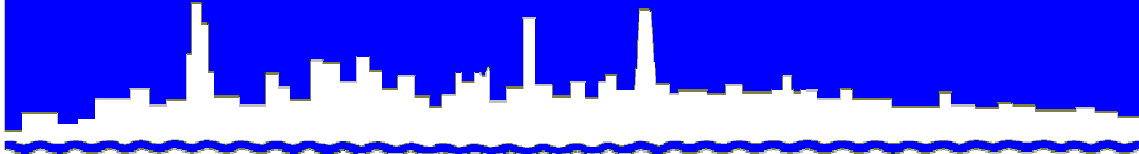


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 10-05

ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR

2009

FEBRUARY 2010

Protecting Our Water Environment

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Louis Kollias, P.E., BCEE

Director of Monitoring and Research

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February 16, 2010

Mr. Patrick Kuefler
Chief of Enforcement Section 2
USEPA – Region V
Water Enforcement and Compliance
Assurance Branch (WC-15J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Mr. Kuefler:

Subject: 2009 Reporting Requirements Under the 40 CFR Part 503 Regulations

The Metropolitan Water Reclamation District of Greater Chicago (District) herein submits the 2009 records required under the 40 CFR Part 503 Regulations at Section 503.18, titled “Annual Biosolids Management Report for 2009.”

We believe this report satisfies the reporting requirements under the 40 CFR Part 503 Regulations.

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.”

Subject: 2009 Reporting Requirements Under the 40 CFR Part 503 Regulations

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

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:CO'C:AC:kq

Attachment

cc w/att.: Aistars (USEPA)
Bramscher (USEPA)
Keller (IEPA)
Yurdin (IEPA)
Garretson (IEPA)
Sulski (IEPA)
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Feldman
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**ANNUAL BIOSOLIDS MANAGEMENT REPORT
FOR 2009**

By

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ACKNOWLEDGEMENT

The assistance of the following individuals is greatly appreciated: Mr. Daniel Collins, Supervising Civil Engineer, Lawndale Avenue Solids Management Area; Mr. Raphael Frost, Senior Civil Engineer, Calumet 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. Ellice Durham, Supervising Environmental Chemist, Stickney Analytical Laboratory Section; and Dr. Heng Zhang, Supervising Environmental Research Scientist, Wastewater Process Research Section.

Special thanks are given to Ms. Kathleen Quinlan 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 Biosolids Management by the Metropolitan Water Reclamation District of Greater Chicago as specified in the United States Environmental Protection Agency's (USEPA) 40 CFR Part 503 Regulations for 2009.

INTRODUCTION

The Metropolitan Water Reclamation District of Greater Chicago (District) herein reports the 2009 records required under the 40 CFR Part 503 Regulations 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. 2005-SC-5073).
2. Hanover Park Fischer Farm Biosolids Application to Land Site (IEPA Permit Nos. 2002-SC-0672 and 2007-SC-2951).
3. Controlled Solids Distribution Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2005-SC-3793).
4. Application to Farmland (Application of biosolids from Calumet, Stickney, and John E. Egan Water Reclamation Plants (WRPs) to farmland under IEPA Permit Nos. 2004-SC-0701 and 2009-SC-2056).

The 40 CFR Part 503 Regulations require that the District report certain data. 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 beneficially recycled or disposed of in 2009. In addition, we also discuss the utilization of the biosolids, outline the data reporting requirements under the 40 CFR Part 503 Regulations, and present the required monitoring data in summary tables. The 2009 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: 2009 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	117,056	29,252	40,478	6,833	748	7,394	331
Land Applied	95,552	24,320	-	6,916	29	-	-
Surface Disposal	-	-	-	-	-	-	-
Landfill (Total)	3,462	790	-	-	-	-	-
Co-disposal	3,462	790	-	-	-	-	-
Daily Cover	-	-	-	-	-	-	-
Final Cover	-	-	-	-	-	-	-
Incinerated	-	-	-	-	-	-	-
To Other WRPs ³	-	-	40,478	2,820	-	7,394	331
Other	31,474 ⁴	-	-	3 ⁵	-	-	-

¹Differences between biosolids production and total use or disposal in 2009 were due to a net withdrawal or storage in lagoons or drying areas, and processing of biosolids imported from other WRPs.

²Stickney, 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.

³For further processing or storage.

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

⁵Trucked to Interstate Brands Corp., Schiller Park, Illinois, for seeding digesters.

LEMONT WATER RECLAMATION PLANT

The Lemont WRP, located in Lemont, Illinois, has a design average flow of 3.4 million gallons per day (MGD). Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatment. In 2009, the Lemont WRP produced 331 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 2009, the James C. Kirie WRP produced 7,394 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 2009, the North Side WRP produced 40,478 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 2009, the total biosolids production at the John E. Egan WRP was 6,833 dry tons ([Table 1](#)). This total includes biosolids generated from 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 2009, none of the biosolids generated at the John E. Egan WRP were sent to landfills.

