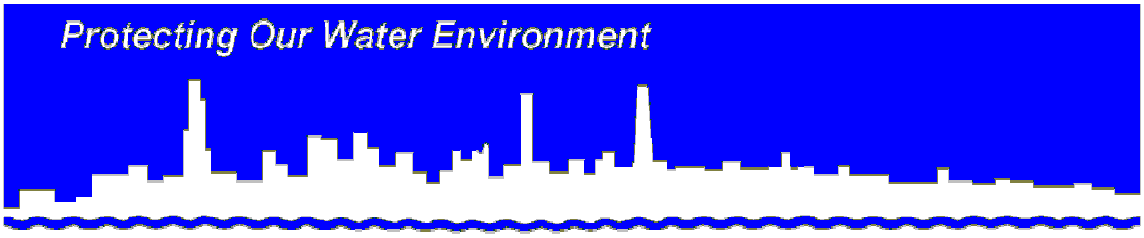

Metropolitan Water Reclamation District of Greater Chicago

MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 12-5

ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2011

FEBRUARY 2012

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, Illinois 60611-3154 312.751.5190

Thomas C. Granato, Ph.D.
Director of Monitoring and Research Department
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February 15, 2012

Mr. Patrick Kuefler
Chief of Enforcement Section 2
United States Environmental Protection
Agency, Region 5
Water Enforcement and Compliance
Assurance Branch (WC-15J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Mr. Kuefler:

Subject: 2011 Reporting Requirements Under the Code of Federal Regulations Title 40 Part 503

The Metropolitan Water Reclamation District of Greater Chicago (District) herein submits the 2011 records required under the Code of Federal Regulations Title 40 Part 503 (Part 503) at Section 503.18, entitled "Annual Biosolids Management Report for 2011."

We believe this report satisfies the reporting requirements under Part 503.

Certification Statement Required for Record Keeping

"I certify under penalty of law, that the information that will be used to determine compliance with the Class A pathogen requirements, Class B pathogen requirements, vector attraction reduction requirements, management practices, site restrictions, and requirements to obtain information as described in Sections 503.32a5, 503.32a6, 503.32a8, 503.32b2, 503.32b3, 503.33b1, 503.33b9, 503.13, 503.14, and 503.16 for the District's land application sites was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

If you have any questions, please telephone me at (312) 751-5190.

Very truly yours,

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

TCG:AC:cm
Attachment
cc w/att.: V. Aistars (USEPA)/T. Bramscher (USEPA)
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Metropolitan Water Reclamation District of Greater Chicago
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ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2011

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February 2012

TABLE OF CONTENTS

	Page
LIST OF TABLES	iii
ACKNOWLEDGEMENT	v
DISCLAIMER	v
FOREWORD	vi
INTRODUCTION	1
LEMONT WATER RECLAMATION PLANT	3
JAMES C. KIRIE WATER RECLAMATION PLANT	4
NORTH SIDE WATER RECLAMATION PLANT	5
JOHN E. EGAN WATER RECLAMATION PLANT	6
Treatment Plant and Biosolids Process Train Description	6
Summary of Use and Disposal at Landfills	6
Biosolids Conveyed to Other Water Reclamation Plants For Further Processing	6
Land Application of Class B Centrifuge Cake Biosolids	6
HANOVER PARK WATER RECLAMATION PLANT	11
Treatment Plant and Biosolids Process Train Description	11
Land Application of Class B Liquid Biosolids	11
CALUMET WATER RECLAMATION PLANT	15
Treatment Plant and Biosolids Process Train Description	15
Summary of Use and Disposal at Landfills	16
Land Application of Class B Biosolids	16
Land Application of Exceptional Quality, Air-Dried Biosolids	16

TABLE OF CONTENTS (Continued)

	Page
STICKNEY WATER RECLAMATION PLANT	23
Treatment Plant and Biosolids Process Train Description	23
Summary of Use and Disposal at Landfills	24
Land Application of Class B Biosolids	24
Land Application of Exceptional Quality, Air-Dried Biosolids	24
Centrifuge Cake Biosolids to Pelletizing Facility	37
METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO BIOSOLIDS DISTRIBUTED TO LANDFILLS UNDER 40 CFR PARTS 258 AND 261	38
APPENDICES	
Biosolids Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR PART 503	AI-1
Designation of Site-Specific Equivalency to Process to Further Reduce Pathogens for Metropolitan Water Reclamation District of Greater Chicago Biosolids Processing Trains	AII-1

LIST OF TABLES

Table No.		Page
1	2011 Production and Uses of Sludge and Biosolids	2
2	Concentrations of Nitrogen and Metals in Centrifuge Cake Biosolids Generated at the John E. Egan Water Reclamation Plant and Applied to Farmland in 2011	7
3	Digester Temperatures and Detention Times for Centrifuge Cake Biosolids Generated at the John E. Egan Water Reclamation Plant and Applied to Farmland in 2011	9
4	Concentrations of Nitrogen and Metals in Biosolids Generated at the Hanover Park Water Reclamation Plant and Applied to the Fischer Farm Site in 2011	12
5	Digester Temperatures and Detention Times for Biosolids Generated at the Hanover Park Water Reclamation Plant and Applied to the Fischer Farm Site in 2011	13
6	Volatile Solids Reduction in Biosolids Generated at the Hanover Park Water Reclamation Plant and Applied to the Fischer Farm Site in 2011	14
7	Concentrations of Nitrogen and Metals in Semi-Dried Biosolids Generated at the Calumet Water Reclamation Plant and Applied to Farmland in 2011	17
8	Digester Temperatures and Detention Times for Semi-Dried Biosolids Generated at the Calumet Water Reclamation Plant and Applied to Farmland in 2011	19
9	Concentrations of Nitrogen and Metals and Volatile Solids Reduction in Air-Dried Biosolids Generated at the Calumet Water Reclamation Plant and Applied to Land in 2011	20
10	Sites that Utilized Calumet Water Reclamation Plant Air-Dried Biosolids Under the Controlled Solids Distribution Program in 2011	21
11	Microbiological Analysis of Biosolids Generated by Compliant Process to Further Reduce Pathogens-Equivalent Codified Processing Trains at the Calumet Water Reclamation Plant in 2011	22

LIST OF TABLES (Continued)

Table No.		Page
12	Concentrations of Nitrogen and Metals in Centrifuge Cake and Semi-Dried Biosolids Generated at the Stickney Water Reclamation Plant and Applied to Farmland in 2011	25
13	Digester Temperatures and Detention Times for Centrifuge Cake and Semi-Dried Biosolids Generated at the Stickney Water Reclamation Plant and Applied to Farmland in 2011	31
14	Sites that Utilized Stickney Water Reclamation Plant Air-Dried Biosolids Under the Controlled Solids Distribution Program in 2011	32
15	Concentrations of Nitrogen and Metals and Volatile Solids Reduction in Air-Dried Biosolids Generated at the Stickney Water Reclamation Plant and Applied to Land in 2011	34
16	Microbiological Analysis of Biosolids Generated by Non-Compliant Process to Further Reduce Pathogens-Equivalent Codified Processing Trains at the Stickney Water Reclamation Plant in 2011	36

ACKNOWLEDGEMENT

The assistance of the following individuals is greatly appreciated: Mr. Daniel Collins, Supervising Civil Engineer, and Ms. Elizabeth Tijerina, Senior Civil Engineer, Lawndale Avenue Solids Management Area; Ms. Katarzyna Lai, Assistant Engineer of Treatment Plant Operations I, John E. Egan Water Reclamation Plant (WRP); Robert Podgorny, Engineering Technician V, Hanover Park WRP; Dr. Geeta Rijal, Supervising Environmental Microbiologist, Analytical Microbiology and Biomonitoring Section; Mr. John Chavich, Supervising Environmental Chemist, John E. Egan Analytical Laboratory Section; Mr. Tom Liston, Assistant Director of Monitoring and Research, Analytical Laboratory Division; Ms. Donna Coolidge, Supervising Environmental Chemist, Stickney Analytical Laboratory Section; and Dr. Heng Zhang, Environmental Monitoring and Research Manager.

Special thanks are given to Ms. Coleen Maurovich 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.

FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for 2011 for Biosolids Management by the Metropolitan Water Reclamation District of Greater Chicago, as specified in the United States Environmental Protection Agency's (USEPA's) Code of Federal Regulations Title 40 Part 503 (Part 503).

INTRODUCTION

The Metropolitan Water Reclamation District of Greater Chicago (District) herein reports the 2011 records required under Part 503 at Section 503.18.

The District has four Illinois Environmental Protection Agency (IEPA) permitted biosolids management programs that must comply with Part 503. These programs are as follows:

1. Fulton County Dedicated Biosolids Application to Land Site (IEPA Permit No. 2009-SC-2921).

2. Hanover Park Fischer Farm Biosolids Application to Land Site (IEPA Permit No. 2007-SC-2951).

3. Controlled Solids Distribution Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2010-SC-0200).

4. Application to Farmland (Application of Biosolids from Calumet, Stickney, and John E. Egan Water Reclamation Plants (WRPs) to Farmland under IEPA Permit Nos. 2009-SC-2056 and 2009-SC-2056-1).

