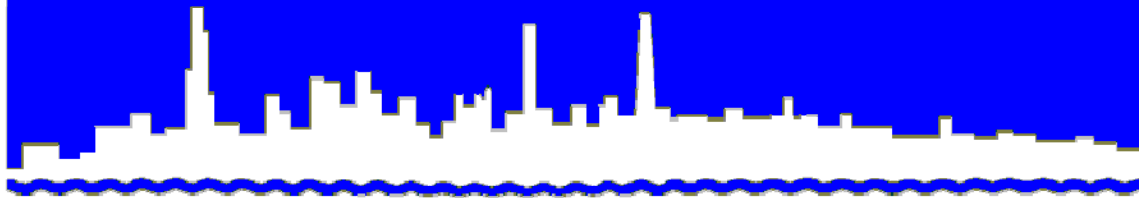


*Protecting Our Water Environment*



***Metropolitan Water Reclamation District of Greater Chicago***

*MONITORING AND RESEARCH  
DEPARTMENT*

***REPORT NO. 15-8***

***HANOVER PARK WATER RECLAMATION PLANT***

***FISCHER FARM MONITORING REPORT FOR***

***FOURTH QUARTER 2014***

***February 2015***

**Metropolitan Water Reclamation District of Greater Chicago**  
**100 East Erie Street Chicago, Illinois 60611-2803 312-751-5600**

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

**FOURTH QUARTER 2014**

**Monitoring and Research Department  
Thomas C. Granato, Director**

**February 2015**

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#### **THOMAS C. GRANATO, Ph.D., BCES**

Director of Monitoring and Research

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February 5, 2015

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 October, November, and December 2014

The attached report includes three tables of monitoring results for the Hanover Park Fischer Farm site for the fourth quarter of 2014. The report also includes five additional tables for the second and third quarter reports for 2014 that were mistakenly omitted from those reports.

Very truly yours,

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

TCG:DB:cm

Attachment

cc: Mr. J. Patel, Manager, IEPA - Des Plaines  
Mr. V. Aistars, USEPA Region 5  
Mr. P. Kuefler, USEPA Region 5

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## FOREWORD

The data and information in this report fulfill the frequency of monitoring and reporting requirements for the Hanover Park Fischer Farm Site as specified in the Illinois Environmental Protection Agency Permit No. 2012-SC-2255 for the fourth quarter of 2014.

## ACKNOWLEDGEMENT

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



## HANOVER PARK WATER RECLAMATION PLANT FISCHER FARM REPORT FOR FOURTH QUARTER OF 2014

During October, November, and December 2014, 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. 2012-SC-2255. Fields and water monitoring locations are presented in Figure 1.

Analytical data for well water samples collected during the fourth quarter are presented in Tables 1 and 2. Drainage water (combined surface and subsurface) returned to the Hanover Park WRP from farm fields was sampled twice each month for October, November, and December. Analytical data for these samples are presented in Table 3. The volumes of drainage water returned to the WRP during the fourth quarter were estimated at 3.8, 1.8, and 2.6 million gallons in October, November, and December, respectively. No lagoon supernatant or biosolids were applied to fields during the fourth quarter.

## **ADDENDUM TO SECOND AND THIRD QUARTER REPORTS**

Data were mistakenly omitted from the second and third quarter reports for 2014. The omitted data for Well 7 for the second quarter are provided in Table 4. The omitted data for lagoon supernatant and biosolids applied to fields at the Hanover Park Fischer Farm site for the second quarter are provided in Tables 5, 6, and 7. The omitted data for Well 7 for the third quarter are provided in Table 8.