Biosolids Conveyed to Other Water Reclamation Plants for Further Processing

In 2009, 454 dry tons of biosolids were pumped as centrifuge centrate to North Side WRP. In addition, 2,366 dry tons of centrifuge cake biosolids were trucked to the Harlem Avenue Solids Management Area of which 415 dry tons were stored until the 2010 land application season.

Land Application of Centrifuge Cake Biosolids

In 2009, the John E. Egan WRP land applied a total of 6,916 dry tons of centrifuge cake biosolids to farmland under IEPA Permit Nos. 2004-SC-0701 and 2009-SC-2056 through a contract with Stewart Spreading, Inc. This total consists of 4,028 dry tons trucked directly from the John E. Egan WRP and 2,888 dry tons that were stored (937 dry tons in 2008 and 1,951 dry tons in 2009) at the Harlem Avenue Solids Management Area before being land applied. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is six times per year.

All John E. Egan WRP centrifuge cake biosolids land applied in 2009 met the pollutant concentration limits in Table 3 of Section 503.13 ([Table 2](#)), the Class B pathogen requirements of Section 503.32b2 ([Table 3](#)), and the vector attraction reduction requirements of Section 503.33b10. [Table 2](#) also shows the biosolids nitrogen concentration data that were used by the land applier 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 2009.

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 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----mg/kg-----										
4/4/09	11,701	2,892	8	4	570	NA	10	48	44	<2.6	783
4/18/09	13,525	3,730	6	4	605	0.61	10	51	38	<2.6	796
4/25/09	26,192	6,689	6	4	624	NA	11	54	39	<2.6	799
5/2/09	23,355	6,506	7	3	619	NA	10	57	37	<2.6	849
5/9/09	24,196	6,934	6	3	612	1.3	10	53	40	<2.6	829
5/16/09	30,094	7,735	11	4	614	NA	10	52	42	<2.6	891
5/23/09	33,231	6,706	14	4	635	NA	10	52	46	<2.6	931
5/30/09	34,698	8,354	14	4	655	NA	10	50	45	<2.6	966
6/1/09	39,989	8,028	7	3	630	NA	10	44	39	<2.6	932
6/1/09	53,779	8,679	3	3	581	0.87	12	49	49	<2.6	751
6/6/09	50,274	7,414	2	2	558	0.97	14	50	46	<2.6	795
6/13/09	39,382	8,126	6	3	629	1.1	10	45	38	<2.6	962
6/20/09	30,316	6,973	9	3	638	NA	9	43	39	<2.6	1,049
6/26/09	44,350	8,952	3	3	587	1.0	14	50	43	<2.6	802
6/27/09	39,410	7,657	7	3	646	NA	10	44	40	<2.6	1,104
7/4/09	37,674	7,243	8	3	660	NA	11	48	44	<2.6	1,132
7/7-9/09	54,218	10,241	3	3	592	0.72	14	51	46	<2.6	784
7/11/09	36,848	7,649	6	3	635	0.97	10	46	45	<2.6	1,087
7/13/09	48,049	10,530	<2	<2	546	0.71	14	46	47	<2.6	817
7/18/09	34,969	6,651	6	3	622	NA	11	46	42	<2.6	1,026
7/25/09	34,547	7,415	8	3	613	NA	11	47	48	<2.6	993
8/1/09	45,518	7,034	9	3	634	NA	12	48	46	<2.6	1,016
8/8/09	34,333	5,814	10	3	635	1.3	13	49	46	<2.6	1,021
8/15/09	24,462	6,834	9	3	650	NA	14	54	46	<2.6	1,011
8/22/09	32,127	7,364	8	4	681	NA	15	53	44	<2.6	1,002