In the following sections, we have prepared a short description of the sludge processing and biosolids management operations at the District's seven water reclamation plants (WRPs). The Lemont, James C. Kirie, and North Side WRPs do not produce a final biosolids product, while the Calumet, Stickney, John E. Egan, and Hanover Park WRPs produced final biosolids products that were used beneficially in 2011. In addition, we discuss the uses for these biosolids, outline the data reporting requirements under Part 503, and present the required monitoring data in summary tables. The 2011 production and final disposition of sludges and biosolids generated by the District are summarized in Table 1. It should be noted that the total biosolids production in any given year may not equal the amount of the final biosolids product distributed, since biosolids may be distributed from production inventory from a previous year, or biosolids produced in a given year may be stored or aged for distribution at a later time.

TABLE 1: 2011 PRODUCTION AND USES OF SLUDGE AND BIOSOLIDS

Production and Use	Water Reclamation Plants						
	Stickney[1]	Calumet[1]	North Side	Egan[1]	Hanover Park[1]	Kirie	Lemont
	Dry Tons						
Production[2]	126,442	25,374	35,259	7,228	802	6,357	305
Land Application	65,596	17,474	-	6,677	1,187	-	-
Agricultural land	59,372	16,419	-	6,677	-	-	-
Urban land	6,224	1,055	-	-	-	-	-
Surface Disposal	-	-	-	-	-	-	-
Landfill (Total)	2,151	906	-	-	-	-	-
Co-disposal	2,151	906	-	-	-	-	-
Daily cover	-	-	-	-	-	-	-
Final Cover	-	-	-	-	-	-	-
Incinerated	-	-	-	-	-	-	-
To Other WRPs[3]	-	-	35,259	2,708	-	6,357	305
Temporary storage	-	-	-	688	-	-	-
Other[4]	37,290	-	-	-	-	-	-

[1]Differences between biosolids production and total use or disposal in 2011 were due to a net withdrawal or storage in lagoons or drying areas, and processing of biosolids imported from other WRPs.

[2]Stickney, Calumet, Egan, and Hanover Park produce biosolids while North Side, Kirie, and Lemont produce undigested sludge. Figures represent total solids generated at the end of each plant's processing train including those imported from other plants for further processing.

[3]For further processing.

[4]Sent to pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, Stickney, Illinois, under Contract No. 98-RFP-10.

LEMONT WATER RECLAMATION PLANT

The Lemont WRP, located in Lemont, Illinois, has a design average flow of 3.4 MGD. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatment. In 2011, the Lemont WRP produced 305 dry tons of solids (Table 1), which were gravity concentrated and transported to the Stickney WRP for further processing.

No final biosolids product is produced at this WRP.

JAMES C. KIRIE WATER RECLAMATION PLANT

The James C. Kirie WRP, located in Des Plaines, Illinois, has a design average flow of 72 MGD. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatment. In 2011, the James C. Kirie WRP produced 6,357 dry tons of solids (Table 1), which were sent via force main to the John E. Egan WRP for further processing.

No final biosolids product is produced at this WRP.

NORTH SIDE WATER RECLAMATION PLANT

The North Side WRP, located in Skokie, Illinois, has a design average flow of 333 MGD. Wastewater reclamation processes at the North Side WRP include primary (primary settling) and secondary (activated sludge process) treatment. In 2011, the North Side WRP produced 35,259 dry tons of solids (Table 1), which were sent via pipeline to the Stickney WRP for further treatment. This total includes solids generated from water reclamation at the North Side WRP and biosolids conveyed from the John E. Egan WRP.

No final biosolids product is produced at this WRP.

JOHN E. EGAN WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The John E. Egan WRP, located in Schaumburg, Illinois, has a design average flow of 30 MGD. Wastewater reclamation processes include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatment. All solids managed at the John E. Egan WRP are anaerobically digested. During some winters or when the centrifuges are not operating, liquid digested biosolids are sent via sewers to the North Side WRP. Centrifuge centrate containing biosolids are also sent via sewers to the North Side WRP.

In 2011, the total biosolids production at the John E. Egan WRP was 7,228 dry tons (Table 1). This total includes biosolids generated from the processing of sludge originating at the John E. Egan WRP as well as the sludge that was imported from the James C. Kirie WRP for further processing.

Summary of Use and Disposal at Landfills

In 2011, none of the biosolids generated at the John E. Egan WRP was sent to landfill.

Biosolids Conveyed to Other Water Reclamation Plants for Further Processing

In 2011, a total of 387 dry tons of biosolids were pumped as centrifuge centrate to the North Side WRP. In addition, 2,321 dry tons of centrifuge cake biosolids were trucked to the Harlem Avenue Solids Management Area, of which 688 dry tons have been temporarily stored until the 2012 land application season.

Land Application of Class B Centrifuge Cake Biosolids

In 2011, the John E. Egan WRP applied a total of 6,677 dry tons of centrifuge cake biosolids to agricultural land under IEPA Permit Nos. 2009-SC-2056 and 2009-SC-2056-1 through a contract with Stewart Spreading, Inc. This total consisted of 4,520 dry tons hauled directly from the WRP and 2,157 dry tons that were stored temporarily (524 dry tons in 2010 and 1,633 in 2011) at the Harlem Avenue Solids Management Area before being applied.

All John E. Egan WRP centrifuge cake biosolids land applied in 2011 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 2), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 3), and the vector

TABLE 2: CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
04/02/11	20,139	4,213	<10	5	720	NA[1]	10	51	45	<10	771
04/09/11	8,180	2,091	<10	4	665	0.88	10	47	50	<10	726
04/16/11	19,197	5,782	<10	4	673	NA	9	45	43	<10	708
04/30/11	23,941	6,169	<10	4	699	NA	10	46	39	<10	738
05/07/11	22,942	4,291	<10	4	661	1.0	9	45	47	<10	730
05/14/11	39,221	7,695	<10	4	672	NA	8	43	46	<10	715
05/21/12	41,746	8,015	<10	4	635	NA	9	45	37	<10	685
05/28/11	30,458	6,411	<10	4	658	NA	10	44	41	<10	710
06/04/11	36,557	4,484	<10	4	654	NA	10	44	42	<10	759
06/11/11	32,755	4,838	<10	3	670	1.4	9	42	44	<10	718
06/18/11	31,640	4,055	10	3	597	NA	9	37	40	<10	679
06/25/11	36,943	5,015	12	4	664	NA	9	40	53	<10	743
07/02/11	34,851	7,355	11	3	641	NA	10	41	46	<10	782
07/09/11	36,526	4,596	12	4	670	1.1	10	43	45	<10	809
07/16/11	34,891	7,229	14	4	661	NA	9	40	47	<10	764
07/23/11	29,411	3,813	16	4	741	NA	11	46	46	<10	848
07/30/11	27,166	5,821	11	4	721	NA	11	42	45	<10	826
08/06/11	35,256	6,076	13	4	734	NA	12	44	46	<10	861
08/13/11	30,932	6,021	10	4	695	1.0	13	46	41	<10	820
08/20/11	16,812	4,066	11	4	640	NA	13	43	42	<10	781
08/27/11	20,052	4,225	10	4	641	NA	11	41	49	<10	803
09/03/11	15,513	3,253	11	4	650	NA	12	46	54	<10	840

TABLE 2 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
09/10/11	33,661	5,342	12	4	675	1.0	14	49	47	<10	838
09/17/11	22,119	3,812	12	4	704	NA[1]	15	56	50	<10	920
09/24/11	31,533	5,817	11	4	661	NA	14	55	45	<10	829
10/01/11	32,640	5,455	14	4	708	NA	13	55	47	<10	912
10/08/11	35,835	5,799	14	3	671	1.5	12	55	44	<10	843
10/15/11	33,381	5,372	13	3	735	NA	13	60	47	<10	897
10/22/11	32,680	5,443	13	4	772	NA	14	67	50	<10	969
10/29/11	28,113	5,680	11	4	789	NA	14	69	48	<10	991
11/05/11	31,651	4,993	12	4	765	NA	15	73	45	<10	979
11/12/11	37,995	2,982	10	4	754	0.79	15	70	42	<10	951
11/19/11	21,906	4,075	12	4	763	NA	13	67	44	<10	900
Minimum	8,180	2,091	7	3	597	0.79	8	37	37	<10	679
Mean[2]	29,292	5,160	11	4	690	1.1	11	50	45	<10	814
Maximum	41,746	8,015	16	5	789	1.5	15	73	54	<10	991
503 Limit	NL[3]	NL	41	39	1,500	17	75	420	300	100	2,800

[1]NA = No analysis.
[2]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[3]NL = No limit.

TABLE 3: DIGESTER[1] TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3[2]
	------- ^{o}F -------	------- days -------		------- days -------
January	97	26.1	yes	15.0
February	97	28.4	yes	15.0
March	97	28.0	yes	15.0
April	97	25.4	yes	15.0
May	98	28.5	yes	15.0
June	98	28.3	yes	15.0
July	97	26.5	yes	15.0
August	98	20.1	yes	15.0
September	98	28.7	yes	15.0
October	97	25.0	yes	15.0
November	97	31.7	yes	15.0
December	96	21.1	yes	15.0

[1]Data are for primary Digesters A and C and do not reflect additional digestion achieved in secondary Digesters B and D.
[2]For anaerobic digestion at average temperature achieved.

attraction reduction requirements of Section 503.33b10. Table 2 also shows the biosolids nitrogen concentrations that were used to compute the agronomic loading rates at the farmland sites.

The John E. Egan WRP did not have any additional requirement for reporting under Part 503 in 2011.

HANOVER PARK WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Hanover Park WRP, located in Hanover Park, Illinois, has a design average flow of 12 MGD. Wastewater reclamation processes at this WRP include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatment. All solids produced at the Hanover Park WRP are anaerobically digested and stored in lagoons. The digested biosolids stored in the lagoons are then applied by injection at an on-site farm, formerly the Fischer Farm. All of the biosolids produced by the Hanover Park WRP are land applied at the on-site farm.

