

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 07-78

***HANOVER PARK WATER RECLAMATION PLANT
FISCHER FARM MONITORING REPORT***

THIRD QUARTER 2007

NOVEMBER 2007

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December 10, 2007

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:

The attached report contains the monitoring results for the Hanover Park Water Reclamation Plant Fischer Farm site for the third quarter of 2007, as required by IEPA Operating Permit No. 2007-SC-2951.

Very truly yours,

Louis Kollias
Director
Research and Development

LK:PL:spy

Enclosure

cc w/enc:

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**HANOVER PARK WATER RECLAMATION PLANT
FISCHER FARM MONITORING REPORT**

THIRD QUARTER 2007

**Research and Development
P. Lindo
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November 2007

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FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for the Hanover Park Fischer Farm Site as specified in the Illinois Environmental Protection Agency Permit No. 2007-SC-2951 for the third quarter of 2007.

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The assistance given by Ms. Minaxi Patel, Sanitary Chemist I, of the Environmental Monitoring and Research Division, and Mr. John Chavich, Sanitary Chemist IV, of the John E. Egan Analytical Laboratory Section, is greatly appreciated.

Thanks are due to Ms. Sabina Yarn for typing this report.

DISCLAIMER

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago.

HANOVER PARK WATER RECLAMATION PLANT FISCHER FARM REPORT FOR THIRD QUARTER OF 2007

During July, August, and September 2007, activities at the Hanover Park Water Reclamation Plant (WRP) Fischer Farm included well and field drainage water sampling, and flow measurements. These monitoring activities are required by the Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2007-SC-2951. Fields and water monitoring locations are presented in Figure 1.

Water from each of the six monitoring wells was sampled twice monthly in July, August, and September. Analytical data for samples collected during the quarter are presented in Tables 1 through 6.

Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from the farm fields was sampled twice per month during July, August, and September. Analytical data for these samples are presented in Table 7. The volumes of drainage water returned to the WRP during the third quarter were estimated as 2.21, 10.5 and 4.22 million gallons (MG) during July, August, and September, respectively.

During the quarter, a total of 1.20 MG lagoon supernatant containing 5.67 dry tons of solids was applied to Fields 1, 2, and 5 at the Fischer Farm site. The analytical data for the lagoon supernatant are presented in Table 8. The volumes and dry weights are reported in Table 9.

The sample collected on August 7 from Well 1 contained high fecal coliform counts, probably due to some form of contamination. However, the problem was resolved with time, as indicated by normal counts in the subsequent samples.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 1

