MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 15-9

ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2014

FEBRUARY 2015

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street Chicago, Illinois 60611-3154 f: 312.751.5194 312.751.5190

BOARD OF COMMISSIONERS
Mariyana T. Spyropoulos
President
Barbara J. McGowan
Vice President
Frank Avila
Chairman of Finance
Michael A. Alvarez
Timothy Bradford
Cynthia M. Santos
Debra Shore
Kari K. Steele
Patrick D. Thompson

THOMAS C. GRANATO, Ph.D., BCES
Director of Monitoring and Research

thomas.granato@mwrd.org

February 18, 2015

USEPA, Region 7
Attention: Biosolids Center
WWPD/WENF
11201 Renner Boulevard
Lenexa, Kansas 66219

Dear Sir or Madam:

Subject: 2014 Reporting Requirements Under the United States Environmental Protection Agency Code of Federal Regulations Title 40 Part 503

The Metropolitan Water Reclamation District of Greater Chicago (District) herein submits the 2014 records required under the United States Environmental Protection Agency Code of Federal Regulations Title 40 Part 503 (Part 503) at Section 503.18 entitled "Annual Biosolids Management Report for 2014."

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 503.32(a)(5), 503.32(a)(6), 503.32(a)(8), 503.32(b)(2), 503.32(b)(3), 503.32(b)(5), 503.33(b)(1), 503.33(b)(9), 503.33(b)(10), 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., BCES
Director
Monitoring and Research

TCG:PL:cm
Attachment
cc w/att.: V. Aistars (USEPA)/T. Bramscher (USEPA)
A. Keller (IEPA)/B. Yurdin (IEPA)
M. Garretson (IEPA)/J. Patel (IEPA)

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, IL 60611-2803 (312) 751-5600

ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2014

By

Pauline Lindo
Associate Environmental Soil Scientist

Lakhwinder Hundal
Supervising Environmental Soil Scientist

Minaxi Patel
Assistant Environmental Chemist

Albert Cox
Environmental Monitoring and Research Manager

Heng Zhang
Assistant Director of Monitoring and Research
Environmental Monitoring and Research Division

Monitoring and Research Department
Thomas C. Granato, Director

February 2015

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

ACKNOWLEDGEMENT

The assistance of the following individuals is greatly appreciated: Mr. Daniel Collins, Supervising Civil Engineer, Ms. Elizabeth Tijerina, Senior Civil Engineer, and Mr. Richard Kuzminski, Associate Civil Engineer, Lawndale Avenue Solids Management Area; Ms. Jacquelyn Caston, Engineering Technician V, and Mr. Jamaal Kendrick, Engineering Technician V, Calumet Solids Management Areas; Ms. Katarzyna Lai, Principal Engineer, John E. Egan (Egan) Water Reclamation Plant (WRP); Mr. 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, 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.

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 (District).

FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for 2014 for Biosolids Management by the District, as specified in the United States Environmental Protection Agency's (USEPA's) Code of Federal Regulations (CFR) Title 40 Part 503 (Part 503).

INTRODUCTION

This District's report presents the 2014 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 requirements. These programs are:

1. Fulton County Dedicated Biosolids Application to Land (IEPA Permit No. 2013-SC-58146).

2. Hanover Park Fischer Farm Biosolids Application to Land (IEPA Permit No. 2012-SC-2255).

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

4. Farmland Application Program (Biosolids Application to Farmland from the Calumet, Stickney, and John E. Egan (Egan) WRPs under IEPA Permit No. 2014-SC-58425).

In the following sections, we have prepared a short description of the sludge processing and biosolids management operations at the District's seven WRPs. The Lemont, James C. Kirie (Kirie), and Terrence J. O'Brien (O'Brien) WRPs do not produce a final biosolids product, while the Calumet, Stickney, Egan, and Hanover Park WRPs produced final biosolids products that were beneficially used in 2014. In addition, we discuss the utilization of the biosolids, outline the data reporting requirements under Part 503, and present the required monitoring data in summary tables. The 2014 production and final disposal 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 for a previous year, or biosolids produced in a given year may be stored or aged for distribution at a later time.

TABLE 1: PRODUCTION AND UTILIZATION OF SLUDGE AND BIOSOLIDS DURING 2014

Production and Utilization	Water Reclamation Plants						
	Stickney[1]	Calumet[1]	O'Brien	Egan[1,2]	Hanover Park[1]	Kirie	Lemont
	Dry Tons						
Production[3]	126,159	24,588	34,272	5,454	816	4,797	304
Land Application	29,659	11,918	-	1,950	998	-	-
Agricultural land	24,728[4]	8,005	-	1,950	-	-	-
Urban land	4,931[5]	3,913	-	-	-	-	-
Landfill (Total)	454	616	-	-	-	-	-
Co-disposal	454	616	-	-	-	-	-
Daily cover	-	-	-	-	-	-	-
Final cover	-	-	-	-	-	-	-
To Other WRPs[6]	-	-	34,272	3,718[7]	-	4,797	304
Temporary Storage	-	-	-	-	-	-	-
Other[8]	36,672	-	-	-	-	-	-

[1]Differences between biosolids production and total use or disposal in 2014 were due to a net withdrawal or storage in lagoons or drying areas, and processing of biosolids imported from other WRPs.
[2]Difference between amount produced and amount shipped was due to sampling anomalies.
[3]Stickney, Calumet, Egan, and Hanover Park WRPs produce biosolids while O'Brien, Kirie, and Lemont produce undigested sludge. Figures represent total solids generated at the end of each plant's processing train plus those imported from other plants for further processing.
[4]Includes 22 DT used on Fulton County research plots.
[5]Includes 4,248 DT of air-dried exceptional quality biosolids applied to urban land plus 683 DT of air-dried Class B biosolids used on District property.
[6]For further processing.
[7]Includes 2,142 DT of centrate and biosolids pumped to the O'Brien WRP and 3,526 DT of centrifuge cake sent to CALSMA and HASMA for further processing or land application.
[8]Sent to Stickney WRP pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, Lyons, Illinois 60534 (Contract No. 98-RFP-10).

LEMONT WATER RECLAMATION PLANT

The Lemont WRP, located in Lemont, Illinois, has a design average flow of 2.3 million gallons per day (MGD). The annual average treated flow in 2014 was 2.55 MGD. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatments. In 2014, the Lemont WRP produced 304 dry tons (DT) of solids (Table 1), which were gravity concentrated and transported to the Stickney WRP for further processing.

No final biosolids product is generated at this WRP.

