RESEARCH AND DEVELOPMENT DEPARTMENT

REPORT NO. 07-53

HANOVER PARK WATER RECLAMATION PLANT
FISCHER FARM MONITORING REPORT

SECOND QUARTER 2007

AUGUST 2007

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3154 312·751·5600

Louis Kollias, P.E., BCEE
Director of Research and Development
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August 30, 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 second 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: Jay Patel, Manager, IEPA Region II - Des Plaines
Mr. Valdis Aistars, USEPA Region V
Mr. Ash Sajjad, USEPA Region V
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Research and Development
P. Lindo
A. Cox

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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 second quarter of 2007.

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ACKNOWLEDGMENT

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 SECOND QUARTER OF 2007

During April, May, and June 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 April, May, and June. 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 in April, May, and June. Analytical data for these samples are presented in Table 7. The volumes of drainage water returned to the WRP during the second quarter were estimated as 14.0, 5.20, and 1.00 million gallons (MG) in April, May, and June, respectively.

During the quarter, a total of 2.80 MG lagoon supernatant containing 15.5 dry tons of solids was applied to Fields 1 and 2 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.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 1

FIELDS AND WELLS AT THE HANOVER PARK FISCHER FARM SITE

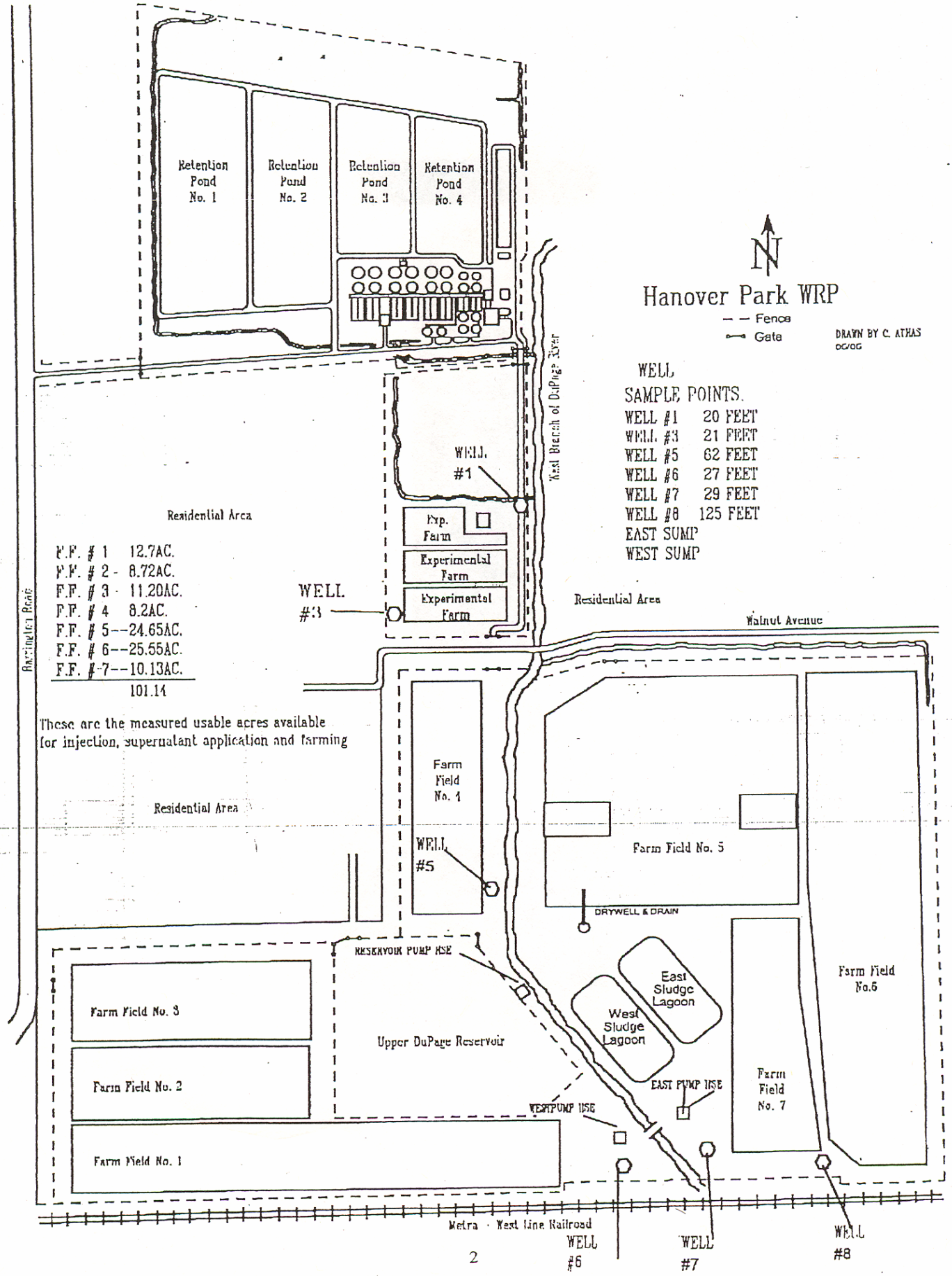

TABLE 1: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON APRIL 17, 2007

Parameter	Units	Well 1	3	5	6	7	8
pH*		7.4	7.8	7.7	7.6	7.3	7.9
EC	mS/m	218	94	73	65	128	63
Cl^-	mg/L	510	18	13	17	37	7
$SO_4^=$	"	13	247	98	191	245	72
Alkalinity as $CaCO_3$	"	334	278	311	362	455	283
TKN	"	4.5	0.58	0.74	0.61	8.1	0.77
NH_3-N	"	3.6	0.05	0.30	0.16	7.7	0.40
NO_2+NO_3-N	"	0.46	0.07	0.03	0.04	0.05	0.05
Total P	"	0.16	0.10	0.06	0.05	0.08	0.07
Cd	"	0.0023	<0.0003	0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0037	0.0029	0.0107	0.0056	<0.0005	0.0029
Fe	"	19.0	1.10	2.06	2.70	5.26	1.93
Mn	"	1.592	0.0181	0.0212	0.0209	0.0655	0.0547
Ni	"	0.0043	0.0028	0.0022	0.0033	0.0031	0.0020
Zn	"	0.0517	0.0183	0.0042	0.0058	0.0402	0.0070
Fecal coliform	MPN/100 mL	<1	<1	<1	<1	<1	<1