FIELDS AND WELLS AT THE HANOVER PARK FISCHER FARM SITE

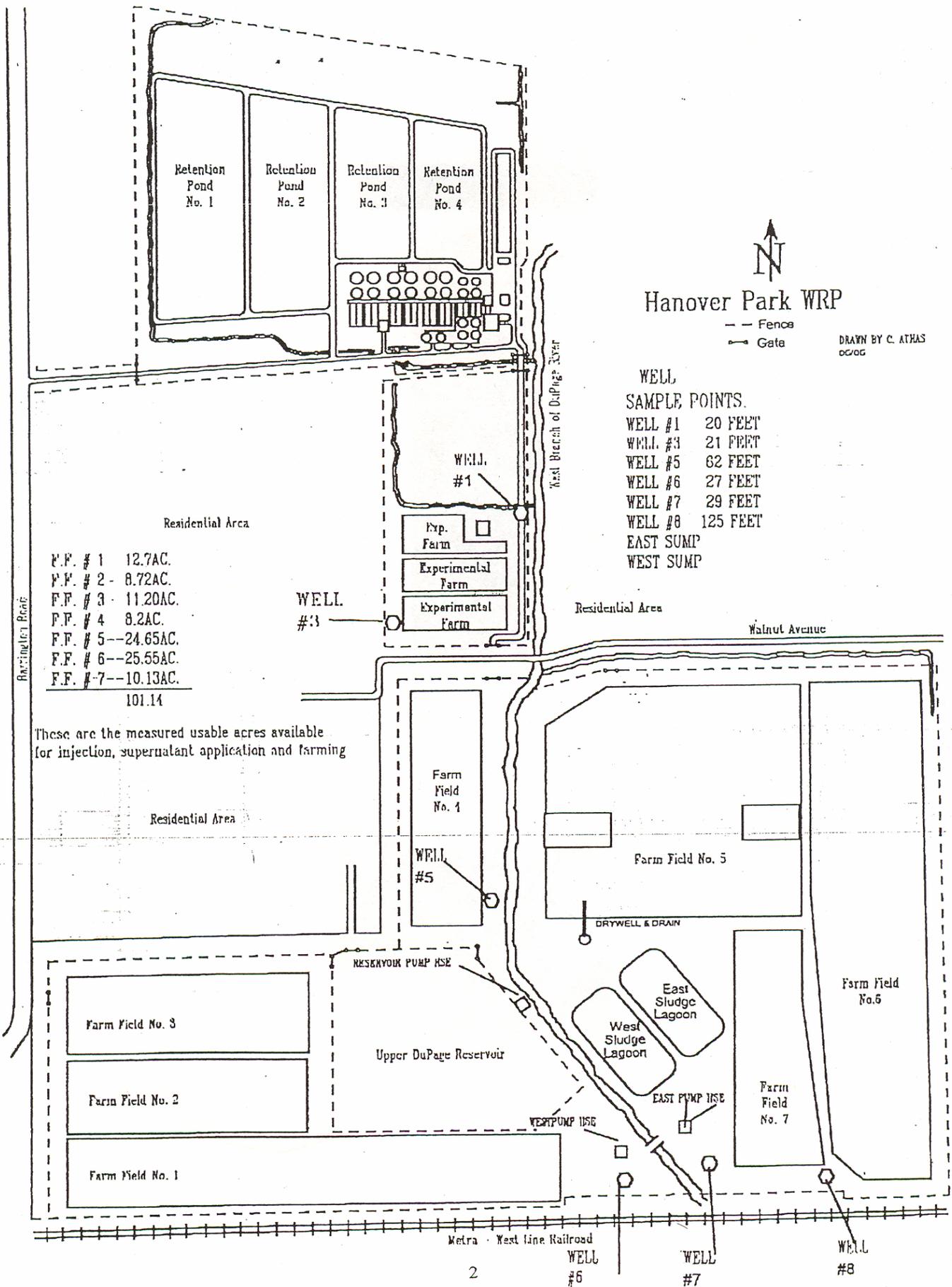


TABLE 1: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON JULY 3, 2007

Parameter	Unit	Well					
		1	3	5	6	7	8
pH*		7.2	7.5	7.6	7.6	7.2	7.9
EC	mS/m	220	99	78	105	138	68
Cl ⁻	mg/L	521	19	13	18	39	6
SO ₄ ⁼	"	7	266	98	195	259	69
Alkalinity as CaCO ₃	"	300	271	323	382	512	303
TKN	"	4.2	0.32	0.36	0.20	8.8	0.16
NH ₃ -N	"	3.4	0.07	0.31	0.27	8.2	0.37
NO ₂ +NO ₃ -N	"	0.11	0.05	0.02	0.02	0.02	0.02
Total P	"	0.17	0.08	0.04	0.04	0.05	0.04
Cd	"	0.0033	0.0007	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0134	<0.0005	0.0318	0.0154	<0.0005	0.0015
Fe	"	NRR	NRR	2.71	6.96	5.36	1.47
Mn	"	1.767	0.3001	0.0245	0.0446	0.0675	0.0424
Ni	"	0.0081	0.0056	0.0021	0.0017	0.0012	<0.0007
Zn	"	0.3919	0.1099	0.0068	0.0049	0.0331	0.0044
Fecal coliform	MPN/100mL	<1	<1	<1	<1	<1	<1

*Samples analyzed beyond recommended holding time of 15 minutes.

NRR = No reportable result.

MPN = Most probable number.