JAMES C. KIRIE WATER RECLAMATION PLANT

The Kirie WRP, located in Des Plaines, Illinois, has a design average flow of 52 MGD. The annual average treated flow in 2014 was 31.1 MGD. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatments. In 2014, the Kirie WRP produced 4,797 DT of solids (Table 1), which were sent via force main to the Egan WRP for further processing.

No final biosolids product is generated at this WRP.

TERRENCE J. O'BRIEN WATER RECLAMATION PLANT

The O'Brien WRP, located in Skokie, Illinois, has a design average flow of 333 MGD. The annual average treated flow in 2014 was 250 MGD. Wastewater reclamation processes at the O'Brien WRP include primary (primary settling) and secondary (activated sludge process) treatments. In 2014, the O'Brien WRP produced 34,272 DT 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 O'Brien WRP and biosolids conveyed from the Egan WRP to the O'Brien WRP via sewer, which is described in detail in the next section.

No final biosolids product is generated at this WRP.

JOHN E. EGAN WATER RECLAMATION PLANT

Treatment Plant and Biosolids Process Train Description

The Egan WRP, located in Schaumburg, Illinois, has a design average flow of 30 MGD. The annual average treated flow in 2014 was 26.5 MGD. Wastewater reclamation processes include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatments. All solids managed at the Egan WRP are anaerobically digested. During some winters or when the centrifuges are not operating, liquid digested biosolids are sent via sewers to the O'Brien WRP. Centrifuge centrate is also sent via sewers to the O'Brien WRP.

In 2014, the total biosolids production at the Egan WRP was 5,454 DT (Table 1). This total includes biosolids generated by the processing of sludge originating at the Egan WRP as well as solids conveyed from the Kirie WRP for further processing. The total amount of 5,668 DT of biosolids (3,526 DT shipped out during the year to the Harlem Avenue (HASMA) and Calumet (CALSMA) Solids Management Areas, plus 2,142 DT pumped to the O'Brien WRP) was greater than the measured total production (5,454 DT) due to digester draw and centrifuge feed sampling anomalies.

Summary of Biosolids Use and Disposal at Landfills

In 2014, no biosolids generated at the Egan WRP were sent to landfills for co-disposal.

Biosolids Conveyed to Other Water Reclamation Plants for Further Processing

In 2014, a total of 2,142 DT of solids was pumped as biosolids (1,893 DT) and centrifuge centrate (249 DT) to the O'Brien WRP. Also, a total of 3,526 DT of centrifuge cake generated at the Egan WRP was shipped to the HASMA and CALSMA sites for farmland application as well as for co-composting with woodchips. Of this amount, 1,576 DT was used for the composting project and the remainder was applied to farmland.

Land Application of Class B Centrifuge Cake Biosolids

In 2014, a total of 1,950 DT of centrifuge cake biosolids that were shipped to HASMA and CALSMA were applied to farmland through contracts with Synagro Midwest, Inc. (Contract No. 14-692-12) and Stewart Environmental, Inc. (Contract Nos. 11-690-11 and 14-690-11) to agricultural land under IEPA Permit No. 2014-SC-58425. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

All Egan WRP centrifuge cake biosolids land applied in 2014 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 2), the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 3),

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 2014

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---------- mg/dry kg ----------										
03/08/14	55,384	10,796	<5	2	628	1.2	7	88	25	<5	683
04/10/14	48,573	9,440	<5	2	684	1.2	10	64	33	<5	786
06/07/14	32,186	8,161	<5	1	613	0.80	5	60	36	<5	639
07/12/14	18,106	5,045	<5	2	612	0.59	4	54	34	<5	642
08/29/14	39,532	9,501	<5	2	641	0.67	5	58	38	<5	682
10/25/14	53,733	9,176	<5	2	794	1.3	10	70	37	<5	934
11/17/14	48,016	5,383	<5	2	657	0.96	7	58	36	<5	698
Minimum	18,106	5,045	<5	1	612	0.59	4	54	25	<5	639
Mean[1]	42,219	8,215	<5	2	661	1.0	7	65	34	<5	723
Maximum	55,384	10,796	<5	2	794	1.3	10	88	38	<5	934
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 detection limit was considered the detection limit.
[2]No limit.

TABLE 3: DIGESTER[1] TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2014

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3)[2]
	------- ^{o}F ------	------- days ----		------- days -------
January	96.9	29.6	yes	15.0
February	97.4	27.7	yes	15.0
March	98.2	27.7	yes	15.0
April	97.5	29.4	yes	15.0
May	98.7	30.9	yes	15.0
June	98.0	31.4	yes	15.0
July	97.9	39.4	yes	15.0
August	97.6	38.0	yes	15.0
September	97.6	41.3	yes	15.0
October	97.1	39.2	yes	15.0
November	97.1	40.3	yes	15.0
December	97.2	31.2	yes	15.0

[1]Temperatures and detention times 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.

and the vector attraction reduction requirements of Section 503.33(b)(10) (incorporation in soil within six hours after application). Table 2 also shows the biosolids nitrogen concentrations used to compute the agronomic rates for farmland application.

The Egan WRP had no additional requirement for reporting under Part 503 in 2014.

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. The annual average treated flow in 2014 was 10.1 MGD. Wastewater reclamation processes at this WRP include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatments. All solids produced at the Hanover Park WRP are anaerobically digested and stored in lagoons and later land applied by injection at the on-site Fischer Farm.

In 2014, the total biosolids production at this WRP was 816 DT (Table 1).

Land Application of Class B Liquid Biosolids

In 2014, the Hanover Park WRP land applied a total of 998 DT of biosolids at the on-site Fischer Farm under IEPA Permit No. 2012-SC-2255. The quantity of land-applied biosolids (998 DT) was higher than the quantity produced (816 DT) in 2014, due to 182 DT used from lagoon storage. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is four times per year.

All Hanover Park WRP lagoon biosolids land applied in 2014 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 4), the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 5), and the vector attraction reduction requirements of Section 503.33(b)(1) (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 AT THE FISCHER FARM SITE IN 2014

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
04/12/14	407,115	372,385	38	<1	118	<0.20	8	18	15	34	199
04/19/14	431,714	388,214	36	<1	136	<0.20	7	19	14	27	220
05/24/14	94,391	44,232	<5	1	866	1.7	13	31	24	<5	815
05/31/14	86,038	25,230	<5	1	884	1.4	13	35	24	<5	830
06/07/14	86,225	36,456	<5	1	1,025	1.6	15	42	28	<5	906
Minimum	86,038	25,230	<5	<1	118	<0.20	7	18	14	<5	199
Mean[2]	221,097	173,303	18	<1	606	1.0	11	29	21	15	594
Maximum	431,714	388,214	38	1	1,025	1.7	15	42	28	34	906
503 Limit	NL[3]	NL	41	39	1,500	17	75	420	300	100	2,800

[1]Biosolids applied as supernatant on 4/11 and 4/19/14; liquid biosolids applied on 5/23 through 6/6/14.
[2]In computing each mean, any value less than the reporting limit was considered the reporting limit.
[3]No limit.

