Metropolitan Water Reclamation District of Greater Chicago

MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 09-68

HANOVER PARK WATER RECLAMATION PLANT

FISCHER FARM MONITORING REPORT FOR

THIRD QUARTER 2009

DECEMBER 2009

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago
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December 3, 2009

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. 2007-SC-2951-1, Monitoring Report for July, August, and September 2009

The attached report includes nine tables of the monitoring results for the Hanover Park Water Reclamation Plant Fischer Farm site for the third quarter of 2009.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:PL:kq
Enclosures
cc: Mr. Jay Patel, Manager, IEPA Region II - Des Plaines
Mr. Valdis Aistars, USEPA Region V
Mr. Ash Sajjad, USEPA Region V
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Louis Kollias, Director

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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-2951-1 for the third quarter of 2009.

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ACKNOWLEDGEMENT

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.

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 2009

During July, August, and September 2009, 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 Operating Permit No. 2007-SC-2951-1. 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. On July 30, permission was granted by the IEPA to terminate the monitoring of Well 1. Consequently, data for this well will no longer be included in this report.

Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from the farm fields was sampled twice per month in 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 0.78, 4.48, and 2.03 million gallons in July, August, and September, respectively. The analytical data for the lagoon supernatant applied to Fischer Farm fields during the quarter are presented in Table 8. The volumes and dry weights applied are reported in Table 9.