In 2011, the total biosolids production at this WRP was 802 dry tons (Table 1).

Land Application of Class B Liquid Biosolids

In 2011, the Hanover Park WRP land applied a total of 1,187 dry tons of biosolids at the Hanover Park Fischer Farm site under the IEPA Permit No. 2007-SC-2951. This included liquid biosolids and supernatant stored in a lagoon. The quantity of land applied biosolids was higher than the quantity of biosolids produced in 2011 due to net removal of biosolids that were stored in a lagoon. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is once per year.

All Hanover Park WRP lagoon biosolids land applied in 2011 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 4), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 5), and the vector attraction reduction requirements of Section 503.33b1 (Table 6). Management practices at this land application site complied with Section 503.14 as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I).

TABLE 4: CONCENTRATIONS OF NITROGEN AND METALS IN BIOSOLIDS[1] GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED TO THE FISCHER FARM SITE IN 2011

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---------- mg/dry kg ----------										
03/26/11	425,667	384,125	24	<1.0	93	0.17	4	22	17	<10	130
04/02/11	386,393	398,857	19	<1.0	99	0.14	4	14	14	<10	113
04/09/11	450,964	421,750	20	<1.0	132	0.19	4	16	14	<10	155
04/16/11	423,400	395,733	20	<1.0	112	0.13	3	16	13	<10	149
05/07/11	422,033	378,467	17	<1.0	131	0.19	4	15	13	<10	171
06/18/11	167,179	111,929	21	<1.0	20	0.14	8	15	14	<10	32
07/02/11	264,600	215,167	23	<1.0	41	0.13	4	15	13	<10	57
08/06/11	254,118	217,618	16	<1.0	41	0.12	4	15	12	<10	61
08/20/11	185,364	178,227	18	<1.0	28	0.18	5	20	18	<10	43
08/27/11	250,222	247,833	22	1.1	43	0.22	6	24	22	<10	77
10/22/11	358,214	324,786	22	<1.0	69	0.14	6	23	14	14	95
11/05/11	371,844	329,938	18	<1.0	61	0.13	3	21	13	<10	87
11/19/11	66,368	26,251	14	1.4	1,183	1.6	14	45	28	<10	968
11/26/11	59,327	22,804	14	1.5	1,304	1.7	14	49	31	<10	1,026
12/03/11	68,591	27,233	13	1.7	1,063	1.7	14	34	30	<10	996
12/10/11	65,886	24,404	14	1.6	1,035	1.4	14	36	29	<10	933
Minimum	59,327	22,804	13	<1.0	20	0.12	3	14	12	<10	32
Mean[2]	263,761	231,570	18	<1.0	341	0.52	7	24	19	<10	318
Maximum	450,964	421,750	24	1.7	1,304	1.7	14	49	31	14	1,026
503 Limit	NL[3]	NL	41	39	1,500	17	75	420	300	100	2,800

[1]Biosolids applied as supernatant from 3/26/11 to 11/05/11.
[2]In computing each mean, any value less than the reporting limit was considered the reporting limit.
[3]NL = No limit.

TABLE 5: DIGESTER TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED TO THE FISCHER FARM SITE IN 2011

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3[1]
	----- ^{o}F -----	----- days -----		----- days -----
January	95	27.7	yes	15.0
February	95	25.9	yes	15.7
March	95	28.3	yes	15.0
April	95	29.7	yes	15.0
May	96	33.0	yes	15.0
June	96	36.2	yes	15.0
July	96	39.5	yes	15.0
August	97	34.9	yes	15.0
September	96	33.0	yes	15.0
October	95	33.7	yes	15.0
November	95	32.3	yes	15.0
December	95	34.3	yes	15.3

[1]For anaerobic digestion at average temperature achieved.

TABLE 6: VOLATILE SOLIDS REDUCTION IN BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED TO THE FISCHER FARM SITE IN 2011

Month	Digester Feed	Digester Draw	Lagoon Biosolids[1]	Volatile Solids Reduction[2]
	---------- % Total Volatile Solids ----------			----- % -----
Mar	84.9	74.7	59.7	73.6
Apr	83.6	73.2	58.3	72.6
May	82.5	72.0	54.3	74.8
Jun	81.3	70.7	60.5	64.7
Jul	81.1	72.4	61.7	62.5
Aug	79.9	71.6	52.5	72.2
Oct	84.0	74.0	58.8	72.7
Nov	85.3	75.2	64.3	68.8
Dec	85.3	74.7	68.1	63.1

[1]Biosolids applied as supernatant from 3/26/11 to 11/05/11.
[2]Volatile solids reduction computed using digester feed and lagoon biosolids data.

CALUMET WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Calumet WRP, located in Chicago, Illinois, has a design average flow of 354 MGD. Wastewater reclamation processes at this WRP include primary (primary settling) and secondary (activated sludge process) treatment. All solids produced at the Calumet WRP are anaerobically digested. Calumet WRP biosolids are then:

1. Placed into lagoons for dewatering, aging and stabilization, and then transported to paved cells and air-dried prior to:

    a) Application to land as Exceptional Quality (EQ) biosolids under the District's Controlled Solids Distribution Permit.

    b) Use at local municipal solid waste landfills as final landfill cover.

    c) Disposal in local municipal solid waste landfills.

2. Placed into lagoons for dewatering to semi-dried and then applied to farmland by a private contractor as a Class B biosolids or used as daily landfill cover.

3. Centrifuge dewatered to approximately 25 percent solids content, placed into lagoons for aging and stabilization, and transported to paved cells and air-dried prior to:

    a) Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.

    b) Use at local municipal solid waste landfills as final landfill cover.

In 2011, the total biosolids production at the Calumet WRP was 25,374 dry tons (Table 1). The quantity of biosolids used in 2011 (18,380 dry tons) was lower than the total production for the Calumet WRP due to net storage of biosolids in lagoons or on drying cells.

Summary of Use and Disposal at Landfills

In 2011, a total of 906 dry tons of biosolids generated at the Calumet WRP was co-disposed with municipal solid wastes in landfills.

Land Application of Class B Biosolids

In 2011, the Calumet WRP land applied 16,419 dry tons of semi-dried Class B biosolids to farmland under IEPA Permit Nos. 2009-SC-2056 and 2009-SC-2056-1 through a contract with Synagro Midwest, Inc. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is 12 times per year.

All Calumet WRP semi-dried Class B biosolids land applied in 2011 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 7), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 8), and the vector attraction reduction requirements of Section 503.33b1 (Table 9). The latter table also contains the biosolids nitrogen concentrations that were utilized to compute the agronomic loading rates to farmland.

Land Application of Exceptional Quality, Air-Dried Biosolids

In 2011, the Calumet WRP land applied a total of 1,055 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2010-SC-0200 for maintenance of golf courses, recreation fields, landscaping, and for the construction of new recreation fields. The sites that utilized these biosolids under the Controlled Solids Distribution Program and how they were used are listed in Table 10. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is four times per year.

The USEPA Region 5 designated, on a site-specific basis for the Calumet and Stickney WRPs, two of the District's biosolids processing trains as equivalent to a Process to Further Reduce Pathogens (PFRP). The PFRP equivalency commenced on August 1, 2002 (Appendix II), and on this basis, all EQ biosolids produced by the Calumet WRP met the Part 503 Class A pathogen requirements of 503.32a8 in 2011.

All Calumet WRP EQ biosolids that were land applied in 2011 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 9), the vector attraction reduction requirements of Section 503.33b1 (Table 9), and the Class A pathogen limits of Section 503.32a8 (Table 11). Management practices complied with Section 503.14 as previously described in a letter to the USEPA dated January 28, 1994 (Appendix 1).

TABLE 7: CONCENTRATIONS OF NITROGEN AND METALS IN SEMI-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
4/4/2011	28,602	4,539	<10	2	439	0.98	9	31	86	<5	1,171
5/18/2011	25,656	4,657	<10	2	383	1.0	11	59	101	<5	1,002
5/18/2011	25,450	4,522	<10	2	415	0.96	10	47	83	<5	1,058
5/18/2011	33,064	6,104	<10	2	436	0.97	8	44	83	<5	1,115
5/18/2011	26,454	3,616	<10	2	437	1.0	8	39	85	<5	1,144
5/30/2011	24,345	3,214	<10	2	445	1.0	10	42	96	<5	1,220
5/30/2011	28,405	4,146	<10	2	438	1.2	11	41	86	<5	1,165
5/30/2011	26,214	4,209	<10	2	422	1.0	8	48	85	<5	1,142
5/30/2011	22,761	3,520	<10	2	424	0.99	10	45	82	<5	1,120
5/30/2011	25,094	4,379	<10	2	415	0.99	8	36	82	<5	1,097
5/30/2011	23,612	3,372	<10	1	314	0.70	8	81	60	<5	819
5/30/2011	26,692	4,002	<10	2	434	1.0	9	42	86	<5	1,171
6/29/2011	24,575	4,699	13	2	398	0.60	13	37	79	<5	1,023
7/20/2011	27,035	4,395	<10	2	426	0.99	12	36	89	<5	1,178
7/20/2011	23,933	2,798	<10	2	439	1.1	11	36	89	<5	1,168
7/20/2011	23,027	3,244	<10	2	431	1.2	12	39	89	<5	1,146
7/20/2011	28,073	5,636	<10	2	433	0.96	12	36	89	<5	1,320
7/20/2011	24,591	5,629	<10	2	415	0.95	12	35	93	<5	1,114
7/20/2011	27,469	6,318	<10	2	408	0.86	11	36	88	<5	1,201
8/31/2011	20,705	3,412	<10	2	353	0.72	11	36	83	<5	947