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

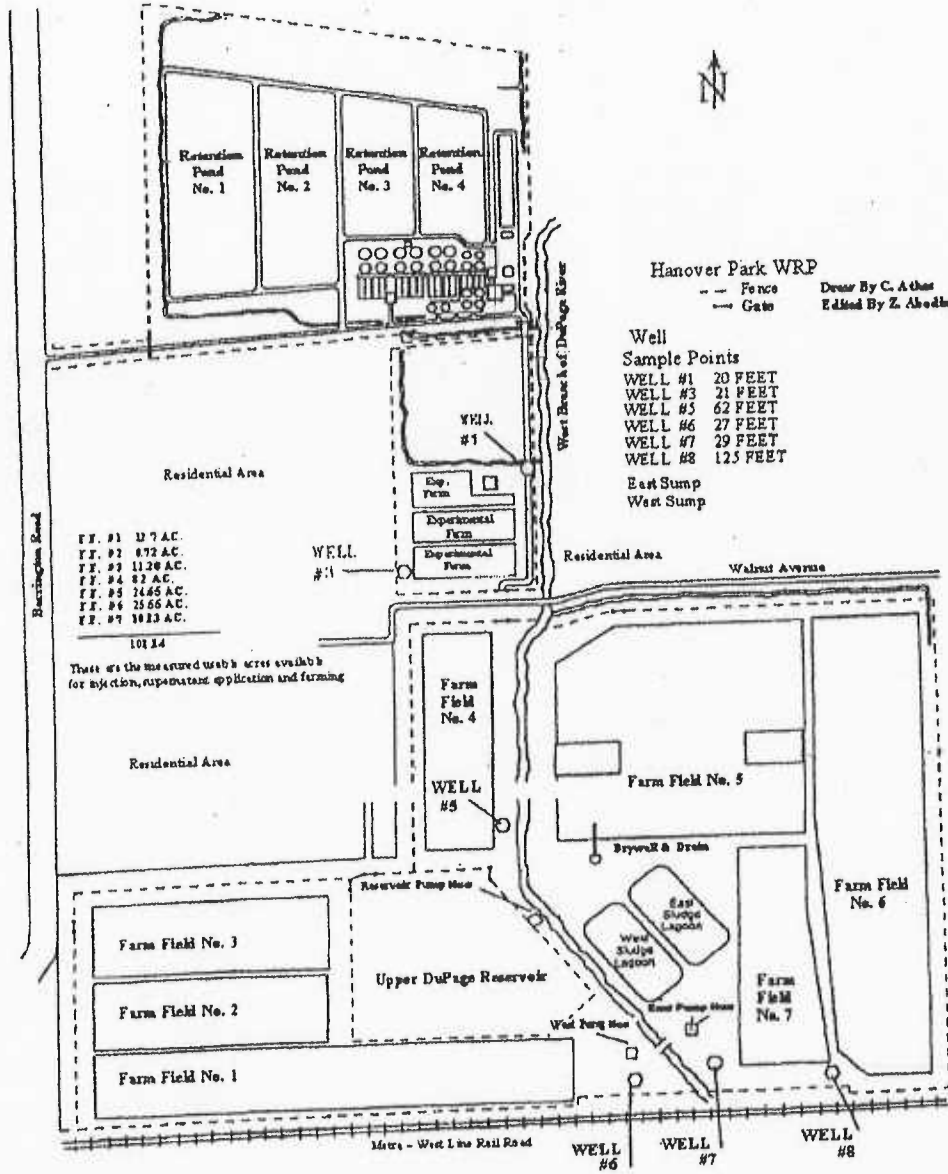


TABLE 1: ANALYSIS OF WATER FROM MONITORING WELL W-7 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED DURING OCTOBER, NOVEMBER, AND DECEMBER 2014

Parameter	Date Sampled					
	10/7/14	10/21/14	11/4/14	11/25/14	12/9/2014	12/16/14
pH <sup>1</sup>	7.3	7.2	7.2	7.4	7.2	7.2
EC	123	151	147	111	121	123
	-----mS m <sup>-1</sup> -----					
Cl <sup>-</sup>	60	61	60	60	59	59
SO <sub>4</sub> <sup>2-</sup>	259	256	249	256	262	253
Alkalinity as CaCO <sub>3</sub>	544	527	535	224	266	531
TKN	35	33	34	33	31	31
NH <sub>3</sub> -N	33	31	32	31	30	30
NO <sub>2</sub> +NO <sub>3</sub> -N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Total P	0.20	0.20	0.20	0.25	0.25	0.23
Cd	<0.001	<0.001	<0.001	<0.001	0.002	<0.001
Cr	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cu	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Fe	4.0	4.5	3.8	3.9	4.2	4.2
Mn	0.05	0.06	0.05	0.05	0.05	0.05
Ni	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zn	0.07	0.08	0.06	0.08	0.08	0.10

