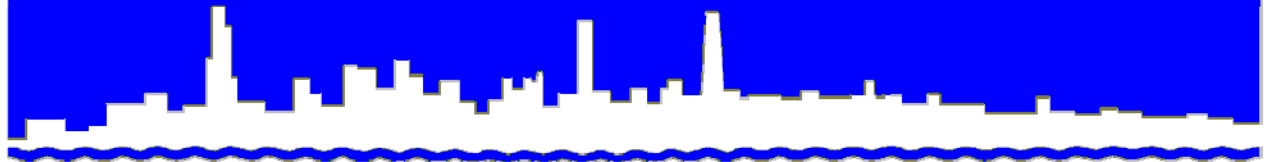


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

*MONITORING AND RESEARCH
DEPARTMENT*

REPORT NO. 16-42

HANOVER PARK WATER RECLAMATION PLANT

FISCHER FARM MONITORING REPORT FOR

THIRD QUARTER 2016

December 2016

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December 16, 2016

Mr. S. Alan Keller, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794 - 9276

Dear Mr. Keller:

Subject: Hanover Park Water Reclamation Plant - Illinois Environmental Protection Agency Permit No. 2012-SC-2255, Monitoring Report for July, August, and September 2016

The attached tables contain the monitoring data for the Hanover Park Water Reclamation Plant (WRP) Fischer Farm site for July, August, and September 2016 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2012-SC-2255. Analytical data for well water samples collected during the quarter are presented in Tables 1 and 2.

Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from the farm fields was sampled in July, August, and September 2016, and data for these samples are presented in Table 3. The volumes of drainage water returned to the WRP during the third quarter were estimated as 0.75, 1.2, and 2.0 million gallons in July, August, and September 2016, respectively. The analytical data for lagoon supernatant applied to Fischer Farm fields in July, August, and September 2016 are presented in Tables 4, 5 and 6, respectively. The volume of supernatant and associated dry weight of biosolids applied are shown in Table 7. Field and water monitoring locations are presented in Figure 1.

The Metropolitan Water Reclamation District of Greater Chicago began an investigation of elevated NH₄-N and TKN concentrations in Well 7. As part of this investigation, the well was purged extensively and additional samples were collected for analysis in November. The results of this investigation will be included in subsequent reports.

The data reported are as follows:

Table 1 Analysis of Water From Monitoring Well W-7 at the Hanover Park Fischer Farm Site Sampled during July, August, and September 2016.

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Table 2 Analysis of Water From Monitoring Wells W-3, W-5, W-6, and W-8 at the Hanover Park Fischer Farm Site Sampled on September 20, 2016.

Table 3 Analysis of Combined Surface and Subsurface Drainage From the Fischer Farm Site Returned to the Hanover Park Water Reclamation Plant During July, August, and September 2016.

Table 4 Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During July 2016.

Table 5 Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During August 2016.

Table 6 Analysis of Lagoon Supernatant Applied to Fields at the Hanover Park Fischer Farm Site During September 2016.

Table 7 Volumes and Dry Weights of Lagoon Supernatant Applied to Fields During July, August, and September 2016 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,

Thomas C. Granato, Ph.D., BCES
Director
Monitoring and Research

TCG:HZ:GT:DB:cm

Attachments

cc/att: Mr. J. Patel, Manager, IEPA – Des Plaines
Mr. V. Aistars, USEPA, Region 5
Mr. P. Kuefler, USEPA, Region 5
Mr. E. Podczerwinski
Ms. D. Coolidge
Dr. H. Zhang
Dr. A. Cox
Dr. G. Tian
Dr. D. Brose

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELL W-7 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED DURING JULY, AUGUST, AND SEPTEMBER 2016

Parameter	Unit	Date Sampled				
		7/26/16 ¹	8/9/16	8/23/16	9/6/16	9/20/16
pH ²		7.3	7.4	7.7	7.4	7.3
EC	mS m ⁻¹	166	180	184	201	207
Cl ⁻	mg L ⁻¹	46	46	46	47	47
SO ₄ ²⁻	"	258	251	262	267	253
Alkalinity as CaCO ₃	"	731	729	743	627	758
TKN	"	58	65	66	66	73
NH ₃ -N	"	58	59	63	64	69
NO ₂ +NO ₃ -N	"	<0.15	<0.15	<0.15	<0.15	<0.15
Total P	"	0.45	0.51	0.50	0.50	0.52
Cd	"	<0.001	0.001	<0.001	<0.001	<0.001
Cr	"	<0.003	<0.003	0.003	<0.003	<0.003
Cu	"	<0.004	<0.004	<0.004	0.008	<0.004
Fe	"	4.2	4.1	3.8	3.9	4.4
Mn	"	0.055	0.050	0.047	0.046	0.059
Ni	"	<0.005	<0.005	<0.005	<0.005	<0.005
Zn	"	0.107	0.065	0.061	0.048	0.094

¹Only one sample date was available for July due to equipment malfunction.

²pH analyzed beyond recommended holding time of 15 minutes.