TABLE 7 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN SEMI-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
8/31/2011	19,097	3,916	<10	2	367	0.96	11	36	84	<5	994
9/6/2011	25,058	4,917	<10	2	372	1.8	11	33	89	<5	1,006
9/6/2011	33,577	4,711	<10	2	377	0.70	11	34	86	<5	1,015
9/6/2011	27,415	5,375	<10	2	361	0.69	11	41	83	<5	938
9/13/2011	25,576	4,774	<10	2	350	1.6	11	33	82	<5	932
9/13/2011	31,746	4,516	<10	2	356	0.69	11	30	71	<5	905
10/26/2011	17,717	5,912	<10	2	383	0.90	10	27	76	<5	974
10/26/2011	27,218	6,509	<10	2	368	1.0	10	27	77	<5	945
10/26/2011	24,614	6,186	<10	2	379	0.90	10	27	73	<5	967
11/24/2011	23,019	3,651	<10	2	364	0.82	10	27	81	<5	1,016
11/24/2011	30,062	4,349	<10	2	359	0.83	10	28	83	<5	981
11/24/2011	31,507	3,045	<10	2	369	0.69	11	27	81	<5	969
12/14/2011	22,319	3,430	<10	2	335	0.64	7	30	80	<5	874
12/14/2011	26,321	4,590	<10	2	388	1.2	9	30	84	<5	994
12/14/2011	25,275	5,132	<10	2	391	0.62	11	29	78	<5	1,005
12/14/2011	29,507	6,293	<10	2	368	0.59	11	30	78	<5	947
Minimum	17,717	2,798	<10	1	246	0.59	7	21	50	<5	620
Mean[1]	25,975	4,543	<10	2	390	0.95	10	37	82	<5	1,038
Maximum	33,577	6,509	<10	2	445	1.8	13	81	101	<5	1,320
503 Limit	NL[2]	NL	41	39	1,500	17	75	420	300	100	2,800

[1]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[2]NL = No Limit.

TABLE 8: DIGESTER[1] TEMPERATURES AND DETENTION TIMES FOR SEMI-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3[2]
	---- °F ----	----- days -----		----- days -----
January	96	51.4	yes	15.0
February	97	54.7	yes	15.1
March	97	57.3	yes	15.0
April	96	70.8	yes	15.0
May	97	50.4	yes	15.0
June	97	46.5	yes	15.0
July	97	43.7	yes	15.0
August	97	34.8	yes	15.0
September	97	52.4	yes	15.0
October	96	38.6	yes	15.0
November	96	40.1	yes	15.0
December	96	46.9	yes	15.0

[1]Temperatures and detention times are for primary digesters 1 through 12 at the Calumet WRP.
[2]For anaerobic digestion at average temperature achieved.

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TABLE 9: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO LAND IN 2011

Sample Date	TKN	NH_3-N	TVS	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	----- mg/dry kg ----		----------%----------		---------- mg/dry kg ----------								
07/21-22/11	22,820	4,395	45.0	57.9	<10	2	408	0.85	9	36	92	<5	1,130
08/05/2011	17,745	2,212	42.1	62.5	<10	2	378	0.85	10	31	88	<5	1,069
08/12/2011	13,738	2,547	35.1	72.2	<10	2	394	0.83	10	29	88	<5	1,066
08/16/2011	20,937	1,042	40.1	65.4	<10	2	389	0.95	9	31	90	<5	1,061
09/13-14/11	22,154	1,854	40.0	63.6	<10	2	387	1.2	10	31	85	<5	989
11/05/11	10,139	1,436	39.4	64.4	<10	2	401	1.1	10	35	91	<5	1,089
11/07/11	12,354	1,266	33.6	72.3	<10	2	408	1.1	9	34	93	<5	1,099
Minimum	10,139	1,042	34	58	<10	2	378	0.83	9	29	85	<5	989
Mean[1]	17,127	2,108	39	65	<10	2	395	1.0	10	32	90	<5	1,072
Maximum	22,820	4,395	45	72	<10	2	408	1.2	10	36	93	<5	1,130
503 Limit	NL[2]	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

[1]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[2]No limit.

TABLE 10: SITES THAT UTILIZED CALUMET WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2011

User	Location
Balmoral Woods Golf Club, Crete	Golf Course
Blue Island Park District, Blue Island	Athletic fields - Memorial Park
Calumet WRP, Chicago	Landscaping
Chicago Park District, Chicago	Landscaping - Pingtom Memorial Park
Coyote Run Golf Course, Flossmoor	Golf Course
Evanston High School, Evanston	Athletic fields
Joliet Country Club, Joliet	Golf Course
Morton Grove Park District, Morton Grove	Athletic fields - Harrer Park
Renwood Golf Course, Round Lake	Golf Course
Tinley Park Park District, Tinley Park	Athletic fields – Community Park, Freedom Park

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TABLE 11: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS GENERATED BY COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE CALUMET WATER RECLAMATION PLANT IN 2011

Sample Date	Lagoon Source	Total Solids	Fecal Coliform
		---- % ----	----- MPN[1]/g -----
03/30/2011	2	67.0	7
04/13/2011	17	61.5	6
05/05/2011	2	65.5	77
07/20/2011	19	75.8	66
08/03/2011	19	78.0	130
08/17/2011	19	69.7	970
08/31/2011	19	86.6	440
08/31/2011	19	83.3	820
09/14/2011	19	77.8	150
11/02/2011	19	73.4	52
11/02/2011	19	67.4	56

[1]Most Probable Number.

STICKNEY WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Stickney WRP, located in Stickney, Illinois, has a design average flow of 1,200 MGD. Wastewater reclamation processes include primary (Imhoff and primary settling) and secondary (activated sludge process) treatment. All solids produced at this WRP are anaerobically digested. Stickney WRP biosolids are then:

1. Placed into lagoons for dewatering, aging, and stabilization, and then transported to paved cells and air-dried prior to:

    a. Applied to land as EQ biosolids under the District's Controlled Solids Distribution Permit.

    b. Used at local municipal solid waste landfills as final landfill cover

    c. Disposed of in local municipal solid waste landfills.

2. Centrifuge dewatered to approximately 25 percent solids content and then applied to land by a private contractor as Class B cake.

3. Centrifuge dewatered to approximately 25 percent solids content, transported to paved cells, and air-dried prior to use as daily landfill cover.

4. Centrifuge dewatered to approximately 25 percent solids content and conveyed to Metropolitan Biosolids Management, LLC under Contract 98-RFP-10 for further processing.

5. Centrifuge dewatered to approximately 25 percent solids content, placed into lagoons for aging and stabilization, and transported to paved cells and air-dried prior to:

    a. Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.

    b. Application to farmland as semi-dried Class B biosolids

    c. Use at local municipal solid waste landfills as final landfill cover.

    d. Disposal in local municipal solid waste landfills.

In 2011, the total biosolids production at the Stickney WRP was 126,442 dry tons (Table 1). This total includes biosolids generated from processing of sludge originating at the Stickney WRP as well as the sludge that was imported from the North Side and Lemont WRPs for further

processing. The quantity of biosolids used (105,037 dry tons) was lower than the total 2011 production for the Stickney WRP due to a net storage of biosolids in lagoons and on drying cells.

Summary of Use and Disposal at Landfills

In 2011, a total of 2,151 dry tons of biosolids generated at the Stickney WRP was co-disposed with municipal solid wastes in landfills. However, no biosolids were used as landfill daily or final cover during the year.

Land Application of Class B Biosolids

In 2011, the Stickney WRP applied a total of 59,372 dry tons of centrifuge cake and semi-dried biosolids to agricultural land under IEPA Permit Nos. 2009-SC-2056 and 2009-SC-2056-1. These quantities were utilized through contracts with Synagro Midwest, Inc. and Stewart Spreading, Inc. The total does not include the centrifuge cake biosolids transported from the John E. Egan WRP to the Harlem Avenue Solids Management Area prior to being applied to farmland by Synagro Midwest, Inc. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is 12 times per year.

All Stickney WRP centrifuge cake and semi-dried biosolids land applied in 2011 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 12), the vector attraction reduction requirements of Section 503.33b10, and the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 13). Table 12 also contains the biosolids nitrogen concentrations that were used to compute the agronomic loading rates at the farmland sites.

Land Application of Exceptional Quality, Air-Dried Biosolids

In 2011, the Stickney WRP applied a total of 6,224 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2010-SC-0200, for the construction and maintenance of golf courses and recreation fields. The sites that utilized these biosolids under the program and how they were used are listed in Table 14. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is six times per year.

The air-dried biosolids at the Stickney WRP were not generated by the codified PFRP-equivalent processing train. Therefore, the biosolids were tested for Class A compliance in accordance with Section 503.32a5.

All Stickney EQ biosolids land applied in 2011 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 15), the vector attraction reduction requirements of Section 503.33b1 (Table 15), and the Class A pathogen limits of Section 503.32a5 (Table 16). Management practices complied with Section 503.14 as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I).