TABLE 5: DIGESTER TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED AT THE FISCHER FARM SITE IN 2014

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3)[1]
	----- ^{o}F -----	----- days -----		----- days -----
January	95.2	26.0	yes	15.0
February	95.2	27.1	yes	15.0
March	94.9	26.6	yes	15.2
April	95.0	23.8	yes	15.0
May	95.0	17.6	yes	15.0
June	95.0	27.6	yes	15.0
July	95.0	24.0	yes	15.0
August	95.0	26.7	yes	15.0
September	95.0	32.0	yes	15.0
October	95.0	25.0	yes	15.0
November	94.9	28.8	yes	15.2
December	95.0	27.1	yes	15.0

[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 AT THE FISCHER FARM SITE IN 2014

Month	Digester Feed	Digester Draw	Lagoon Biosolids[1]	Volatile Solids Reduction[2]
	---------- % Total Volatile Solids ----------			----- % -----
April	85.5	73.6	52.0	81.6
May	83.5	72.8	70.1	53.7
June	83.1	70.8	66.8	59.1

[1]Biosolids applied as supernatant 4/11 and 4/18/2014; liquid biosolids applied 5/23 through 6/6/2014.
[2]Volatile solids reduction computed using total volatile solids for digester feed and lagoon biosolids.

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. The annual average treated flow in 2014 was 278 MGD. Wastewater reclamation processes at this WRP include primary settling and secondary activated sludge processes. All solids produced at the Calumet WRP are anaerobically digested. Calumet WRP biosolids are then:

1. Placed in 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 Program.

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

2. Placed in lagoons for dewatering, transported to paved cells for air-drying, and then applied to farmland as semi-dried Class B biosolids by a private contractor or used as daily landfill cover.

Biosolids that are unsuitable for beneficial reuse are co-disposed in local municipal solid waste landfills.

In 2014, a total of 24,588 DT of biosolids was produced at the Calumet WRP (Table 1). The quantity of biosolids used and disposed (12,534 DT) was less than the total 2014 production for the Calumet WRP. Hence, a total of 12,054 DT was stored in lagoons or on drying cells for further processing and/or later use.

Summary of Biosolids Use and Disposal at Landfills

No biosolids generated in 2014 at the Calumet WRP were used as landfill daily or final cover. However, 616 DT were co-disposed with municipal solid wastes in Newton County landfill, Brook, Indiana.

Land Application of Class B Biosolids

In 2014, the Calumet WRP land applied 8,005 DT of semi-dried Class B biosolids to farmland under IEPA Permit No. 2014-SC-58425 through contracts with Synagro Midwest, Inc. (Contract No. 14-690-12) and Stewart Environmental, Inc. (Contract Nos. 11-690-11 and 14-690-11). The total includes the centrifuge cake biosolids transported from the Egan WRP to the CALSMA site prior to land application. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

All Calumet WRP semi-dried biosolids land applied in 2014 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 7), the vector attraction reduction

requirements of Section 503.33(b)(10) (by incorporation in soil within six hours after application), and the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 8). Table 7 also shows the biosolids nitrogen concentrations used to compute the agronomic rates for farmland application.

TABLE 7: CONCENTRATIONS OF NITROGEN AND METALS IN SEMI-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2014

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
04/02/14	28,300	2,749	<5	2	397	0.78	11	24	73	<5	1,278
04/10/14	20,774	1,575	6	2	438	0.84	12	30	91	<5	1,177
04/10/14	21,450	1,763	6	2	465	1.1	9	30	91	<5	1,224
06/24/14	27,839	3,752	7	2	410	0.44	12	31	85	<5	1,231
07/03/14	28,300	2,749	7	2	382	0.74	12	27	75	<5	1,238
07/03/14	34,211	1,740	6	2	413	0.98	13	28	79	<5	1,359
07/24/14	40,063	18,201	7	2	379	0.84	12	26	74	<5	1,110
07/31/14	25,791	4,471	8	2	304	0.43	9	22	63	<5	949
08/08/14	26,032	557	7	2	451	1.0	8	28	89	<5	1,430
08/14/14	27,787	2,181	7	2	402	0.92	10	27	76	<5	1,271
09/12/14	27,978	2,444	6	2	441	1.0	12	28	80	<5	1,353
09/18/14	16,149	734	6	3	356	0.92	5	27	115	<5	1,023
09/19/14	36,217	2,549	6	2	406	1.2	12	25	74	<5	1,205
09/20/14	19,377	161	8	2	466	1.0	12	29	89	<5	1,184
09/30/14	25,159	13,169	<5	1	615	1.1	4	58	31	<5	608
09/30/14	22,156	1,949	7	2	442	0.78	11	29	86	<5	1,305
Minimum	16,149	161	<5	1	304	0.43	4	22	31	<5	608
Mean[1]	26,724	3,797	6	2	423	0.87	10	29	79	<5	1,184
Maximum	40,063	18,201	8	3	615	1.2	13	58	115	<5	1,430
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]No Limit.

TABLE 8: DIGESTER[1] TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2014

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3)[2]
	---- °F ----	----- days -----		----- days -----
January	96.4	29.1	yes	15.0
February	96.8	35.9	yes	15.0
March	96.3	39.3	yes	15.0
April	96.7	31.6	yes	15.0
May	96.8	34.4	yes	15.0
June	97.7	39.9	yes	15.0
July	97.9	58.9	yes	15.0
August	97.8	54.5	yes	15.0
September	97.7	61.6	yes	15.0
October	97.7	55.7	yes	15.0
November	96.9	55.0	yes	15.0
December	97.0	57.6	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.