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 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/kg -----											
8/29/09	34,344	6,694	5	3	719	NA	16	55	45	<2.6	1,033
9/5/09	28,579	7,359	6	3	681	NA	16	55	43	<2.6	1,019
9/12/09	25,206	6,443	5	3	713	1.5	17	59	41	<2.6	1,025
9/19/09	33,333	6,631	5	3	724	NA	18	59	40	<2.6	984
9/26/09	26,645	5,890	5	3	743	NA	18	58	39	<2.6	978
10/3/09	19,779	4,925	15	3	775	NA	18	58	41	<2.6	993
10/10/09	24,422	5,875	13	4	746	0.97	18	61	41	<2.6	1,000
10/17/09	21,887	5,413	11	4	824	NA	18	60	42	<2.6	974
10/24/09	17,543	4,529	11	3	840	NA	17	65	38	<2.6	1,015
10/31/09	36,389	7,240	11	3	808	NA	16	60	37	<2.6	926
11/7/09	25,824	6,111	11	3	818	1.2	16	64	35	<2.6	943
11/14/09	25,461	5,179	12	4	758	NA	16	69	35	<2.6	842
11/21/09	35,271	6,041	11	3	777	NA	14	68	35	<2.6	887
11/28/09	29,744	6,279	10	3	767	NA	14	66	33	<2.6	857
12/5/09	33,225	6,761	10	3	732	NA	13	64	33	<2.6	812
Minimum	11,701	2,892	<2	<2	546	0.61	9	43	33	<2.6	751
Mean ¹	32,372	6,838	8	3	672	1.0	13	54	41	<2.6	935
Maximum	54,218	10,530	15	4	840	1.5	18	69	49	<2.6	1,132
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹In calculating each mean, any value less than the detection limit was considered the detection limit.

NA = Not Available.

NL = No Limit.

TABLE 3: DIGESTER¹ TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS GENERATED AT THE JOHN E. EGAN WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

Month	Average Temperature ----- °F -----	Average Detention Time ----- days -----	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3 ² ----- days -----
January	99	32.2	yes	15.0
February	97	26.5	yes	15.0
March	97	25.8	yes	15.0
April	97	31.2	yes	15.0
May	97	27.8	yes	15.0
June	98	28.8	yes	15.0
July	98	29.6	yes	15.0
August	97	26.4	yes	15.0
September	98	28.4	yes	15.0
October	97	36.3	yes	15.0
November	97	34.7	yes	15.0
December	97	29.1	yes	15.0

¹Data are for primary Digesters A and C and do not reflect additional digestion achieved in secondary Digesters B and D.

²For anaerobic digestion at average temperature achieved.

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 land applied by injection at the Fischer Farm, which is located on the plant grounds.

In 2009, the total biosolids production at this WRP was 748 dry tons (Table 1).

Land Application of Liquid Biosolids

In 2009, the Hanover Park WRP land applied a total of 29 dry tons of biosolids at the Hanover Park Fischer Farm site under the IEPA Permit No. 2007-SC-2951. This consisted of the supernatant portion of liquid biosolids and supernatant stored in a lagoon. The quantity of land applied biosolids was lower than the quantity of biosolids produced in 2009 due to net storage of biosolids 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 lagooned biosolids land applied in 2009 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 03.32b3 (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 Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

TABLE 4: CONCENTRATIONS OF NITROGEN AND METALS IN BIOSOLIDS¹ GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED TO THE FISCHER FARM SITE IN 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----mg/kg-----										
4/11/09	516,962	487,308	21	<0.9	206	0.32	4	26	5	<6	226
4/25/09	341,250	414,250	31	<0.9	96	<0.25	7	30	8	9	98
5/16/09	385,700	378,900	25	<0.9	78	<0.25	3	27	5	<6	83
7/4/09	454,727	413,727	31	<0.9	90	<0.25	2	23	5	11	108
7/25/09	381,577	418,577	25	<0.9	75	<0.25	<1	22	<3	<6	87
8/8/09	335,706	335,471	24	<0.9	94	<0.25	1	27	5	9	121
8/29/09	348,188	368,656	19	<0.9	81	<0.25	3	21	6	11	94
9/12/09	157,750	166,583	18	<0.9	17	<0.25	<1	20	<3	9	19
9/19/09	286,882	343,500	16	<0.9	75	<0.25	3	19	3	<6	87
10/3/09	340,750	348,625	21	<0.9	62	<0.25	3	21	<3	<6	73
10/10/09	369,500	383,429	22	<0.9	52	<0.25	2	22	4	9	64
10/31/09	291,923	307,808	20	<0.9	175	<0.25	2	23	5	<6	178
11/21/09	311,083	306,958	20	<0.9	106	<0.25	2	23	<3	13	107
11/28/09	320,636	330,182	23	<0.9	60	<0.25	2	25	<3	10	65
12/5/09	424,100	391,200	17	<0.9	229	<0.25	2	30	3	<6	220
Minimum	157,750	166,583	16	<0.9	17	<0.25	<1	19	<3	<6	19
Mean ²	351,116	359,678	22	<0.9	100	<0.25	2	24	4	8	109
Maximum	516,962	487,308	31	<0.9	229	0.32	7	30	8	13	226
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

12

¹All biosolids applied as supernatant.

²In calculating each mean, any value less than the detection limit was considered the detection limit.