TABLE 12: CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
03/14/11	47,192	6,436	<10	3	412	0.76	9	40	90	<8	747
03/14/11	59,208	9,559	<10	2	638	1.2	7	57	42	<8	813
03/15/11	27,713	3,389	<10	3	415	1.1	7	39	129	<8	853
03/15/11	37,358	6,057	<10	3	404	1.0	10	40	126	<8	971
05/05/11	33,785	5,184	<10	3	348	0.47	9	35	85	<8	648
05/06/11	50,943	9,836	<10	3	599	0.80	4	48	46	<8	707
05/09-11/11	58,843	10,331	<10	3	687	1.1	11	56	44	<8	825
05/12/11	28,690	4,465	<10	3	429	0.9	8	39	125	<8	807
05/17/11	42,838	6,392	<10	3	380	0.55	9	36	80	<8	678
05/18-21/11	48,274	7,970	<10	3	422	0.90	13	43	94	<8	735
05/23-24/11	47,612	10,273	<10	3	429	0.80	13	45	94	<5	757
06/01/11	52,193	4,852	<10	3	670	1.7	5	50	47	<5	740
06/01/11	46,266	7,998	<10	3	392	0.77	10	38	80	<5	698
06/06-07/11	38,339	8,592	<10	3	402	1.2	10	38	85	<5	723
06/21/11	37,800	6,948	<10	3	403	0.83	10	37	84	<5	707
06/21/11	43,659	6,897	<10	3	440	1.3	13	45	94	<5	762
06/21/11	28,862	4,925	<10	3	380	1.1	11	44	112	<5	805
07/14-15/11	22,089	2,880	<10	3	468	1.3	10	43	127	<5	1,030
07/15-16/11	41,250	10,945	<10	3	372	0.91	10	37	86	<5	718
07/18-20/11	45,084	11,495	<10	4	372	1.1	9	39	85	<5	706
07/18-19/11	16,175	1,960	<10	3	440	1.2	9	41	126	<5	1,002

TABLE 12: (Continued) CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
07/20/11	20,562	2,925	<10	3	415	1.3	8	40	119	<5	950
07/21/11	31,825	7,215	<10	3	388	0.92	9	38	104	<5	755
07/21-22/11	46,927	14,646	<10	3	373	0.66	9	39	87	<5	706
07/27/11	40,274	10,613	<10	3	363	0.61	10	37	85	<5	687
07/27-29/11	19,222	4,135	<10	3	426	0.74	9	40	110	<5	810
07/29/11	25,419	4,819	<10	3	412	1.0	11	44	114	<5	829
08/01-02/11	15,122	1,823	<10	3	409	0.79	10	40	110	<5	787
08/01-06/11	38,048	10,221	<10	3	347	0.91	9	37	89	<5	688
08/02-06/11	12,498	2,365	<10	3	421	0.71	9	40	113	<5	811
08/05-06/11	17,101	4,501	<10	3	417	1.1	10	40	108	<5	810
08/06/11	25,201	5,244	<10	3	419	0.83	9	40	109	<5	769
08/08-11/11	39,469	10,439	<10	4	362	0.80	10	37	92	<5	711
08/08-12/11	21,636	3,465	<10	4	461	1.6	11	42	132	<5	860
08/11/11	36,249	9,006	<10	3	377	0.67	10	40	88	<5	742
08/11/11	44,891	11,797	<10	4	441	0.73	13	46	91	<5	799
08/12/11	26,089	4,417	<10	3	468	1.3	12	41	116	<5	853
08/12/11	39,937	10,443	<10	4	372	0.70	10	40	94	<5	752
08/16-17/11	25,970	4,734	<10	4	464	1.0	11	43	117	<5	857
08/16-20/11	15,533	2,007	<10	3	433	0.94	11	39	114	<5	838
08/16-20/11	38,398	9,616	<10	3	343	0.69	9	34	102	<5	650
08/17-18/11	26,665	4,237	<10	4	455	1.1	10	41	116	<5	844

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
08/18-19/11	38,309	9,992	<10	4	368	0.54	10	39	98	<5	756
08/18-20/11	16,081	4,157	<10	3	425	0.93	10	39	113	<5	827
08/19/11	10,031	236	<10	3	455	1.2	8	41	127	<5	989
08/22-23/11	16,729	2,254	<10	3	432	1.2	7	39	131	<5	847
08/23-26/11	14,066	2,839	<10	3	438	0.83	9	40	128	<5	839
08/23-27/11	71,340	7,993	<10	3	355	0.66	9	35	96	<5	699
08/27/11	9,577	826	<10	3	424	1.1	10	38	108	<5	782
08/29/11	26,661	2,698	<10	3	440	1.4	29	44	115	<5	867
08/29-30/11	37,652	9,927	<10	4	375	0.61	9	38	99	<5	754
08/30/11	28,252	3,480	<10	3	438	0.97	13	44	110	<5	857
08/31/2011	25,277	3,850	<10	4	487	0.66	11	47	125	<5	983
09/01/11	26,345	3,877	<10	4	452	0.71	10	43	119	<5	913
09/01-02/11	34,863	9,356	<10	4	363	0.84	9	37	98	<5	742
09/01-02/11	25,438	2,144	<10	4	444	0.69	10	42	121	<5	896
09/02/11	49,726	9,374	<10	3	682	0.88	9	54	56	<5	824
09/02/11	15,838	1,167	<10	4	477	1.1	7	45	143	<5	943
09/02/11	26,989	4,253	<10	3	439	1.1	13	45	116	<5	857
09/03/11	35,278	7,076	<10	3	413	0.82	12	42	90	<5	762
09/06-07/11	22,038	3,852	<10	4	495	1.1	10	43	130	<5	907
09/06-08/11	39,656	8,396	<10	3	406	0.61	12	42	87	<5	778
09/07-08/11	16,837	1,963	<10	4	483	0.79	9	43	140	<5	917

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
09/08-10/11	32,913	8,184	<10	4	387	0.63	10	38	95	<5	744
09/12-13/11	19,363	2,683	<10	4	464	0.83	10	43	135	<5	903
09/12-17/11	36,587	7,666	<10	4	387	0.71	10	37	95	<5	745
09/13-14/11	17,695	2,465	<10	4	456	0.88	7	39	130	<5	891
09/14/11	39,724	10,085	<10	3	411	0.66	9	37	108	<5	814
09/16/11	22,554	4,171	<10	3	424	0.84	10	41	109	<5	814
09/16/11	12,585	1,278	<10	3	442	0.75	11	41	115	<5	856
09/17/11	10,390	2,977	<10	3	429	0.71	12	41	112	<5	816
09/21/11	11,636	2,535	<10	3	410	0.63	10	40	110	<5	793
09/21-22/11	35,396	9,073	<10	4	379	0.61	10	37	98	<5	748
09/21-23/11	27,572	6,233	<10	3	430	0.69	11	41	112	<5	823
09/23-24/11	34,968	7,562	<10	3	401	0.89	11	40	95	<5	744
10/03/11	18,764	5,773	<10	3	430	1.2	7	39	110	<5	840
10/04/11	26,224	2,401	<10	4	458	1.1	15	47	115	<5	905
10/03-08/11	17,938	2,646	<10	3	450	1.5	12	42	111	<5	861
10/03-08/11	37,600	9,333	<10	4	393	1.2	10	38	105	<5	782
10/04-08/11	12,619	1,410	<10	3	448	0.99	11	42	108	<5	866
10/05/11	35,609	7,582	<10	4	399	0.43	11	42	103	<5	815
10/05/11	42,679	8,729	<10	3	419	0.48	12	43	87	<5	783
10/05/11	35,498	6,420	<10	3	406	0.63	11	42	98	<5	799
10/10/11	28,253	3,281	<10	3	456	0.79	12	42	107	<5	861

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
10/10/11	33,312	3,636	<10	3	447	0.94	12	42	105	<5	847
10/10-11/11	35,516	4,627	<10	3	452	0.89	13	42	112	<5	848
10/10-12/11	39,129	10,729	<10	4	398	1.0	10	39	104	<5	778
10/11-12/11	32,001	4,155	<10	4	438	1.2	9	39	108	<5	863
10/17-18/11	34,474	8,263	<10	4	398	1.1	10	38	106	<5	758
10/18/11	33,787	8,156	<10	3	420	0.83	12	41	83	<5	733
10/21/11	44,597	12,765	<10	3	417	0.86	14	42	101	<5	839
10/21/11	31,096	6,025	<10	4	387	0.80	9	42	113	<5	835
10/25-29/11	10,510	2,660	<10	4	402	1.2	10	39	103	<5	766
11/01-02/11	43,238	9,509	<10	4	390	0.92	11	39	105	<5	760
11/02/11	42,327	8,356	<10	3	410	0.82	12	41	93	<5	767
11/02/11	34,162	4,800	<10	3	420	1.1	10	39	110	<5	815
11/07/11	32,027	4,204	<10	3	436	1.0	13	40	107	<5	810
11/14/11	21,790	3,538	<10	3	425	1.2	9	40	119	<5	827
11/14-19/11	25,104	7,426	<10	4	404	0.73	11	39	110	<5	796
11/14-19/11	39,049	5,621	<10	3	444	0.75	11	40	111	<5	844
11/16-18/11	25,142	6,873	<10	3	401	0.80	11	41	97	<5	766
11/21/11	37,030	9,065	<10	4	416	1.2	10	43	129	<5	861
12/03/11	26,024	4,502	<10	3	415	0.75	10	38	109	<5	818
12/07-10/11	27,465	7,370	<10	3	399	1.0	9	38	106	<5	805
12/12-13/11	25,804	6,589	<10	3	402	0.93	10	40	106	<5	804

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
12/12-13/11	32,050	4,857	<10	3	399	0.86	9	37	107	<5	815
Minimum	9,577	1,167	<10	2	343	0.43	4	34	42	<5	648
Mean[1]	31,230	6,163	<10	3	428	0.91	10	41	104	<5	808
Maximum	71,340	14,646	<10	4	687	1.7	29	57	143	<5	1,030
503 Limit	NL[2]	NL	41	39	1,500	17	75	420	300	100	2,800

[1]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[2]NL = No limit.