Land Application of Exceptional Quality, Air-Dried Biosolids

In 2014, the Calumet WRP land-applied a total of 3,913 DT 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 and recreation fields, landscaping, and for the construction of new recreation fields. The sites and method of utilization of these biosolids under the Controlled Solids Distribution Program are listed in Table 9. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

All Calumet WRP air-dried, EQ biosolids land applied in 2014 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 10), the vector attraction reduction requirements of Section 503.33(b)(1) (Table 10), and the Class A pathogen limits of Section 503.32(a)(5) (Tables 11 and 12). Enteric viruses and helminth ova were analyzed before biosolids were dried (Table 11). The fecal coliforms were analyzed after biosolids were dried and prior to utilization on urban land (Table 12). Management practices complied with Section 503.14 as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I).

Site-Specific Process to Further Reduce Pathogens.

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 Process to Further Reduce Pathogens (PFRP) according to Section 503.32(a)(8). The PFRP equivalency commenced on August 1, 2002 (Appendix II). The current renewable certification of the PFRP designation is valid from August 1, 2012, through July 31, 2017, and requires analysis of six samples for helminth ova and enteric viruses annually during this period**.**

All of the Calumet WRP EQ biosolids generated or utilized in 2014 were not PFRP-compliant with respect to the minimum required duration of lagoon aging (18 months) due to operational constraints. Therefore, no PFRP-compliant biosolids were available for sampling and analysis. All biosolids utilized as EQ material in 2014 were tested for pathogen compliance according to Section 503.32(a)(5).

TABLE 9: SITES THAT UTILIZED CALUMET WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2014

User	Use/Location
Calumet Park District, Calumet City	Athletic fields - Memorial Park
Chicago Park District, Chicago	Athletic fields - 12 Parks[1]
Elmhurst Lacrosse, Elmhurst	Athletic fields - Playgrounds
Evanston High School, Evanston	Athletic fields - Baseball Field
Evanston Wilmette Golf Course, Evanston	Golf course
Frankfort Square Park District, Frankfort	Athletic fields - Baseball Field
Glenwoodie Golf Course, Glenwood	Golf course
Keith Construction, Lemont	Landscaping
Mokena Park District, Mokena	Athletic fields - 6 Parks[2]
Oak Forest Park District, Oak Forest	Athletic fields - 9 Parks[3]
Oak Lawn Park District, Oak Lawn	Athletic fields - Oakview Park
Reavis High School, Burbank	Athletic fields - Baseball Field
Stony Creek Golf Course, Oak Lawn	Golf course
Thornton Fractional South High School, Calumet City	Athletic fields - Baseball Field
Tinley Park Park District, Tinley Park	Athletic fields - Dog Parks
Village of Hinsdale, Hinsdale	Athletic fields - 3 Parks[4]

[1]Douglas, Dunbar, Eckhart, Garfield, Harrison, Magggie Daley, Marquette, McKinley, Piotrowski, Smith, Union, and Washington.
[2]Fox Ridge, Grasmere, Green Meadow, Main, McGovney, and Oak Recreation and Fitness Center.
[3]Arbor, Convent, Don Burns, Fieldcrest, Friendly Oaks, Gene Leonard, Hecht, Jesk, and Tower.
[4]Brook, Burns Field, and Veeck.

TABLE 10: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2014

Sample Date	TKN	NH_3-N	TVS[1]	TVS Reduction[2]	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	------- mg/dry kg ------		---------- % ----------		---------- mg/dry kg ----------								
05/29/14	29,962	2,540	48.5	56.9	7	2	425	1.9	11	27	77	<5	1,366
06/02/14	35,543	2,125	47.8	58.1	6	2	456	1.1	13	30	83	<5	1,466
06/09/14	29,822	4,443	47.4	58.8	6	2	445	0.79	13	29	83	<5	1,450
06/16/14	28,286	1,132	47.7	58.3	6	2	442	0.95	10	28	80	<5	1,396
06/26/14	25,201	648	46.2	60.8	7	2	433	0.96	8	27	82	<5	1,369
06/27/14	17,285	NRR[3]	40.9	68.3	7	2	421	NRR[3]	9	28	91	<5	1,166
07/11/14	18,939	NRR[3]	42.0	55.0	8	2	457	0.62	10	31	100	<5	1,350
07/17/14	20,670	NRR[3]	42.0	55.0	7	2	419	0.91	9	29	94	<5	1,244
08/06/14	22,782	718	44.1	51.1	6	2	431	0.87	11	28	81	<5	1,439
08/15/14	22,153	266	45.4	47.8	8	2	450	0.81	10	29	85	<5	1,513
08/28/14	17,175	420	42.0	54.5	7	2	338	0.61	6	24	83	<5	1,001
09/09/14	20,462	271	45.0	48.6	8	2	428	<0.25	10	28	80	<5	1,336
09/09/14	18,927	NRR[3]	45.9	61.1	7	2	347	<0.25	7	25	87	<5	1,063
09/17/14	21,642	439	46.4	70.0	8	2	429	0.78	11	27	80	<5	1,305
09/23/14	14,159	136	49.2	40.0	6	2	315	0.73	6	22	79	<5	931

TABLE 10 (Continued): CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2014

Sample Date	TKN	NH_3-N	TVS[1]	TVS Reduction[2]	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	------- mg/dry kg ------		---------- % ----------		---------- mg/dry kg ----------								
Minimum	14,159	136	40.9	40.0	6	2	315	<0.25	6	22	77	<5	931
Mean[4]	22,867	1,194	45.4	56.3	7	2	414	0.83	10	27	84	<5	1,293
Maximum	35,543	4,443	49.2	70.0	8	2	457	1.9	13	31	100	<5	1,513
503 Limit	NL[5]	NL	NL	38.0	41	39	1,500	17	75	420	300	100	2,800

[1]Total volatile solids.
[2]Total volatile solids for digester feed during 1/1/13 – 11/15/13 were used to calculate TVS reductions.
[3]No reportable result.
[4]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[5]No limit.

TABLE 11: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS[1] GENERATED BY NON-COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS [2]-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE CALUMET WATER RECLAMATION PLANT DURING AUGUST 2013 THROUGH JULY 2014

Sample Date[3]	Total Solids	Fecal Coliform	Sample Date[4]	Helminth Ova	Enteric Virus
	--- % ---	----- MPN[5]/g -----		--- No./4g ---	--- PFU[6]/4g --
09/25/13	76.6	370	08/14/13	<0.0800	<0.8000
07/09/14	62.9	600	09/25/13	<0.0800	<0.8000
07/09/14	62.9	600	10/30/13	<0.0800	<0.8000
05/08/14	71.6	40	03/04/14	<0.0800	<0.8000
04/23/14	60.5	470	04/23/14	<0.0800	<0.8000
06/03/14	66.0	88	05/14/14	<0.0133[7]	<0.8000

[1]All biosolids satisfied Part 503 Class A requirements.
[2]Process to further reduce pathogens.
[3]Sample dates apply to FC samples only.
[4]Non-PFRP biosolids sampled before the material was dried and subsequently used in 2014.
[5]Most probable number.
[6]Plaque-forming unit.
[7]Sample weight = 300 g; for all others, sample weight = 50 g.