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

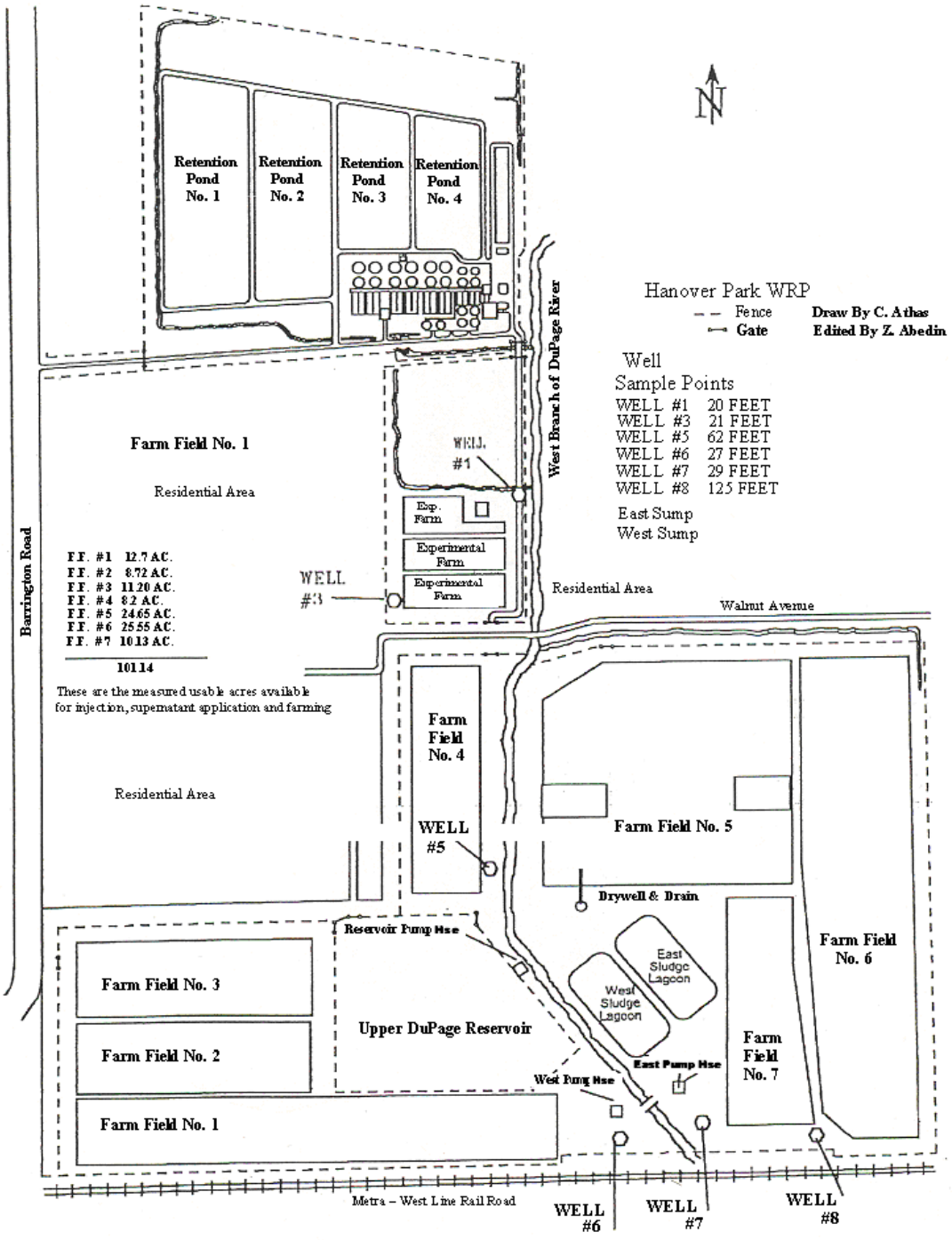

TABLE 1: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON JULY 7, 2009

Parameter	Unit	Well 3	Well 5	Well 6	Well 7	Well 8
pH[1]		7.6	7.7	7.5	7.3	8.0
EC	mS/m	87	77	86	142	66
Cl^-	mg/L	19	15	27	51	8.0
$SO_4^=$	"	155	91	125	238	57
Alkalinity[2]	"	348	326	320	526	302
TKN	"	0.99	0.56	0.45	11	0.76
NH_3-N	"	0.32	0.26	0.12	9.4	0.34
$NO_2 + NO_3$-N	"	0.04	<0.02	<0.02	<0.02	<0.02
Total P	"	0.04	<0.02	0.05	<0.02	0.03
Cd	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Cr	"	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	"	0.0012	0.0144	0.0026	<0.0005	0.0024
Fe	"	2.80	1.78	2.59	4.82	2.05
Mn	"	0.5019	0.0173	0.0337	0.0599	0.0605
Ni	"	0.0034	0.0020	0.0024	0.0029	0.0014
Zn	"	0.0037	0.0008	0.0011	0.0359	0.0066
Fecal Coliform	MPN	11	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 2: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON JULY 21, 2009

Parameter	Unit	Well 3	5	6	7	8
pH[1]		7.6	|	7.7	7.3	8.1
EC	mS/m	90		91	149	66
Cl^-	mg/L	20	W	23	50	8.0
$SO_4^=$	"	159	E	147	258	60
Alkalinity[2]	"	346	L	340	545	300
			L			
TKN	"	0.69		0.45	13	0.82
NH_3-N	"	0.35	I	0.23	11	0.35
$NO_2 + NO_3$-N	"	<0.02	N	<0.02	<0.02	<0.02
Total P	"	<0.02	A	<0.02	<0.02	<0.02
			C			
Cd	"	0.0053	C	<0.0002	0.0003	<0.0002
Cr	"	<0.001	E	<0.001	<0.001	<0.001
Cu	"	<0.0005	S	0.0030	<0.0005	0.0065
Fe	"	NRR	S	3.35	4.86	1.88
Mn	"	0.4849	I	0.0428	0.0600	0.0495
Ni	"	0.0058	B	0.0021	0.0020	<0.0006
Zn	"	0.1527	L	0.0078	0.0406	0.0012
			E			
Fecal Coliform	MPN	<1		<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
NRR = No reportable result.
MPN = Most probable number/100 mL.

TABLE 3: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON AUGUST 4, 2009

Parameter	Unit	Well 3	5	6	7	8
pH[1]		7.4	7.7	7.7	7.3	8.1
EC	mS/m	90	76	76	139	64
Cl^-	mg/L	20	15	23	48	8.0
$SO_4^=$	"	159	97	136	260	59
Alkalinity[2]	"	353	321	334	554	300
TKN	"	2.3	0.37	0.26	13	0.52
NH_3-N	"	0.33	0.28	0.20	12	0.38
$NO_2 + NO_3$-N	"	<0.02	<0.02	<0.02	<0.02	<0.02
Total P	"	0.49	<0.02	0.04	<0.02	0.03
Cd	"	0.0007	<0.0002	<0.0002	<0.0002	<0.0002
Cr	"	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	"	<0.0005	0.0077	0.0126	<0.0005	0.0040
Fe	"	NRR	1.72	6.53	4.81	1.30
Mn	"	0.3228	0.0164	0.0574	0.0569	0.0450
Ni	"	0.0033	0.0010	0.0012	0.0018	0.0016
Zn	"	0.0405	<0.0005	0.0188	0.0342	0.0013
Fecal Coliform	MPN	3	<1	<1	120	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
NRR = No reportable result.
MPN = Most probable number/100 mL.

TABLE 4: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON AUGUST 11, 2009

Parameter	Unit	Well 3	5	6	7	8
pH[1]		7.9	7.9	7.8	7.5	8.3
EC	mS/m	78	69	81	141	60
Cl^-	mg/L	20	15	33	48	7.0
$SO_4^=$	"	153	98	124	241	56
Alkalinity[2]	"	339	327	322	568	303
TKN	"	1.2	0.42	0.26	14	0.46
NH_3-N	"	0.23	0.26	0.16	13	0.38
$NO_2 + NO_3$-N	"	0.03	<0.02	<0.02	0.03	<0.02
Total P	"	0.18	<0.02	0.06	<0.02	<0.02
Cd	"	0.0007	<0.0002	<0.0002	<0.0002	<0.0002
Cr	"	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	"	<0.0005	0.0139	0.0037	0.0009	0.0025
Fe	"	NRR	2.31	3.01	4.87	1.55
Mn	"	0.2761	0.0213	0.0413	0.0568	0.0447
Ni	"	0.0025	0.0017	0.0025	0.0033	0.0015
Zn	"	0.0329	<0.0005	0.0010	0.0452	<0.0005
Fecal Coliform	MPN	<1	<1	<1	3	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
NRR = No reportable result.
MPN = Most probable number/100 mL.