TABLE 2: ANALYSIS OF WATER FROM MONITORING WELLS W-3, W-5, W-6,
AND W-8 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED
ON SEPTEMBER 20, 2016

Parameter	Unit	Monitoring Well No.			
		W-3	W-5	W-6	W-8
pH ¹		7.3	7.6	7.6	8.1
EC	mS m ⁻¹	104	85	95	69
Cl ⁻	mg L ⁻¹	15	16	28	8.0
SO ₄ ²⁻	"	115	102	127	69
Alkalinity as CaCO ₃	"	414	316	313	278
TKN	"	1.3	<1.0	<1.0	<1.0
NH ₃ -N	"	0.36	0.32	0.33	0.42
NO ₂ +NO ₃ -N	"	<0.15	<0.15	<0.15	<0.15
Total P	"	0.32	<0.10	0.10	<0.10
Cd	"	<0.001	<0.001	<0.001	<0.001
Cr	"	<0.003	<0.003	<0.003	<0.003
Cu	"	0.008	0.010	0.007	<0.004
Fe	"	41	3.0	2.8	0.58
Mn	"	0.279	0.032	0.047	0.021
Ni	"	<0.005	<0.005	<0.005	<0.005
Zn	"	0.055	<0.005	<0.005	<0.005

¹pH analyzed beyond recommended holding time of 15 minutes.

TABLE 3: ANALYSIS OF COMBINED SURFACE AND SUBSURFACE DRAINAGE FROM THE FISCHER FARM SITE RETURNED TO THE HANOVER PARK WATER RECLAMATION PLANT DURING JULY, AUGUST, AND SEPTEMBER 2016

Date	Sump	NH ₃ -N	TSS ¹	BOD ₅
		----- mg L ⁻¹ -----		
7/12/2016	East	2.1	9.0	10.0
7/12/2016	West	3.9	11	<2.0
7/26/2016	East	2.6	<4.0	6.0
7/26/2016	West	0.12	24	<2.0
8/09/2016	East	6.7	18	9.0
8/09/2016	West	5.5	16	8.0
8/23/2016	East	0.54	21	5.0
8/23/2016	West	8.0	11	13
9/06/2016	East	5.9	14	18
9/06/2016	West	13	18	25
9/20/2016	East	36	68	74
9/20/2016	West	46	178	112

¹Total suspended solids.

TABLE 4: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING JULY 2016

Constituent	Unit	Concentration ¹
pH		8.0
Total Solids	%	0.16
Total Volatile Solids ²	"	58
Volatile Acids ³	mg L ⁻¹	<5.0
TKN	"	617
NH ₃ -N	"	520
Total P	"	61
Cd	"	<0.001
Cr	"	<0.003
Cu	"	0.052
Mn	"	0.304
Ni	"	0.026
Pb	"	<0.010
Zn	"	0.074

¹Mean of three samples.

²Total volatile solids as a percentage of total solids.

³As acetic acid.

TABLE 5: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING AUGUST 2016

Constituent	Unit	Concentration ¹
pH		7.9
Total Solids	%	0.15
Total Volatile Solids ²	"	67
Volatile Acids ³	mg L ⁻¹	<5.0
TKN	"	490
NH ₃ -N	"	389
Total P	"	59
Cd	"	<0.001
Cr	"	0.004
Cu	"	0.051
Mn	"	0.264
Ni	"	0.027
Pb	"	<0.010
Zn	"	0.074

¹Mean of three samples.

²Total volatile solids as a percentage of total solids.

³As acetic acid.

TABLE 6: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING SEPTEMBER 2016

Constituent	Unit	Concentration ¹
pH		7.9
Total Solids	%	0.18
Total Volatile Solids ²	"	64
Volatile Acids ³	mg L ⁻¹	41
TKN	"	486
NH ₃ -N	"	391
Total P	"	65
Cd	"	<0.001
Cr	"	0.004
Cu	"	0.052
Mn	"	0.291
Ni	"	0.029
Pb	"	<0.010
Zn	"	0.082

¹Mean of two samples.

²Total volatile solids as a percentage of total solids.

³As acetic acid.

TABLE 7: VOLUMES AND DRY WEIGHTS OF LAGOON SUPERNATANT APPLIED TO FIELDS DURING JULY, AUGUST, AND SEPTEMBER 2016 AT THE HANOVER PARK FISCHER FARM SITE

Field	Date	Biosolids Type	Volume (Gallons)	Dry Weight (Tons)
6	7/07/16	Supernatant	200,000	1.3
5	7/15/16	Supernatant	250,000	1.8
1	7/27/16	Supernatant	320,000	2.4
2	7/31/16	Supernatant	450,000	1.4
6	8/11/16	Supernatant	200,000	1.4
5	8/23/16	Supernatant	190,000	1.4
6	9/01/16	Supernatant	540,000	3.6
5	9/17/16	Supernatant	230,000	1.5
2	9/25/16	Supernatant	200,000	1.3
Total			2,580,000	17

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