TABLE 12: MICROBIOLOGICAL ANALYSIS OF CLASS A BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND SAMPLED PRIOR TO UTILIZATION ON URBAN LAND IN 2014

Sample Date	Lagoon	Total Solids	Fecal Coliform
		-------- % -------	--------- MPN[1]/g --------
04/23/14	2	59.6	64
04/23/14	2	60.5	470
05/08/14	1	71.6	40
05/22/14	1	68.3	56
05/22/14	1	59.6	250
05/22/14	2	59.1	76
05/29/14	1	64.3	91
06/03/14	2	66.0	88
06/04/14	19	56.1	510
06/04/14	1	71.3	53
06/05/14	2	70.6	710
06/05/14	1	58.8	490
06/05/14	2	68.5	420
06/10/14	1	72.1	700
06/17/14	19	78.1	490
06/17/14	19	75.9	890
07/08/14	19	57.7	87
07/08/14	2	59.3	170
07/08/14	2	62.4	46
07/09/14	14	62.9	600
07/15/14	1	57.5	100
07/17/14	19	50.1	76
07/17/14	1	53.3	71
07/17/14	1	55.3	91
07/17/14	1	61.8	810
07/30/14	1	64.5	150
09/03/14	1	64.3	450
09/10/14	6	48.7	100

[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. The annual average treated flow in 2014 was 769 MGD. Wastewater reclamation processes include primary (Imhoff and primary settling) and secondary (activated sludge process) treatments. All solids produced at this WRP and coming from the O'Brien and Lemont WRPs are anaerobically digested. Stickney WRP biosolids are then:

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

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

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

2. Dewatered by centrifuging to approximately 25 percent solids content and then applied to farmland as Class B biosolids by a private contractor.

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

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

5. Dewatered by centrifuging to approximately 25 percent solids content, placed in 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 permitted Controlled Solids Distribution Program.

    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.

Biosolids that are unsuitable for beneficial reuse are co-disposed in local municipal solid waste landfills.

In 2014, the Stickney WRP produced a total of 126,159 DT of biosolids (Table 1). This total included biosolids generated by processing sludge originating at the Stickney WRP as well as

the sludge imported from the O'Brien and Lemont WRPs for further processing. The quantity of biosolids used and disposed (66,785 DT) was lower than the total 2014 production for the Stickney WRP. Hence, 59,374 DT were stored in lagoons and/or on drying cells for later use.

Summary of Biosolids Use and Disposal at Landfills

In 2014, a total of 454 DT of biosolids generated at the Stickney WRP was co-disposed with municipal solid wastes in Laraway Landfill, Joliet, Illinois (Heartland Recycling, LLC). No biosolids were used as landfill final or daily cover during the year.

Land Application of Class B Biosolids to Farmland

In 2014, a total of 24,706 DT of centrifuge cake and semi-dried biosolids generated at the Stickney WRP was applied to agricultural land under IEPA Permit No. 2014-SC-58425 and 22 DT was applied to research plots at the Fulton County site. The total includes the centrifuge cake biosolids transported from the Egan WRP to the HASMA site prior to land application. Application to agricultural land was done through contracts with Synagro Midwest, Inc. (Contract No. 14-692-12) and Stewart Environmental, Inc. (Contract Nos. 11-690-11 and 14-690-11). In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is 12 times per year.

All Stickney WRP centrifuge cake and semi-dried biosolids land applied in 2014 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 13), the vector attraction reduction requirements of Section 503.33(b)(10) (by incorporation in soil within six hours after application), and the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 14). Table 13 also shows the biosolids nitrogen concentrations used to compute the agronomic rates for farmland application.

Land Application of Biosolids to Urban Land

In 2014, the Stickney WRP applied a total of 4,248 DT of air-dried, EQ biosolids for the construction and maintenance of golf courses, recreation fields, and parks and 683 DT of air-dried Class B biosolids for construction and landscaping at the District property through the District's Controlled Solids Distribution Program under IEPA Permit No. 2010-SC-0200. The sites and method of utilization of these biosolids under the program are listed in Table 15. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

All Stickney biosolids applied to urban land in 2014 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 16) and the vector attraction reduction requirements of Section 503.33(b)(1) (Table 16). The 4,248 DT of air-dried, EQ biosolids met the Class A pathogen limits of Section 503.32(a)(5) (Tables 17 and 18). The 683 DT of air-dried Class B biosolids met the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 14). These Class B biosolids were used within the District's

property, which is a low public access site guarded by security, and therefore met public access requirements of Section 503.32(b). Management practices complied with Section 503.14, as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I).

TABLE 13: CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2014

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
03/18/14	27,744	3,866	5	3	452	0.83	12	46	112	<5	871
03/18/14	33,374	6,180	5	11	466	0.72	13	50	123	<5	875
03/18/14	31,005	3,637	7	5	461	0.66	11	43	126	<5	881
03/24/14	35,158	5,767	8	4	471	1.11	11	46	120	<5	860
03/24/14	27,844	1,707	7	6	500	0.89	10	46	130	<5	916
04/10/14	24,821	3,374	6	3	450	1.15	11	45	110	<5	851
05/07/14	14,486	1,698	9	5	530	1.29	13	55	158	<5	1,085
05/07/14	14,869	1,426	5	3	438	0.86	12	44	113	<5	869
05/08/14	27,000	4,852	7	3	453	1.00	12	46	117	<5	895
05/08/14	35,889	6,913	6	3	453	0.88	14	47	112	<5	858
05/22/14	29,669	4,826	7	3	473	0.98	12	47	123	<5	934
05/22/14	29,621	5,590	7	4	456	1.29	13	46	119	<5	909
05/22/14	32,309	5,397	9	3	449	1.10	12	46	118	<5	906
05/23/14	30,566	5,549	7	3	435	1.10	13	44	112	<5	853
05/24/14	25,409	5,663	6	5	478	1.26	11	45	132	<5	903
05/24/14	20,284	990	6	6	463	1.03	10	44	124	<5	871
05/28/14	28,344	5,732	5	4	456	0.98	16	48	117	<5	861
05/28-29/14	26,637	4,444	5	3	462	1.06	13	47	118	<5	914
05/29-30/14	29,801	5,159	<5	3	444	1.00	12	44	115	<5	879