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

TABLE 2: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON APRIL 24, 2007

Parameter	Units	Well 1	3	5	6	7	8
pH*		6.9	7.5	7.4	7.1	7.3	7.6
EC	mS/m	222	94	75	126	101	67
Cl^-	mg/L	525	19	13	37	18	6
$SO_4^=$	"	13	248	96	240	208	69
Alkalinity as $CaCO_3$	"	329	275	319	454	381	300
TKN	"	4.8	0.26	0.55	7.5	0.46	0.60
NH_3-N	"	3.9	0.06	0.35	6.9	0.23	0.37
NO_2+NO_3-N	"	0.18	0.06	0.04	0.05	0.04	1.30
Total P	"	0.22	0.06	0.05	0.05	0.04	0.05
Cd	"	0.0005	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0017	0.0043	0.0310	0.0022	0.0078	0.0061
Fe	"	24.3	1.34	3.37	5.22	3.95	2.83
Mn	"	1.766	0.0185	0.0264	0.0662	0.0218	0.0730
Ni	"	0.0052	0.0024	0.0039	0.0029	0.0029	0.0026
Zn	"	0.0767	0.0342	0.0070	0.0278	0.0041	0.0036
Fecal coliform	MPN/100 mL	<1	<1	<1	<1	<1	<1

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

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

Parameter	Units	Well 1	Well 3	Well 5	Well 6	Well 7	Well 8
pH*		7.6	7.7	7.6	7.5	7.3	7.9
EC	mS/m	217	94	75	99	128	66
Cl^-	mg/L	527	20	13	17	38	6
$SO_4^=$	"	15	238	97	188	242	70
Alkalinity as $CaCO_3$	"	341	275	318	369	461	308
TKN	"	4.1	0.27	0.48	0.39	7.6	0.61
NH_3-N	"	3.4	0.11	0.29	0.18	7.3	0.39
NO_2+NO_3-N	"	0.43	0.12	0.11	0.03	0.05	0.06
Total P	"	0.08	0.06	0.05	0.04	0.05	0.08
Cd	"	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fe	"	10.6	0.777	2.64	3.08	4.40	2.07
Mn	"	1.500	0.0167	0.0251	0.0242	0.0597	0.0497
Ni	"	0.0037	0.0038	0.0022	0.0022	0.0018	0.0007
Zn	"	0.0653	0.0423	0.0039	0.0024	0.0219	<0.0005
Fecal coliform	MPN/100 mL	<1	<1	<1	<1	<1	<1

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

TABLE 4: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON MAY 15, 2007

Parameter	Units	Well 1	3	5	6	7	8
pH*		7.3	7.7	7.7	7.5	7.3	7.9
EC	mS/m	215	95	76	103	129	66
Cl^-	mg/L	506	22	13	17	39	7
$SO_4^=$	"	19	248	96	197	244	68
Alkalinity as $CaCO_3$	"	326	271	321	383	467	306
TKN	"	4.1	0.31	0.43	0.31	7.6	0.52
NH_3-N	"	3.2	0.08	0.37	0.33	7.0	0.43
NO_2+NO_3-N	"	0.24	0.22	0.04	0.03	0.03	0.05
Total P	"	0.11	0.04	0.03	0.03	0.04	0.21
Cd	"	0.0023	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	0.0029	0.0035	0.0106	0.0038	<0.0005	0.0007
Fe	"	57.4	9.34	1.80	3.15	4.86	1.74
Mn	"	1.886	0.0557	0.0174	0.0189	0.0653	0.0505
Ni	"	0.0059	0.0039	0.0025	0.0024	0.0036	0.0016
Zn	"	0.2033	0.0745	0.0060	0.0059	0.0234	0.0046
Fecal coliform	MPN/100 mL	<1	<1	<1	<1	<1	<1

*Samples analyzed beyond recommended holding time of 15 minutes.