TABLE 2: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM
SITE SAMPLED ON JULY 17, 2007

Parameter	Unit	Well					
		1	3	5	6	7	8
pH*		7.2	7.3	7.5	7.4	7.1	7.8
EC	mS/m	227	100	76	98	139	68
Cl ⁻	mg/L	512	20	13	26	41	6
SO ₄ ⁼	"	9	273	98	161	265	68
Alkalinity as CaCO ₃	"	319	275	319	349	502	299
TKN	"	7.6	0.33	0.28	0.25	9.3	0.31
NH ₃ -N	"	4.5	0.10	0.30	0.24	9.0	0.37
NO ₂ +NO ₃ -N	"	0.69	0.07	0.02	0.47	0.29	<0.02
Total P	"	0.84	0.09	0.06	0.07	0.07	0.02
Cd	"	<0.0003	0.0018	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0073	<0.0005	0.0164	0.0033	<0.0005	0.0022
Fe	"	15.7	NRR	1.78	3.39	5.29	1.79
Mn	"	1.026	0.3333	0.0165	0.0309	0.0645	0.0468
Ni	"	0.0032	0.0075	0.0015	0.0021	0.0017	0.0010
Zn	"	0.0637	0.1654	0.0034	0.0069	0.0232	0.0018
Fecal coliform	MPN/100mL	1	<1	<1	<1	<1	<1

*Samples analyzed beyond recommended holding time of 15 minutes.

NRR = No reportable result.

MPN = Most probable number.

TABLE 3: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON AUGUST 7, 2007

Parameter	Unit	Well					
		1	3	5	6	7	8
pH*		7.3	7.0	7.6	7.5	7.2	8.0
EC	mS/m	230	104	79	96	105	63
Cl ⁻	mg/L	566	25	13	30	37	7
SO ₄ ⁼	"	9	288	103	172	222	64
Alkalinity as CaCO ₃	"	315	308	322	339	427	294
TKN	"	5.5	4.1	0.27	0.28	7.8	0.38
NH ₃ -N	"	4.7	0.33	0.30	0.25	7.5	0.43
NO ₂ +NO ₃ -N	"	0.24	0.15	0.03	0.05	0.89	0.03
Total P	"	0.23	1.7	0.06	0.09	0.13	0.08
Cd	"	0.0009	0.0081	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0040	<0.0005	0.0118	0.0065	<0.0005	0.0016
Fe	"	NRR	NRR	1.65	3.44	5.42	1.31
Mn	"	1.311	0.4900	0.0154	0.0392	0.0670	0.0406
Ni	"	0.0047	0.0140	0.0025	0.0031	0.0029	0.0020
Zn	"	0.1238	0.3908	0.0038	0.0054	0.0401	0.0024
Fecal coliform	MPN/100mL	19,000	<1	<1	<1	9	<1

*Samples analyzed beyond recommended holding time of 15 minutes.

NRR = No reportable result.

MPN = Most probable number.

TABLE 4: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON AUGUST 21, 2007

Parameter	Unit	Well					
		1	3	5	6	7	8
pH*		7.3	7.2	7.6	7.5	7.2	8.0
EC	mS/m	240	114	79	101	141	67
Cl ⁻	mg/L	599	21	14	38	41	7
SO ₄ ⁼	"	6	299	100	175	249	67
Alkalinity as CaCO ₃	"	291	318	321	326	494	296
TKN	"	5.5	0.25	0.30	0.36	10	0.35
NH ₃ -N	"	4.7	0.10	0.29	0.28	9.1	0.40
NO ₂ +NO ₃ -N	"	0.26	0.13	0.03	0.05	0.03	<0.02
Total P	"	0.15	0.12	0.03	0.08	0.04	0.04
Cd	"	<0.0003	0.0008	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0081	0.0021	0.0048	0.0097	<0.0005	0.0050
Fe	"	14.0	NRR	1.32	4.43	5.37	1.10
Mn	"	0.8481	0.2835	0.0137	0.0529	0.0661	0.0410
Ni	"	0.0031	0.0041	0.0013	0.0037	0.0036	<0.0007
Zn	"	0.0824	0.1608	0.0031	0.0093	0.0378	0.0049
Fecal coliform	MPN/100mL	480	30	56	12	14	9

*Samples analyzed beyond recommended holding time of 15 minutes.

NRR = No reportable result.

MPN = Most probable number.