TABLE 13 (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 2014

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
05/30-31/14	25,794	4,736	5	7	461	0.98	12	46	128	<5	886
06/2-7/14	39,153	8,032	<5	12	460	0.83	14	50	118	<5	878
06/3/14	28,853	4,366	5	3	459	0.98	17	49	112	<5	872
06/6/14	20,487	452	5	3	447	0.81	12	45	111	<5	871
06/9/14	26,350	3,939	5	3	471	0.65	12	48	119	<5	930
06/14/14	30,579	5,568	7	3	431	0.70	15	47	108	<5	813
06/14/14	31,469	4,601	6	3	437	0.73	17	48	106	<5	816
08/4/14	31,667	6,017	8	3	406	0.95	14	44	105	<5	740
08/4/14	32,891	5,194	8	3	421	0.82	15	46	106	<5	814
08/7/14	28,629	4,898	7	3	424	0.92	14	46	107	<5	777
08/9/14	26,193	4,720	8	3	429	0.33	14	46	110	<5	793
08/14/14	28,329	5,874	7	3	434	1.28	14	47	110	<5	802
08/16/14	29,506	6,460	7	3	411	<0.25	14	45	102	<5	754
08/19/14	47,515	8,895	7	5	400	0.74	10	39	100	<5	857
08/18/14	26,741	5,442	8	3	407	1.00	14	45	103	<5	756
08/18/14	23,426	5,494	8	3	420	1.15	8	46	121	<5	897
08/19/14	26,881	5,723	8	4	436	0.96	14	52	111	<5	816
08/26/14	19,649	2,248	<5	6	324	0.52	7	30	71	<5	576
08/26/14	35,221	5,418	8	12	445	0.90	11	45	113	<5	815
09/23-27/14	50,178	17,287	7	12	450	1.06	12	48	107	<5	839

TABLE 13 (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 2014

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
09/26/14	28,974	5,821	9	3	420	1.25	15	47	103	<5	790
09/26/14	35,012	4,793	7	3	442	0.38	13	49	107	<5	824
09/29-30/14	30,808	5,531	8	3	449	0.83	16	49	112	<5	822
09/29-30/14	46,771	17,755	7	12	450	0.76	12	47	106	<5	828
10/01-2/14	49,045	17,461	7	12	465	0.94	12	49	109	<5	856
10/01-2/14	28,050	5,441	9	3	423	0.93	14	47	108	<5	792
10/10/14	36,146	5,559	8	3	430	1.13	16	47	110	<5	797
10/10/14	34,374	4,977	6	8	467	1.09	13	46	127	<5	873
10/10/14	27,050	3,655	8	8	469	0.98	12	46	125	<5	876
10/20/14	29,509	4,657	9	3	423	1.18	16	46	109	<5	786
10/22/14	33,345	4,782	7	3	445	1.11	14	47	111	<5	813
10/23/14	23,599	3,767	7	8	443	1.05	12	44	120	<5	810
10/25/14	53,733	9,176	<5	2	794	1.31	10	70	37	<5	934
10/27/14	27,744	4,248	8	8	451	1.12	12	44	122	<5	845
10/28/14	27,582	4,126	8	4	449	1.22	16	58	115	<5	876
10/29-30/14	19,362	3,813	8	8	460	1.15	12	45	124	<5	858
10/29/14	23,102	3,167	6	9	473	1.27	12	50	131	<5	943
11/04/14	61,560	7,771	5	3	427	0.77	12	44	108	<5	841
11/08/14	40,173	8,410	6	3	432	1.33	12	42	106	<5	836
11/10/14	46,837	8,601	6	3	426	1.06	12	42	103	<5	839

TABLE 13 (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 2014

Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---------- mg/dry kg ----------										
11/13/14	56,322	7,876	6	3	435	0.68	12	43	108	<5	871
11/14/14	35,933	4,170	7	9	495	1.26	14	51	134	<5	945
11/17/14	37,582	3,364	7	8	473	1.33	13	48	130	<5	896
11/17-21/14	63,866	8,209		3	418	0.85	12	44	95	<5	807
12/01-06/14	55,452	18,656	8	12	473	<0.25	13	50	110	<5	862
12/18-19/14	50,612	16,108	7	11	461	1.06	13	48	108	<5	838
Minimum	14,486	452	<5	2	324	<0.25	7	30	37	<5	576
Mean[1]	32,875	6,000	7	5	452	0.95	13	47	113	<5	852
Maximum	63,866	18,656	9	12	794	1.3	17	70	158	<5	1,085
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 14: DIGESTER TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2014

Month	Average Temperature	Average Retention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3)[1]
	---- °F ----	--- days ---		--- days ---
January	96.9	23.6	yes	15.0
February	97.3	20.4	yes	15.0
March	96.4	17.1	yes	15.0
April	97.4	15.3	yes	15.0
May	97.8	28.3	yes	15.0
June	97.7	29.5	yes	15.0
July	97.5	26.4	yes	15.0
August	97.9	30.4	yes	15.0
September	97.9	22.8	yes	15.0
October	98.0	37.4	yes	15.0
November	97.0	24.9	yes	15.0
December	97.0	22.8	yes	15.0

[1]For anaerobic digestion at average temperature achieved.

TABLE 15: SITES THAT UTILIZED STICKNEY WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2014

User	Use/Location
Chicago Park District, Chicago	Athletic fields - Maggie Daley, Northerly, and Washington Parks
City of Northlake, Northlake	Athletic fields - Centerpoint Preserve
Coolidge Junior High School, Phoenix	Athletic fields - Baseball Field
Deerfield Park District, Deerfield	Athletic fields - Jewett Park
Fox Valley Park District, Aurora	Athletic fields - Stuart Park
Franklin Park Park District, Franklin Park	Athletic fields - Community Park
Glenwoodie Golf Course, Glenwood	Golf Course
Lake Street Supply, Chicago	Landscaping - Bloomingdale Trail
Maywood Park District, Maywood	Athletic fields - Bosco and Burton Parks
Moe Javedi Co., Indian Head Park	Landscaping
District Property	Landscaping - Meany Garden, Lane project
Naperville Park District, Naperville	Athletic fields - Frontier Park
North Shore Country Club, Glenview	Golf course
St. Charles Park District, St. Charles	Athletic fields - Breen Park, East Side Sports Complex
Tinley Park Park District, Tinley Park	Athletic fields - Memorial Park
Village of Glenwood, Glenwood	Athletic fields - Hickory Glen Park
Village of Lyons Park District, Lyons	Athletic fields - Veterans Park
Western Springs Park District, Western Springs	Athletic fields - Northeast, Spring Rock, and Tinder Trails Parks