<sup>1</sup>pH 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 NOVEMBER 4, 2014

Parameter	Monitoring Well No.			
	W-3	W-5	W-6	W-8
pH <sup>1</sup>	7.4	7.5	7.5	8.2
	----- mS m <sup>-1</sup> -----			
EC	84	74	81	55
	----- mg L <sup>-1</sup> -----			
Cl <sup>-</sup>	14	14	31	7.1
SO <sub>4</sub> <sup>2-</sup>	126	95	118	52
Alkalinity as CaCO <sub>3</sub>	349	312	307	255
TKN	<1.0	<1.0	<1.0	<1.0
NH <sub>3</sub> -N	0.25	0.30	0.20	0.42
NO <sub>2</sub> +NO <sub>3</sub> -N	<0.15	<0.15	<0.15	<0.15
Total P	<0.20	<0.20	<0.20	<0.20
Cd	0.003	<0.001	0.002	<0.001
Cr	<0.005	<0.005	<0.005	<0.005
Cu	0.007	0.011	<0.005	0.008
Fe	9.8	2.6	2.0	0.50
Mn	0.20	0.03	0.03	0.02
Ni	<0.01	<0.01	<0.01	<0.01
Zn	0.04	<0.01	<0.01	0.02

<sup>1</sup>pH 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 OCTOBER, NOVEMBER, AND DECEMBER 2014

Date	Sump	NH <sub>3</sub> -N	TSS <sup>1</sup>	BOD <sub>5</sub>
		----- mg L <sup>-1</sup> -----		
10/07/2014	East	9.2	5.0	11
10/07/2014	West	0.17	16.0	5.0
10/21/2014	East	<0.10	5.0	NRR <sup>2</sup>
10/21/2014	West	6.6	<4.0	NRR
11/04/2014	East	25	6.0	4.0
11/04/2014	West	0.93	5.0	<2.0
11/25/2014	East	82	46	53
11/25/2014	West	196	176	NRR
12/09/2014	East	142	94	113
12/09/2014	West	52	42	47
12/16/2014	East	12	7.0	4.0
12/16/2014	West	3.5	10	5.0

<sup>1</sup>Total suspended solids.

<sup>2</sup>No reportable results.

TABLE 4: ANALYSIS OF WATER FROM MONITORING WELL W-7 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED DURING APRIL, MAY, AND JUNE 2014

Parameter	Date Sampled					
	4/8/14	4/22/14	5/6/14	5/13/14	6/10/14	6/24/14
pH <sup>1</sup>	7.2	7.3	7.3	7.3	7.6	7.5
	----- mS m <sup>-1</sup> -----					
EC	142	140	139	117	123	138
	----- mg L <sup>-1</sup> -----					
Cl <sup>-</sup>	66	71	74	74	70	67
SO <sub>4</sub> <sup>2-</sup>	233	239	212	211	236	243
Alkalinity as CaCO <sub>3</sub>	502	468	445	457	474	507
TKN	29	22	19	19	19	23
NH <sub>3</sub> -N	27	22	19	17	17	22
NO <sub>2</sub> +NO <sub>3</sub> -N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Total P	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cu	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Fe	4.3	NRR <sup>2</sup>	4.2	4.4	4.3	4.7
Mn	0.05	0.05	0.05	0.05	0.05	0.06
Ni	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zn	0.10	0.08	0.08	0.10	0.09	0.17

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.

<sup>2</sup>No reportable results.