TABLE 13: DIGESTER TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2011

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3[1]
	---- °F ----	--- days ---		--- days ---
January	98	25.7	yes	15.0
February	98	22.9	yes	15.0
March	97	20.3	yes	15.0
April	98	20.0	yes	15.0
May	98	18.2	yes	15.0
June	98	26.9	yes	15.0
July	98	27.8	yes	15.0
August	99	36.9	yes	15.0
September	98	40.6	yes	15.0
October	98	42.4	yes	15.0
November	97	36.7	yes	15.0
December	96	35	yes	15.0

[1]For anaerobic digestion at average temperature achieved.

TABLE 14: SITES THAT UTILIZED STICKNEY WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2011

User	Location
Benet Academy, Lisle	Athletic fields
Blue Island Park District, Blue Island	Athletic fields – Memorial Park
Burbank Park District, Burbank	Athletic fields - Fitzgerald Park, McArthur Park, Newcastle Park
Burbank Park District, Burbank (cont'd.)	Athletic fields - Nottingham Park, Wright Park
Calumet WRP, Chicago	Landscaping
Chicago Park District, Chicago	Athletic fields - Montrose Beach Park, Pottawatomi Park, Franklin Park
Chicago Park District, Chicago (cont'd.)	Athletic fields - Pingtom Memorial Park, Jackson Park
Chicago State University, Chicago	Research farm
Cinder Ridge Golf Course, Wilmington	Golf course
Dolton Park District, Dolton	Athletic fields - Main Park
East Leyden High School, Franklin Park	Athletic fields
Evanston High School, Evanston	Athletic fields
Franklin Park Park District, Franklin Park	Athletic fields – Birch Park, North Park
Frankfort Park District, Frankfort	Athletic fields - Main Park
Highland Park Golf Club, Highland Park	Golf course
Hillcrest High School, Country Club Hills	Athletic fields
Hinsdale High School, Hinsdale	Athletic fields
Joliet Township High school, Joliet	Athletic fields
Keith Construction, Lemont	Landscaping
Lisle Park District, Lisle	Athletic fields - Woodglenn Park
Marmion Academy, Aurora	Athletic fields

TABLE 14 (Continued): SITES THAT UTILIZED STICKNEY WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2011

User	Location
Mokena Park District, Mokena	Athletic fields – Hecht Park
Morton Grove Park District, Morton Grove	Athletic fields - Prairie View Park
North Shore Country Club, Glenview	Golf course
Oak Lawn Park District, Oak Lawn	Athletic fields - Centennial Park
Posen Park District, Posen	Athletic fields - Memorial Park
Reavis High School, Burbank	Athletic fields
Renwood Golf Course, Round Lake	Golf course
Richard Vegas, Braceville	Landscaping - Geothermal Site
River Forest Park District, River Forest	Athletic fields - Priority Park
River Trails Park District, Mount Prospect	Athletic fields - Willow Park
St. Charles Park District, St. Charles	Athletic fields – Campton Hills Park, East Side Sports Complex
St. Xavier University, Chicago	Athletic fields
Summit Park District, Summit	Athletic fields - Skate Park
Tinley Park Park District, Tinley Park	Athletic fields - Freedom Park
Town of Leyden, Leyden	Athletic fields - Franklin Park
Triton College, River Grove	Athletic fields
Twin Orchard Country Club, Long Grove	Golf course
Village Green of Woodridge, Woodridge	Athletic fields - Jane Park
Village of Hinsdale, Hinsdale	Athletic fields – Veeck Park
West Leyden High School, Northlake	Athletic fields
Woodridge Park District, Woodridge	Athletic fields - Cypress Cove Park
York Center Park District, Lombard	Athletic fields -Villa Roosevelt Park

TABLE 15: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO LAND IN 2011

Sample Date	TKN	NH_3-N	TVS	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	--- mg/dry kg ---		------- % --------		----------mg/dry kg ----------								
05/12/11	21,887	1,457	38.0	59.9	<10	3	446	0.95	8	39	125	<8	835
05/13/11	21,470	1,097	39.2	57.9	<10	3	446	0.88	8	39	130	<8	823
05/18-20/11	20,327	719	38.1	59.7	<10	4	455	1.1	9	41	130	<8	852
05/24/11	25,242	1,480	39.2	57.8	<10	3	462	1.2	9	41	133	<5	857
06/03/11	20,435	629	39.3	57.7	<10	3	425	1.1	9	40	131	<5	839
06/07/11	21,027	963	35.0	64.8	<10	3	479	1.2	10	43	135	<5	883
06/08/11	19,388	1,084	33.4	67.2	<10	3	443	1.2	10	43	131	<5	867
06/29/11	19,650	261	35.0	64.8	<10	3	403	1.3	9	41	132	<5	867
07/05/11	18,074	227	35.5	64.0	<10	3	408	1.2	9	40	131	<5	861
07/06-08/11	19,967	329	41.0	54.6	<10	3	450	1.1	10	43	132	<5	874
07/11-15/11	20,830	619	40.9	54.7	<10	3	447	1.3	9	43	129	<5	903
07/18-19/11	15,648	1,147	40.3	55.8	<10	3	409	1.3	9	40	126	<5	830
08/18-20/11	16,081	4,157	39.9	61.5	<10	3	425	0.93	10	39	113	<5	827
08/22/11	26,747	3,144	41.1	59.6	<10	3	407	0.86	10	38	109	<5	799
08/23/11	13,603	1,394	40.4	60.8	<10	3	418	1.2	9	37	112	<5	806
09/06-07/11	27,489	3,385	44.8	53.0	<10	3	416	0.49	10	40	114	<5	863
09/07-08/11	23,696	3,891	45.5	51.6	<10	3	414	1.0	9	39	110	<5	828
09/21-23/11	23,310	1,818	41.9	58.2	<10	4	463	0.70	10	42	113	<5	890
10/11-12/11	25,307	2,572	45.2	52.1	<10	4	453	0.99	9	41	119	<5	872

TABLE 15 (Continued): CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO LAND IN 2011

Sample Date	TKN	NH_3-N	TVS	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	--- mg/dry kg ---		--------- % --------		----------mg/dry kg ----------								
10/18/11	27,492	4,022	43.8	54.9	<10	3	431	1.2	9	39	112	<5	815
11/07/11	24,070	2,360	41.7	58.5	<10	3	418	0.85	10	40	110	<5	834
11/18/11	27,587	2,234	40.7	60.1	<10	4	483	0.83	11	45	127	<5	945
11/22/11	21,464	2,100	42.6	57.1	<10	4	453	0.88	9	43	119	<5	903
11/23-25/11	30,685	3,780	43.1	56.0	<10	4	441	1.0	9	41	127	<5	864
Minimum	13,603	227	33	52	<10	3	403	0.49	8	37	109	<5	799
Mean[1]	21,062	1,599	40	58	<10	3	435	1.1	9	40	124	<5	851
Maximum	27,489	4,157	46	67	<10	4	479	1.3	10	43	135	<5	903
503 Limit	NL[2]	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

[1]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[2]No limit.

TABLE 16: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS[1] GENERATED BY NON-COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE STICKNEY WATER RECLAMATION PLANT IN 2011

Sample Date[2]	Lagoon Source	Total Solids	Fecal Coliform	Helminth Ova	Enteric Virus
		--- % ---	----- MPN[3]/g -----	--- No./4g ---	--- PFU[4]/4g ---
4/13/2011	24	60.2	480	<0.0800	<0.8000
4/27/2011	27	68.2	100	<0.0800	<0.8000
6/15/2011	27	72.1	48	<0.0800	<0.8000
8/17/2011	27	76.3	8	<0.0800	<0.8000
8/17/2011	25	73.1	80	<0.0800	<0.8000

[1]All biosolids satisfied Part 503 Class A requirements.
[2]Sample dates are for FC analyses only. Samples for HO and V analyses were collected September – November 2010 because they require over two months for completion.
[3]Most probable number.
[4]Plaque-forming unit.

Centrifuge Cake Biosolids to Pelletizing Facility

In 2011, the Stickney WRP sent a total of 37,290 dry tons of centrifuge cake biosolids to the pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, Stickney, Illinois under Contract No. 98-RFP-10. Metropolitan Biosolids Management is responsible for final utilization and the monitoring and report requirements of these biosolids.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
BIOSOLIDS DISTRIBUTED TO LANDFILLS UNDER
40 CFR PARTS 258 AND 261

Biosolids from two of the District's WRPs (Stickney and Calumet) were sent to landfills in 2011 for disposal. Biosolids shipped to these landfills were analyzed as specified in 40 CFR Part 261 to establish the nonhazardous nature of this material for co-disposal. Analytical results, including toxic characteristic leaching procedure constituents, polychlorinated biphenyls, cyanide, sulfide, and paint filter test, are submitted to the landfill company to satisfy the requirements of their IEPA permit. District biosolids have always met the requirements of 40 CFR Parts 258 and 261, and the Illinois nonhazardous waste landfill regulations (Title 35, Subtitle G, Chapter I, Subchapter H, Part 810). In 2011, a total of 3,057 dry tons of District biosolids (2,151 dry tons from the Stickney Plant and 906 dry tons from the Calumet Plant) was co-disposed with municipal solid wastes at non-hazardous waste landfills.