TABLE 5: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON SEPTEMBER 11, 2007

Parameter	Unit	Well					
		1	3	5	6	7	8
pH*		7.5	7.5	7.8	7.6	7.3	8.1
EC	mS/m	218	101	77	93	128	60
Cl ⁻	mg/L	559	20	13	38	41	6
SO ₄ ⁼	"	7	236	97	173	248	61
Alkalinity as CaCO ₃	"	272	372	323	324	476	293
TKN	"	5.0	0.55	0.37	0.47	9.6	0.37
NH ₃ -N	"	4.8	<0.03	0.34	0.29	10	0.38
NO ₂ +NO ₃ -N	"	0.17	0.36	0.02	0.03	0.03	0.02
Total P	"	0.08	0.10	0.03	0.06	0.02	0.02
Cd	"	0.0003	<0.0003	<0.0003	0.0008	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0045	0.0034	0.0145	0.0110	<0.0005	0.0034
Fe	"	19.3	3.30	1.46	4.39	5.18	1.29
Mn	"	0.9671	0.0577	0.0325	0.0517	0.0657	0.0413
Ni	"	0.0024	0.0021	0.0016	0.0038	0.0027	<0.0007
Zn	"	0.0705	0.0504	0.0053	0.0047	0.0320	0.0036
Fecal coliform	MPN/100mL	19	13	<1	<1	4	<1

*Samples analyzed beyond recommended holding time of 15 minutes.
MPN = Most probable number.

TABLE 6: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON SEPTEMBER 25, 2007

Parameter	Unit	Well					
		1	3	5	6	7	8
pH*		7.2	7.3	7.6	7.4	7.1	7.9
EC	mS/m	218	108	76	95	120	61
Cl ⁻	mg/L	575	24	14	39	43	7
SO ₄ ⁼	"	6	263	98	178	246	66
Alkalinity as CaCO ₃	"	249	340	321	322	452	296
TKN	"	5.2	0.32	0.30	0.25	9.4	0.39
NH ₃ -N	"	4.3	0.18	0.32	0.29	9.6	0.37
NO ₂ +NO ₃ -N	"	0.20	0.12	0.04	0.04	0.04	0.03
Total P	"	0.32	0.08	<0.02	0.05	0.07	0.02
Cd	"	0.0006	0.0058	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	0.007	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0014	<0.0005	0.0137	0.0158	0.0007	0.0019
Fe	"	19.4	NRR	5.46	4.14	5.07	1.05
Mn	"	0.9186	0.4822	0.0366	0.0484	0.0635	0.0393
Ni	"	0.0037	0.0163	0.0024	0.0067	0.0036	0.0018
Zn	"	0.0648	0.4828	0.0249	0.0093	0.0439	0.0042
Fecal coliform	MPN/100mL	4	<1	<1	<1	<1	<1

*Samples analyzed beyond recommended holding time of 15 minutes.

NRR = No reportable result.

MPN = Most probable number.

TABLE 7: 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 2007

Date	Sump	NH ₃ -N	Total Suspended Solids	BOD ₅
			mg/L	
7/3	East	6.3	39	15
	West	0.77	34	11
7/17	East	3.8	14	8
	West	0.43	24	NA
8/7	East	8.5	67	17
	West	0.21	31	9
8/21	East	62	73	36
	West	0.20	8	7
9/11	East	15	22	8
	West	4.1	8	3
9/25	East	116	125	78
	West	78	83	48

NA = No analysis.

TABLE 8: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING SEPTEMBER 2007

Constituent	Unit	Concentration ¹
pH		8.1
Total Solids	%	0.13
Total Volatile Solids	"	56.8
Total Kjeldahl-N	mg/kg	250,647
NH ₃ -N	"	267,478
Volatile Acids ²	"	8,013
Total P	"	40,519
As	"	15
Cd	"	<0.2
Cr	"	<0.6
Cu	"	21
Hg	"	0.02
Mn	"	206
Mo	"	1
Ni	"	19
Pb	"	4
Se	"	4
Zn	"	33

¹Values are the means of two samples of lagoon supernatant.

²As acetic acid.

TABLE 9: VOLUMES AND DRY WEIGHTS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING SEPTEMBER 2007

Field	Date	Supernatant Source	Volume (Gallons)	Dry Weight (Tons)
2	9/14	Lagoon	230,000	1.15
1	9/17	Lagoon	170,000	0.85
5	9/19	Lagoon	800,000	3.67
Total			1,200,000	5.67