TABLE 5: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON SEPTEMBER 1, 2009

Parameter	Unit	Well 3	5	6	7	8
pH[1]		7.4	7.7	7.6	7.3	8.1
EC	mS/m	94	78	95	151	65
Cl^-	mg/L	20	15	55	46	8.0
$SO_4^=$	"	175	95	136	264	56
Alkalinity[2]	"	351	323	305	584	298
TKN	"	0.35	0.29	0.32	16	0.41
NH_3-N	"	0.08	0.26	0.17	15	0.35
$NO_2 + NO_3$-N	"	0.03	<0.02	<0.02	<0.02	<0.02
Total P	"	<0.02	<0.02	0.14	0.03	0.04
Cd	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Cr	"	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	"	<0.0005	0.0167	0.0042	0.0017	0.0034
Fe	"	4.33	1.69	2.80	4.45	1.14
Mn	"	0.1399	0.0163	0.0448	0.0550	0.0416
Ni	"	0.0028	0.0007	0.0047	0.0025	0.0062
Zn	"	0.0088	0.0039	0.0045	0.0534	0.0036
Fecal Coliform	MPN	<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
MPN = Most probable number/100 mL.

TABLE 6: ANALYSIS OF WATER FROM THE SIX MONITORING WELLS AT THE HANOVER PARK FISCHER FARM SITE SAMPLED ON SEPTEMBER 15, 2009

Parameter	Unit	Well 3	5	6	7	8
pH[1]		7.4	7.6	7.7	7.4	8.2
EC	mS/m	97	79	94	158	66
Cl^-	mg/L	21	15	51	45	8.0
$SO_4^=$	"	177	97	136	283	59
Alkalinity[2]	"	366	328	310	598	301
TKN	"	1.3	0.28	0.31	18	0.42
NH_3-N	"	0.05	0.26	0.14	16	0.42
$NO_2 + NO_3$-N	"	<0.02	<0.02	0.03	<0.02	<0.02
Total P	"	0.23	<0.02	0.12	0.03	0.05
Cd	"	0.0014	<0.0002	<0.0002	<0.0002	<0.0002
Cr	"	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	"	<0.0005	0.0178	0.0270	<0.0005	0.0008
Fe	"	NRR	1.95	6.76	4.68	1.15
Mn	"	0.1986	0.0180	0.0670	0.0543	0.0408
Ni	"	0.0054	0.0022	0.0033	0.0035	0.0022
Zn	"	0.0662	0.0050	0.0057	0.0414	0.0030
Fecal Coliform	MPN	<1	<1	<1	<1	<1

[1]Samples analyzed beyond recommended holding time of 15 minutes.
[2]As $CaCO_3$.
NRR = No reportable result.
MPN = Most probable number/100 mL.

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 2009

Date	Sump	NH_3-N	TSS[1]	BOD_5
		..... mg/L		
07/07/09	East	87	18	12
07/07/09	West	1.1	13	3
07/21/09	East	121	162	NA
07/21/09	West	18	24	16
08/04/09	East	64	13	9
08/04/09	West	25	101	NA
08/11/09	East	151	71	65
08/11/09	West	92	106	73
09/01/09	East	72	38	31
09/01/09	West	1.5	4	8
09/15/09	East	235	60	45
09/15/09	West	39	42	23

[1]Total Suspended Solids.
NA = No analysis.

TABLE 8: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING THE JULY, AUGUST, AND SEPTEMBER 2009

Parameter	Unit	Concentration[1]
pH		7.9
TS	%	0.14
TVS[2]	,,	61.6
TKN	mg/kg	327,472
NH_3-N	,,	341,086
Volatile Acids[3]	,,	12,409
Total P	,,	44,376
As	,,	22
Cd	,,	<0.42
Cr	,,	<2.1
Cu	,,	72
Hg	,,	0.15
Mn	,,	260
Mo	,,	1.6
Ni	,,	22
Pb	,,	3.8
Se	,,	7.1
Zn	,,	86

[1]Values are the means of six samples.
[2]Total volatile solids as a percentage of total solids.
[3]As acetic acid.

TABLE 9: VOLUMES AND DRY WEIGHTS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING JULY, AUGUST, AND SEPTEMBER 2009

Field	Date	Biosolids Type	Volume (Gallons)	Dry Weight (Tons)
1	09/11/09	Supernatant	100,000	0.46
1	09/30/09	,,	340,000	2.27
2	08/25/09	,,	420,000	2.98
2	09/15/09	,,	200,000	1.42
5	07/20/09	,,	330,000	2.06
5	08/05/09	,,	180,000	1.13
5	09/08/09	,,	250,000	1.25
5	09/10/09	,,	390,000	1.79
5	09/29/09	,,	380,000	2.38
Total			2,590,000	15.74