APPPENDIX I

BIOSOLIDS MANAGEMENT PROGRAMS OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO UNDER 40 CFR PART 503

Metropolitan Water Reclamation District of Greater Chicago
100 EAST ERIE STREET CHICAGO, ILLINOIS 60611 312 / 751-5600

Cecil Lue-Hing
Director of R & D
312 / 751-5190

January 28, 1994

Mr. Michael J. Mikulka
Chief of Compliance Section
United States Environmental
Protection Agency
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Mikulka:

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Metropolitan Water Reclamation District of Greater Chicago (District) has three sludge management programs that employ sewage sludge applications to land under the 40 CFR Part 503 Regulations. These programs are the Fulton County, Illinois land application site, the Hanover Park Fischer Farm at the Hanover Park Water Reclamation Plant, and the Controlled Solids Distribution Program. The District feels that it is important to define its interpretation of the 40 CFR Part 503 Regulations with respect to each of these programs.

On July 22, 1993, we sent Mr. John Colletti, then Acting Sludge Coordinator, a letter (copy attached) expressing our concerns regarding compliance monitoring, record keeping and reporting under 40 CFR Part 503 for each of these programs.

The District believes that its existing sludge management programs are conservative, and that monitoring and environmental protection measures far exceed the requirements of the Part 503 Regulations. This letter is designed to inform you of the conservative nature of these sludge management programs, and the fact that they are in complete compliance with the spirit and specific language of the Part 503 Regulations.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

Fulton County Illinois Site

The District considers the application of sewage sludge at its Fulton County, Illinois site to be under "Land Application" section (subpart B) of the Part 503 Regulations. Sewage sludge is applied at rates approved by the Illinois Environmental Protection Agency (IEPA) for reclamation of disturbed strip-mine spoils. Under the current permit with the IEPA (Permit No. 1993-SC-4294 issued December 3, 1993), sewage sludge is being applied at an agronomic rate to supply nutrients for productive crop yields.

Sewage sludge applied at the site will contain metal concentrations below the pollutant limits established in Table 3 of Part 503.13, subsection b(3) of the regulations. As a result, the Part 503 cumulative pollutant limits in Table 4 of Part 503.13 substation b(4) will not apply to future applications of sewage sludge at the Fulton County site.

Sewage sludge applied at the Fulton County site will far exceed the Class B pathogen requirements by conservatively achieving operating temperature and detention times in excess of the Part 503 anaerobic digester operating requirements (§503.32b3).

The Part 503 vector attraction reduction requirements will be easily met since the District consistently reduces the volatile solids content of the Fulton County sludge far greater than the required 38 percent (§503.33b1).

The Part 503 Regulations do not specify what kind of crop can be grown under land application. Crops typically grown at the site are corn, winter wheat, and hay. Corn and winter wheat grown on sludge application fields are sold for ethanol production, and animal feed. Hay grown on application fields receiving supernatant from on-site lagoons containing sewage sludge is currently harvested three times per year, as specified under the existing IEPA permit. This hay is used as animal feed or mulch for project reclamation activities.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Class B pathogen requirements for the supernatant application field where hay is grown will be met by ensuring that supernatant application ceases 30 days before hay crop harvesting.

The Part 503 Regulations do not specify what kind of surface water protection system is required for land application. The permitting authority, on a case-by-case basis, may impose more stringent requirements when necessary to protect the public health and the environment. Sewage sludge application fields at the Fulton County site are bermed, and have runoff retention basins designed to capture all runoff.

Waters released from the 65 retention basins at the site must, and do meet standards specified in the existing IEPA discharge permit for pH, total suspended solids, fecal coliforms, and biochemical oxygen demand. Although not required in the Part 503 Regulations, these restrictions show that District operations at the Fulton County site are designed to minimize contamination of surface waters.

Supernatant application fields at the site are not bermed. However, supernatant application in the fields is controlled so that it does not contaminate indigenous ponds and strip-mined reservoirs. Although such restrictions are not required in the Part 503 Regulations, they prevent contamination of waters used by wildlife and water fowl.

The Class B pathogen requirements in the Part 503 Regulations dictate that public access to application fields be limited. The District will comply with the Class B pathogen requirement for restricted public access by a combination of fencing, posted signs, locked gates, and security guards. These measures are conservative and far exceed the public access requirements in the Part 503 Regulations.

The Part 503 Regulations prohibit the adverse modification or destruction of endangered species or their critical habitat. The District has no evidence to indicate that sludge applications have affected the habitat of wildlife species at the site.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Part 503 Regulations do not specifically prohibit bulk sewage sludge application to flooded, frozen, or snow covered lands. The regulations state, however, that any sludge applied to these lands may not enter surface waters or wet lands. The District does not apply sewage sludge to floodplains, frozen, or snow covered ground at the Fulton County site. The site permit with the IEPA prohibits applying sewage sludge under these conditions.

The Part 503 Regulations state that bulk sewage sludge may not be applied within 10 meters of a surface water body unless authorized by a permit. The District does not apply sewage sludge within 10 meters of the waters of the state. The District's IEPA permit specifies that sludge shall not be applied to land which lies within 200 feet (61 meters) of surface waters.

The Part 503 Regulations require that the land application of bulk sewage sludge may not exceed the agronomic rate for the particular agricultural, forest or public contact site. In some cases the permitting authority may specifically authorize the application of sludge to a reclamation site at an annual rate that exceeds the agronomic rate. The District is currently applying sewage sludge at an application rate of 57 dry tons per acre per year on bermed sludge application fields, and 25 dry tons per acre per year on nonbermed fields. Technical justification for the sludge application rate of 57 dry tons per acre per year is given in the attachment entitled "Fulton County." This application rate is approved under the IEPA permit.

Hanover Park Fischer Farm

The District considers the application of sewage sludge at its Hanover Park Fischer Farm site to fall under the "Land Application" section (subpart B) of the Part 503 Regulations. Sewage sludge is applied at a rate of 20 dry tons per acre per year as specified in the IEPA permit (Permit No. 1992-SC-0942 issued August 18, 1992) for the site.

Sewage sludge applied at the site is far below the pollutant concentration limits established in Table 3 of Part 503.13, subsection b(3) of the regulations for metals.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

Sewage sludge applied at the Hanover Park Fischer Farm site conservatively meets the Class B pathogen requirements by either fecal coliform analysis (§503.32b2), or by meeting the Part 503 anaerobic digester operating temperature and detention time requirements (§503.32b3).

The District will ensure that the Part 503 vector attraction reduction requirements are met by electing to subsurface inject all sludge applied to the site.

The Part 503 Regulations do not specify what kind of crop can be grown under land application. A straw crop is currently being grown at the site, with the straw removed and the grain left in the field.

The Part 503 Regulations do not state what type of surface and groundwater protection system is required. All fields at the site are bermed and all surface water is collected. The entire site is endowed with an extensive system of drainage tile, which collects all the soil percolate. The runoff and percolate are returned to the water reclamation plant for tertiary treatment.

The District's sludge application to land program at the Hanover Park Water Reclamation Plant far exceed any surface water and groundwater protection requirement specified in the Part 503 Regulations.

The Part 503 Class B pathogen requirements limit public access to the sludge application fields. The District operations at Hanover Park far exceed the Part 503 requirements since the entire site is fenced with locked gates and security guards.

The Part 503 Regulations prohibit the adverse modification or destruction of endangered species or their critical habitat. The District has no evidence that sludge applications have affected the habitat of wildlife species at the site.

The Part 503 Regulations do not prohibit bulk sewage sludge application to flooded, frozen, or snow covered lands.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The regulations state, however, that any sludge applied to these lands may not enter surface waters or wetlands. The District does not apply sewage sludge to floodplains, frozen, or snow covered ground at the Hanover Park Fischer Farm. The site IEPA permit prohibits the application of sewage sludge under these conditions.

The Part 503 Regulations state that bulk sewage sludge may not be applied within 10 meters of a surface water body unless authorized by a permit. The District does not apply sewage sludge within 10 meters of the waters of the state. The site application fields are bermed and surface runoff is collected and returned to the plant for tertiary treatment. This management practice far exceeds the Part 503 requirements.

The Part 503 Regulations require that the land application of bulk sewage sludge may not exceed the agronomic rate for the particular agricultural, forest, or public contact site. The District is applying sewage sludge at an annual application rate of 20 dry tons per acre. Technical justification for this application rate is given in the attachment entitled "Hanover Park," and is approved under the IEPA permit.

Controlled Solids Distribution

The District has a sludge management program called the Controlled Solids Distribution Program. Sewage sludge under this program is given away for beneficial use at selected sites for landscaping and soil enrichment. The application of sewage sludge under this program is covered by IEPA Permit No. 1990-SC-1100.

Through the District's efforts to reduce the metals in the sludge with a vigorous industrial waste control program, the District's sewage sludge will be well below the metal limits specified in Part 503.13, subsection b(3), (Table 3). The anaerobic digesters producing sewage sludge for the District's Controlled Solids Distribution Program have detention times and operating temperatures which easily satisfy the Part 503 Class B pathogen requirements. The sewage sludge

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

destined for the Controlled Solids Distribution Program receives extensive treatment to reduce its volatile solids content, which far exceed the 38 percent volatile solids reduction requirement of the Part 503 vector attraction reduction requirements.

The Part 503 Regulations for land application of sewage sludge do not specify what kind of vegetation can be grown at sites receiving sludge. The District requires that only nonfood chain vegetation be grown at all sites receiving sludge under the Controlled Solids Distribution Program. This far exceeds the Part 503 requirements.