MPN = Most probable number.

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

Parameter	Units	Well 1	3	5	6	7	8
pH*		7.3	7.9	7.7	7.6	7.2	8.1
EC	mS/m	216	95	75	93	135	64
Cl^-	mg/L	519	18	13	21	38	7
$SO_4^=$	"	13	256	95	161	233	65
Alkalinity as $CaCO_3$	"	305	265	321	357	493	292
TKN	"	4.9	0.44	0.36	0.31	8.3	0.42
NH_3-N	"	3.8	0.08	0.31	0.22	7.8	0.4
NO_2+NO_3-N	"	0.21	0.08	0.03	0.02	0.03	0.02
Total P	"	0.20	0.09	0.07	0.07	0.07	0.07
Cd	"	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	<0.0005	0.0013	0.0270	0.0029	<0.0005	<0.0005
Fe	"	12.0	2.64	3.54	3.03	5.60	1.60
Mn	"	0.8964	0.0714	0.0301	0.0258	0.0690	0.0505
Ni	"	0.0027	0.0023	0.0028	0.0016	0.0019	0.0012
Zn	"	0.0535	0.0278	0.0071	0.0053	0.0420	0.0034
Fecal coliform	MPN/100 mL	<1	<1	<1	<1	<1	<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 JUNE 19, 2007

Parameter	Units	Well 1	3	5	6	7	8
pH*		7.3	7.7	7.6	7.6	7.3	7.9
EC	mS/m	212	95	77	100	135	66
Cl^-	mg/L	511	19	13	17	41	6
$SO_4^=$	"	10	258	100	188	254	69
Alkalinity as $CaCO_3$	"	313	278	320	382	505	300
TKN	"	4.3	0.51	0.81	0.33	8.3	0.59
NH_3-N	"	3.6	0.23	0.40	0.28	8.3	0.47
NO_2+NO_3-N	"	0.23	0.08	0.05	0.03	0.04	0.06
Total P	"	0.08	0.15	0.07	0.04	0.05	0.07
Cd	"	0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Cr	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cu	"	<0.0005	<0.0005	0.0165	<0.0005	<0.0005	0.0011
Fe	"	34.6	6.45	2.17	3.90	4.73	1.68
Mn	"	1.381	0.1339	0.0194	0.0263	0.0657	0.0406
Ni	"	<0.0007	<0.0007	0.0024	<0.0007	<0.0007	0.0010
Zn	"	0.0786	0.0314	0.0044	0.0029	0.0199	0.0045
Fecal coliform	MPN/100 mL	<1	<1	<1	<1	<1	<1

*Samples analyzed beyond recommended holding time of 15 minutes.
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 IN APRIL, MAY, AND JUNE 2007

Date	Sump	NH_3-N	Total Suspended Solids	BOD_5
		----------mg/L ----------		
4/17	East	21	36	7
	West	1.4	16	11
4/24	East	29	23	18
	West	0.75	33	28
5/1	East	NRR	82	87
	West	2.9	14	7
5/15	East	24	24	7
	West	1.0	8	6
6/5	East	25	12	8
	West	0.22	6	3
6/19	East	35	8	15
	West	6.7	28	28
MDL		0.03	2	2

NRR = No reportable result

TABLE 8: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING APRIL AND JUNE 2007[1]

Constituent	Unit	Concentration[2]
pH		8.1
Total Solids	%	0.12
Total Volatile Solids	"	51.0
Total Kjeldahl-N	mg/kg	470,150
NH_3-N	"	413,061
Volatile Acids[3]	"	15,052
Total P	"	31,702
As	"	17
Cd	"	4
Cr	"	5
Cu	"	164
Hg	"	0.23
Mn	"	282
Mo	"	1
Ni	"	21
Pb	"	8
Se	"	2
Zn	"	161

[1]No biosolids were applied to fields in May.
[2]Values are the means of three samples of lagoon supernatant.
[3]As acetic acid.

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

Field	Date	Supernatant Source	Volume Gallons	Weight* Dry Tons
1	4/02	Lagoon	350,000	1.9
2	4/02	Lagoon	350,000	1.9
1	4/25	Lagoon	450,000	2.06
2	4/26	Lagoon	260,000	0.98
2	6/06	Lagoon	550,000	3.9
2	6/07	Lagoon	560,000	3.27
1	6/08	Lagoon	280,000	1.52
Total			2,800,000	15.53

*Applied in the form of supernatant.