TABLE 16: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2014

Sample Date	TKN	NH_3-N	TVS[1]	TVS Reduction[2]	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	------ mg/dry kg ------		---------- % ----------		----------mg/dry kg----------								
06/17/14	24,286	58	37.7	58.6	8	3	412	0.71	9	41	110	<5	833
06/18/14	24,200	1,196	39.7	54.9	7	3	461	1.1	12	46	118	<5	898
06/27/14	16,972	385	37.3	59.2	7	3	454	0.92	9	42	119	<5	867
07/02/14	22,635	879	37.9	58.3	8	3	452	0.99	10	44	120	<5	878
07/15/14	22,090	1,730	38.2	57.7	7	3	430	1.1	11	43	115	<5	837
07/21/14	20,638	99	38.7	56.7	8	3	435	1.2	10	42	113	<5	851
07/29/14	13,855	NRR[3]	37.1	59.7	9	3	446	1.2	9	44	114	<5	861
08/15/14	15,497	5,299	45.1	43.7	8	3	429	0.97	9	44	112	<5	848
08/19/14	18,094	NRR	32.4	67.2	8	3	457	1.1	9	46	120	<5	923
08/29/14	25,337	6,301	36.8	61.6	8	3	439	0.88	15	47	113	<5	822
09/03/14	17,649	NRR	33.4	65.7	8	3	462	0.82	11	47	120	<5	922
09/12/14	19,008	NRR	35.9	61.7	9	3	449	0.74	10	46	117	<5	916
09/18/14	19,824	NRR	35.2	62.9	7	3	467	1.2	10	45	115	<5	891
09/18-19/14	20,034	217	36.4	62.1	7	3	436	1.0	14	46	112	<5	793
09/22/14	15,363	63	34.8	63.4	9	4	488	1.1	11	50	127	<5	969
09/23/14	14,457	NRR	34.8	63.1	8	4	488	1.3	10	49	125	<5	966
09/24/14	25,144	3,348	35.9	64.7	7	4	453	1.2	13	48	119	<5	866
09/26/14	23,955	824	37.7	60.0	7	3	477	0.99	12	50	117	<5	876

TABLE 16 (Continued): CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2014

Sample Date	TKN	NH_3-N	TVS[1]	TVS Reduction[2]	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	------ mg/dry kg ------		---------- % ----------		----------mg/dry kg ----------								
09/30/14	24,320	4,888	37.4	60.5	10	3	439	0.77	13	46	114	<5	817
10/07/14	27,354	390	37.8	59.9	9	4	455	1.1	13	48	113	<5	850
10/10/14	31,270	1,418	39.1	57.6	7	3	477	1.0	13	50	108	<5	848
10/14/14	11,095	908	38.1	59.4	7	3	485	0.89	15	50	103	<5	821
10/20/14	22,870	697	36.0	62.9	8	3	463	1.4	14	48	112	<5	837
10/21/14	23,293	1,028	34.0	65.9	9	3	443	1.4	15	47	109	<5	805
10/27/14	22,846	885	38.4	57.3	9	3	441	1.2	14	46	110	<5	822
11/03/14	25,414	1,276	37.5	60.4	7	3	478	1.2	15	51	112	<5	855
Minimum	11,095	58	32.4	37.7	6	2	412	0.71	9	27	79	<5	793
Mean[4]	21,508	1,661	37.4	59.4	8	3	453	1.1	12	46	114	<5	884
Maximum	33,228	6,301	47.7	67.2	10	4	488	1.4	15	51	127	<5	1,387
503 Limit	NL[5]	NL	NL	38.0	41	39	1,500	17	75	420	300	100	2,800

[1]Total volatile solids.
[2]Total volatile solids for digester feed pipelined to lagoons during 9/24/12 - 7/19/13 were used to calculate TVS reductions.
[3]No reportable result.
[4]In calculating each mean, any value less than the reporting limit was considered the reporting limit.
[5]No limit.

TABLE 17: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS[1] GENERATED BY NON-COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS[2]-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE STICKNEY WATER RECLAMATION PLANT DURING AUGUST 2013 THROUGH JULY 2014

Sample Date[3]	Total Solids	Fecal Coliform	Sample Date[4]	Helminth Ova	Enteric Virus
	--- % ---	----- MPN[5]/g -----		--- No./4g ---	--- PFU[6]/4g ---
09/19/13	64.9	77	08/29/13	<0.0800	<0.8000
05/14/14	52.6	190	09/25/13	<0.0800	<0.8000
05/08/14	56.2	68	11/20/13	<0.0133[7]	<0.8000
05/14/14	54.6	70	03/19/14	<0.0800	<0.8000
05/08/14	59.6	170	04/16/14	<0.0800	<0.8000
05/29/14	52.5	960	05/14/14	<0.0800	<0.8000

[1]All biosolids satisfied Part 503 Class A requirements.
[2]Process to further reduce pathogens.
[3]Sample dates apply to FC samples only.
[4]Non-PFRP biosolids sampled before the material was dried and subsequently used in 2014.
[5]Most probable number.
[6]Plaque-forming unit.
[7]Sample weight = 300 g; for all others, sample weight = 50 g.

TABLE 18: MICROBIOLOGICAL ANALYSIS OF CLASS A BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND SAMPLED PRIOR TO UTILIZATION ON URBAN LAND IN 2014

Sample Date	Lagoon	Total Solids	Fecal Coliform
		-------- % -------	--------- MPN[1]/g -----
05/08/14	24	59.6	170
05/08/14	24	56.2	68
05/14/14	26	54.6	70
05/14/14	24	52.6	190
05/22/14	24	65.3	120
05/29/14	26	52.5	960
06/04/14	24	66.5	120
07/09/14	24	54.0	930
08/05/14	24	70.2	140
08/13/14	24	56.8	50
08/14/14	26	41.9	270
08/20/14	26	72.6	94
09/04//14	26	63.0	92
09/04/14	24	64.2	59
09/18/14	26	60.8	80
10/16/14	26	65.8	100

[1]Most probable number.

Site-Specific Process to Further Reduce Pathogens

As previously stated, the USEPA Region 5 designated, on a site-specific basis, two of the Stickney WRP biosolids processing trains as PFRP-equivalent. All of the Stickney WRP's biosolids generated or utilized in 2014 were not compliant with the codified operating parameters of the PFRP-equivalent process trains with respect to the minimum required length of time for lagoon aging (18 months). No PFRP-compliant biosolids were available for testing according to the PFRP certification. Therefore, all biosolids generated were tested for pathogen compliance according to Section 503.32(a)(5).