The Part 503 Regulations under 503.32(b) for Class B pathogen reduction requires that public access be restricted for one year if the site has a high potential for public exposure, and public access be restricted for 30 days at a site with a low potential for public exposure. The District will post signs and/or other means to restrict public access to these sites.

The Part 503 Regulations prohibit the adverse modification or destruction of endangered species or their critical habitat. The District has no evidence that endangered species are present in areas receiving sewage sludge under the Controlled Solids Distribution Program.

The Part 503 Regulations do not prohibit bulk sewage sludge application to flooded, frozen, or snow covered lands. The regulations state, however, that any sludge application to these lands may not enter surface waters or wetlands. The District does not apply sewage sludge to floodplains, frozen, or snow covered ground at sites receiving sludge under its Controlled Solids Distribution Program. The District's IEPA permit prohibits these activities.

The Part 503 Regulations has a specific management practice that bulk sewage sludge may not be applied within 10 meters of a surface water body unless authorized by a permit. The District does not apply sewage sludge within 10 meters of the waters of the state. The District's IEPA permit is more restrictive in that it specifies that sludge cannot be applied to land which lies within 200 feet (61 meters) of surface waters.

Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

The Part 503 Regulations require that the land application of bulk sewage sludge may not exceed the agronomic rate for a particular agricultural, forest, or public contact site. In some instances, the permitting authority for a reclamation site may specifically authorize the application of sludge at an annual rate that exceeds the agronomic rate. At these sites, sewage sludge will either be applied at an agronomic application rate, or a reclamation rate depending upon the needs of the site. The District's current permit with the IEPA allows for a higher application rate related to site needs. Under the Part 503 Regulations, as noted in the attachment entitled "Fulton County," the permitting authority may authorize a variance from the agronomic rate by permit. The District has received this variance from the IEPA in its current permit for the Controlled Solids Distribution Program.

The above mentioned sludge management programs are an important part of the District's operations and planning requirements for future sludge management activities. As described, the District feels that these programs comply with the requirements described in the Part 503 Regulations.

If you require additional information or have questions, don't hesitate to telephone me at (312) 751-5190.

Very truly yours,

Cecil Lue-Hing, D.Sc., P.E.
Director
Research and Development

CLH:RIP:ns
Attachments
cc: Dalton
O'Connor
DiVita
Murray
Alan Keller, IEPA
Tim Kluge, IEPA
Ken Rogers, IEPA
Ash Sajjad, USEPA
Bill Tong, USEPA

APPPENDIX II

DESIGNATION OF SITE-SPECIFIC EQUIVALENCY TO PROCESS TO FURTHER REDUCE PATHOGENS FOR METROPOLITAN WATER RELCAMATION DISTRICT OF GREATER CHICAGO BIOSOLIDS PROCESSING TRAINS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 20 2002

REPLY TO THE ATTENTION OF:

WN-16J

Mr. Jack Farnan
General Superintendent
Metropolitan Water Reclamation
District of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611

REF: Mr. Richard Lanyon's November 30, 2001, Letter Request for Site-specific Equivalency Certification for the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) Biosolids Processing Trains at the Stickney and Calumet Waste Water Treatment Plants.

Dear Mr. Farnan:

We acknowledge receipt of the referenced letter request along with attachments A through I. This request conforms with the requirements of the Federal rules for the use and disposal of biosolids codified at 40 CFR part 503. These rules designate the Regional permitting authority to be responsible for determining equivalency, and require generators of biosolids to formally seek an equivalency certification of their process to further reduce pathogens (PFRP) from the permitting authority. To be equivalent, a treatment process must be able to consistently reduce pathogens to levels comparable to the other PFRP processes listed in part 503, Appendix B.

The granting of a site-specific equivalency designation by the Regional permitting authority--based on a thorough review of the adequacy of the process trains to consistently reduce pathogens in biosolids as indicated by the pathogen data, and in consultation with the Pathogen equivalency Committee (PEC)--certifies the biosolids generated by using a PFRP equivalent process is Class A with respect to pathogens. The pathogen standards are specified in section 503.32(a)(7)(i). However, the granting of a site-specific equivalency is limited to the set of process and operating conditions in use at the Stickney and Calumet waste water treatment plants at the time of the application for equivalency designation (Appendix B of the November 30, 2001, Letter Request), and as described by MWRDGC in its application for equivalency submitted to the PEC. The PEC is an US Environmental Protection Agency resource to provide technical assistance and recommendations to Regional permitting authorities regarding pathogen reduction equivalency in implementing the part 503 standards for use and disposal of biosolids.

We are familiar with the MWRDGC's request for equivalency because our biosolids team members participated in numerous phone conversations and meetings with the PEC and Dr. Prakasam Tata of your staff, and both were extremely helpful in explaining and clarifying various issues related to the subject.

Our review of the MWRDGC's biosolids data submitted for 1994 to 2001 indicates Class A biosolids were produced at the Stickney and Calumet plants as they operated their respective low-and high-solids sludge processing trains (SPTs) according to codified protocols delineated in Attachment B of Mr. Lanyon's letter request, dated November 30, 2001. The part 503 rules for PFRP equivalency require that enteric viruses and viable helminth ova are reduced to below detection level. The pathogen data obtained from actual measurements and the statistical treatment of that data by MWRDGC indicated reductions of greater than two logs. We appreciate the MWRDGC's effort in analyzing 1,400 discreet samples of biosolids for pathogens, and the professionalism and patience displayed by Dr. Prakasam Tata of your staff in responding to our queries pertaining to this matter.

In consideration of the quality of data provided for our review, the consistent achievement of a Class A product, we are pleased to grant a conditional site-specific certification of equivalency to the MWRDGC's SPTs at Stickney and Calumet waste water treatment plants for a period of two years effective August 1, 2002 to July 30, 2004, provided the following conditions are met.

1) The Stickney and Calumet plants must operate at all times according to the codified process and operating protocols referred to in the letter request dated November 30, 2001.

2) Monitor biosolids (treated sludge) at Stickney and Calumet plants once per month for the first year and subsequently, once every other month for enteric viruses and helminth ova, and certify the MWRDGC is in compliance with Class A standards and report the results semi-annually to the attention of Mr. Valdis Aistars, Mail Drop WC-15J, 77 West Jackson, Chicago, Illinois 60604.

We appreciate MWRDGC's ongoing efforts to improve the quality of its biosolids. If you have any further questions about this matter, please contact Ash Sajjad of my staff at 312-886-6112.

Sincerely yours,

Robert D. Harvey
FOR

Jo Lynn Traub
Director, Water Division

cc: Dick Lanyon, MWRDGC
Dr. Prakasam Tata, MWRDGC ✓
Dr. James Smith Jr., ORD, Cincinnati

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 20 2010

REPLY TO THE ATTENTION OF: WN-16J

Mr. Louis Kollias
Director of Monitoring and Research
Metropolitan Water Reclamation
District of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611-3154

Re: May 17 2010, Request for Renewal of Site-specific Equivalency Determination for the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) Biosolids Processing Trains at the Stickney and Calumet Wastewater Treatment Plants.

Dear Mr. Kollias:

We have received the above-referenced request on May 20, 2010, along with microbiological analyses of biosolids generated by MWRDGC between August 2002 and December 2009. We appreciate your interest in seeking renewal of MWRDGC's equivalency certification. You have also requested the sampling frequency for enteric viruses and helminth ova be reduced if your equivalency certification is renewed. The following discussion highlights the regulatory requirements of establishing equivalency, memorializes past Agency decisions, and provides Region 5's decision on your requests.

Biosolids are a product of wastewater treatment and are suitable for beneficial reuse in agriculture and other applications, subject to conformance with the Federal biosolids rules at 40 Code of Federal Regulations Part 503 (503 Rules) addressing disease-causing organisms (pathogens) in biosolids. The 503 Rules establish requirements for classifying biosolids as either a Class A or Class B product with respect to pathogens. Class A requirements are met by treating the sewage sludge to reduce pathogens below detection levels, while the Class B requirements rely on a combination of treatment and site restrictions to reduce pathogens and potential exposure to pathogens. The 503 Rules provide a series of options for meeting the specific requirements for the two classes of biosolids.

One of the Class A options is to treat the sewage sludge by a process equivalent to a process listed in the 503 Rules, Appendix B. To be equivalent, a sewage sludge treatment process must be able to consistently reduce pathogens to levels comparable with the processes listed in Appendix B. Under the 503 Rules, the permitting authority

(in this case, EPA Region 5) is responsible for determining equivalency. MWRDGC's sewage sludge processing trains differ from those listed in Appendix B. In March 1998, MWRDGC submitted an equivalency application to EPA's Pathogen Equivalency Committee (PEC) and the Region for approval. The Region and the PEC reviewed MWRDGC's initial request and granted a site-specific and conditional equivalency in June 2002, for a period of 2 years. Subsequently, the Region granted three 2-year extensions, in effect until July 31, 2010.

We have reviewed your most recent renewal request and request for sampling frequency reduction. Based on the microbiological data provided to us, I am approving your equivalency renewal request for a period of two years, until August 1, 2012. This approval is subject to all conditions that were included in the initial approval and all subsequent extensions except as it relates to sampling frequency. With this approval, the sampling frequency for enteric viruses and helminth ova is reduced to six times per year.

If you have any further questions about this matter, please contact Mr. John Colletti of my staff, at (312) 886-6106.

Sincerely,

for Tinka G. Hyde
Director, Water Division