TABLE 5: ANALYSIS OF LAGOON SUPERNATANT APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING APRIL 2014

Constituent	Unit	Concentration <sup>1</sup>
pH		7.9
Total Solids	%	0.14
Total Volatile Solids <sup>2</sup>	"	52
Volatile Acids <sup>3</sup>	mg/L	7.0
TKN	"	567
NH <sub>3</sub> -N	"	514
Total P	"	65
As	"	<0.05
Cd	"	<0.001
Cr	"	0.007
Cu	"	0.17
Hg	µg/L	0.23
Mn	mg/L	0.20
Mo	"	<0.01
Na	"	76
Ni	"	0.03
Pb	"	<0.02
Se	"	0.04
Zn	"	0.28

<sup>1</sup>Mean of two samples.

<sup>2</sup>Total volatile solids as a percentage of total solids.

<sup>3</sup>As acetic acid.



TABLE 6: ANALYSIS OF LAGOON BIOSOLIDS APPLIED TO FIELDS AT THE HANOVER PARK FISCHER FARM SITE DURING MAY AND JUNE 2014

Constituent	Unit	Concentration <sup>1</sup>
pH		7.6
Total Solids	%	3.7
Total Volatile Solids <sup>2</sup>	"	68
Volatile Acids <sup>3</sup>	mg/kg	6.5
TKN	"	86,131
NH <sub>3</sub> -N	"	36
Total P	"	3,102
As	"	<5.0
Cd	"	1.0
Cr	"	47
Cu	"	955
Hg	"	1.5
Mn	"	708
Mo	"	14
Na	"	NRR <sup>4</sup>
Ni	"	39
Pb	"	26
Se	"	<5.0
Zn	"	868

<sup>1</sup>Mean of three samples.

<sup>2</sup>Total volatile solids as a percentage of total solids.

<sup>3</sup>As acetic acid.

<sup>4</sup>No reportable results.

TABLE 7: VOLUMES AND DRY WEIGHTS OF LAGOON SUPERNATANT APPLIED TO FIELDS DURING APRIL AND BIOSOLIDS APPLIED TO FIELDS DURING MAY AND JUNE AT THE HANOVER PARK FISCHER FARM

Field	Date	Biosolids Type	Volume (Gallons)	Dry Weight (Tons)
2	4/07/14	Supernatant	311,000	1.69
5	4/17/14	Supernatant	580,000	3.39
6	5/22/14	Biosolids	726,000	75.4
6	5/23/14	"	685,410	71.2
5	5/24/14	"	477,448	60.1
5	5/25/14	"	737,345	108
5	5/26/14	"	555,652	83.9
1	5/27/14	"	151,340	22.9
1	5/28/14	"	639,541	99.2
3	5/29/14	"	527,438	90.6
2	5/30/14	"	511,710	88.6
4	5/31/14	"	523,699	94.3
6	6/02/14	"	439,773	63.3
6	6/03/14	"	1,024,624	136
Total			7,891,000	998

TABLE 8: ANALYSIS OF WATER FROM MONITORING WELL W-7 AT THE HANOVER PARK FISCHER FARM SITE SAMPLED DURING JULY, AUGUST, AND SEPTEMBER 2014

Parameter	Date Sampled					
	7/8/14	7/22/14	8/5/14	8/26/14	9/9/14	9/23/14
pH <sup>1</sup>	7.5	7.3	9.3	7.3	7.3	7.4
	----- mS m <sup>-1</sup> -----					
EC	152	160	136	143	154	149
	----- mg L <sup>-1</sup> -----					
Cl <sup>-</sup>	61	59	58	57	60	62
SO <sub>4</sub> <sup>2-</sup>	259	244	261	246	271	261
Alkalinity as CaCO <sub>3</sub>	553	558	575	547	533	542
TKN	27	32	33	34	36	34
NH <sub>3</sub> -N	26	30	31	32	33	33
NO <sub>2</sub> +NO <sub>3</sub> -N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Total P	<0.20	<0.20	<0.20	<0.20	0.20	<0.20
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cu	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Fe	4.5	4.5	6.4	5.8	4.4	4.5
Mn	0.06	0.06	0.08	0.08	0.05	0.06
Ni	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zn	0.08	0.09	0.16	0.13	0.10	0.13

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.