Centrifuge Cake Biosolids to Pelletizing Facility

In 2014, the Stickney WRP shipped a total of 36,672 DT 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, LLC, is responsible for the final utilization, monitoring, and reporting requirements for these biosolids.

BIOSOLIDS SENT TO LANDFILLS FOR CO-DISPOSAL UNDER 40 CODE OF FEDERAL REGULATIONS PARTS 258 AND 261

Biosolids from the District's Stickney and Calumet WRPs were sent to landfills in 2014 for disposal. All biosolids sent to these landfills were analyzed as specified in 40 CFR Part 261 to establish the nonhazardous nature of these biosolids for co-disposal. Analytical results, including toxic characteristic leaching procedure constituents, polychlorinated biphenyls, cyanide, sulfide, and paint filter test, were submitted to the landfill company to satisfy the requirements of their IEPA permit. District sludge has 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 2014, a total of 1,070 DT of District biosolids (454 DT from the Stickney WRP and 616 DT from the Calumet WRP) was co-disposed with municipal solid wastes at non-hazardous waste landfills (Heartland Recycling, LLC, Laraway Landfill, Joliet, Illinois; and Newton County Landfill, Brook, Indiana).

APPPENDIX I

BIOSOLIDS MANAGEMENT PROGRAMS OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO UNDER 40 CODE OF FEDERAL REGULATIONS PART 503

BOARD OF COMMISSIONERS
Thomas S. Fuller
President
Frank E. Gardner
Vice President
Nancy Drew Sheehan
Chairman, Committee on Fin.
Joseph E. Gardner
Gloria Alitto Majewski
Kathleen Therese Meany
Terrence J. O'Brien
Patricia Young
Harry "Bus" Yourell

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.

RECYCLED PAPER
100% RECYCLABLE

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 RECLAMATION 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.

Recycled/Recyclable . Printed with Vegetable Oil Based Inks on 100% Recycled Paper (50% Postconsumer)

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 J. Hannon
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 30 2012

REPLY TO THE ATTENTION OF

WN-16J

Thomas C. Granato, Ph.D.
Director of Monitoring and Research
Metropolitan Water Reclamation
District of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611-3154

Re: June 1, 2012, 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 Dr. Granato:

We have received the above-referenced request on June 6, 2012, along with microbiological analyses of biosolids generated by MWRDGC between August 2002 and December 2011. We appreciate your interest in seeking renewal of MWRDGC's equivalency certification. You have also requested that data reporting be reduced and the sampling frequency for enteric viruses and helminth ova be retained at six times per year 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.

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Recycled Paper (50% Postconsumer)

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 four 2-year extensions, in effect until August 1, 2012.

We have reviewed your most recent renewal request and request for reporting and sampling frequency reduction. Based on the microbiological data provided to us, I am approving your equivalency renewal request for a period of five years, until August 1, 2017. This approval is subject to all conditions that were included in the initial approval and all subsequent extensions except as it relates to reporting. As part of your equivalency approval, you were required to submit semi-annual reports to EPA. Based on your past performance, we agree that annual reporting as required by the Part 503 rules is sufficient and therefore, approve the reduction to annual reporting. Regarding the retention of the reduction in sampling frequency for enteric viruses and helminth ova to six times per year, we would like to provide some clarification. This reduction is only allowed when MWRDGC's sewage sludge processing trains are not meeting the approved conditions for equivalency and you are analyzing the sewage sludge in accordance with 40 CFR 503.32(a)(5)(ii) and (a)(5)(iii) to meet Class A. Monthly sampling for enteric viruses and helminth ova is still required as part of your equivalency approval.

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

Sincerely,

Tinka G. Hyde
Director, Water Division

cc: Albert Cox, MWRDGC
Al Keller, IEPA

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago
100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3154 312.751.5190 f: 312.751.5194

BOARD OF COMMISSIONERS
Terrence J. O'Brien
President
Barbara J. McGowan
Vice President
Cynthia M. Santos
Chairman of Finance
Michael A. Alvarez
Frank Avila
Patricia Horton
Kathleen Therese Meany
Debra Shore
Mariyana T. Spyropoulos

THOMAS C. GRANATO, Ph.D.
Director of Monitoring and Research Department
thomas.granato@mwrd.org

September 14, 2012

Ms. Tinka Hyde
Director, Water Division
United States Environmental
Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Ms. Hyde:

Subject: Clarification on July 30, 2012, Letter: Renewal of Site-Specific Equivalency to Process to Further Reduce Pathogens Designation of the Metropolitan Water Reclamation District of Greater Chicago's Biosolids Processing Trains at the Stickney and Calumet Water Reclamation Plants

In a letter dated July 30, 2012 (attached), the United States Environmental Protection Agency (USEPA) notified the Metropolitan Water Reclamation District of Greater Chicago (District) that the site-specific equivalency to process to further reduce pathogens (PFRP) designation of the District's low- and high-solids biosolids processing trains at the Stickney and Calumet Water Reclamation Plants was renewed for a period of five years, until August 1, 2017. Based on a discussion with Mr. John Colletti of your staff, the District will operate as specified in this renewal letter and with the following clarifications:

- Sampling for enteric viruses and helminth ova will be done six times per year as part of the PFRP equivalency as approved in the 2010 renewal (attached) of the two-year certification.

- Since the reporting frequency is changed from semi-annual to annual, and monitoring data will be included in the annual USEPA 40 Code of Federal Regulations Part 503 Rule (Part 503) report to the USEPA, the annual reporting begins with the 2012 calendar year. As such, no more semi-annual reports will be submitted from now onwards. The monitoring data for the period January through July 2012 of the previous certification period (August 2010 to July 2012) will be reported in the 2012 Part 503 report.

Subject: Clarification on July 30, 2012, Letter: Renewal of Site-Specific Equivalency to Process to Further Reduce Pathogens Designation of the Metropolitan Water Reclamation District of Greater Chicago's Biosolids Processing Trains at the Stickney and Calumet Water Reclamation Plants

For additional information, please contact Dr. Albert Cox, Supervising Environmental Soil Scientist, at 708.588.4063.

Very truly yours,

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

TCG:AC:cm
Attachment
cc w/att: S. A. Keller, IEPA

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

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Recycled Paper (50% Postconsumer)

(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