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 2009

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3 ¹
	----- °F -----	--- days ----		----- days -----
January	96	26.6	yes	15.0
February	96	41.2	yes	15.0
March	96	34.1	yes	15.0
April	96	34.1	yes	15.0
May	95	30.2	yes	15.0
June	96	34.3	yes	15.0
July	96	41.0	yes	15.0
August	95	43.2	yes	15.0
September	95	51.7	yes	15.0
October	96	50.3	yes	15.0
November	95	45.1	yes	15.0
December	95	27.6	yes	15.0

¹For anaerobic digestion at average temperature achieved.

TABLE 6: VOLATILE SOLIDS REDUCTION FOR BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED TO THE FISCHER FARM SITE IN 2009

Month	Total Volatile Solids			Volatile Solids Reduction ²
	Digester Feed	Digester Draw	Lagoon Biosolids ¹	
	----- % -----			
April	83.8	96.5	63.5	66.5
May	81.2	95.2	68.6	49.5
June	82.0	95.3	62.9	62.6
July	82.7	95.6	61.5	66.6
August	81.1	96.1	60.4	64.5
September	83.6	95.5	60.5	70.0
October	82.7	95.1	56.0	73.4
November	83.3	95.6	57.7	72.6
December	83.8	96.5	63.5	66.5

¹All biosolids applied supernatant in 2009.

²Volatile solids reduction computed using digester feed and lagoon biosolids data, and only for the months that biosolids were applied to the fields.

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. Dewatered by centrifuging to approximately 25 percent solids content, and then applied to farmland by a private contractor as Class B cake.
3. Dewatered by centrifuging to approximately 25 percent solids content, and then transported to paved cells and air-dried prior to use as daily landfill cover.
4. Dewatered by centrifuging 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 2009, the total biosolids production at the Calumet WRP was 29,252 dry tons (Table 1). The quantity of biosolids used and disposed of in 2009 (25,110 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 2009, the Calumet WRP co-disposed 790 dry tons of biosolids with municipal solid wastes in landfills. This practice is exempt from the Part 503 Regulations and requires no further reporting.

Land Application of Centrifuge Cake Biosolids

In 2009, the Calumet WRP applied 21,334 dry tons of centrifuge cake biosolids to farmland under IEPA Permit Nos. 2004-SC-0701 and 2009-SC-2056 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 twelve times per year.

All Calumet WRP centrifuge cake biosolids land applied in 2009 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 503.33b10. Table 7 also contains the biosolids nitrogen concentration data that were utilized by the land applier to compute the agronomic loading rates at the farmland sites.

Land Application of Aged, Air-Dried Biosolids

In 2009, the Calumet WRP land applied a total of 2,986 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2005-SC-3743 for maintenance of golf courses, recreation fields, landscaping, nurseries, and construction of recreation fields. The sites that utilized these biosolids under the Controlled Solids Distribution Program and how they were used are listed in Table 9. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is six times per year.

The USEPA Region V 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 took effect 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 2009.

All Calumet WRP EQ biosolids land applied in 2009 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 10), the Class A pathogen limits of Section 503.32a8 (Table 11), and the vector attraction reduction requirements of Section 503.33b1 (Table 10). Management practices complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

TABLE 7: CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/kg -----											
5/28/09	16,259	494	9	4	419	0.94	13	34	120	8.3	1,040
6/2/09	31,039	10,515	10	3	290	0.60	7	29	84	1.9	769
6/30/09	34,064	7,641	9	3	354	0.73	8	31	96	5.7	920
7/22/09	36,165	6,280	9	4	361	0.58	11	37	88	3.8	1,010
7/28/09	40,517	4,943	8	4	443	0.58	15	49	85	<1.4	1,178
8/4/09	41,306	6,095	10	4	396	0.88	15	41	90	8.7	1,050
8/11/09	37,855	5,542	10	3	345	0.83	10	47	96	7.9	904
8/25/09	36,943	7,460	7	3	406	0.92	15	45	89	10	1,054
10/6/09	41,861	9,109	7	3	420	0.96	18	43	97	6.1	1,151
10/27/09	47,651	7,807	8	3	416	0.28	19	37	97	5.6	1,173
11/12/09	46,069	8,410	7	3	411	0.75	17	32	95	7.4	1,174
11/17/09	40,676	7,461	8	4	419	0.89	20	37	98	5.4	1,193
Minimum	16,259	494	7	3	290	0.28	7	29	84	<1.4	769
Mean ¹	37,534	6,813	9	3	390	0.75	14	39	94	6.5	1,051
Maximum	47,651	10,515	10	4	443	0.96	20	49	120	10	1,193
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹In calculating each mean, any value less than the detection limit was considered the detection limit.
NL = No Limit.

TABLE 8: DIGESTER¹ TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

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	30.6	yes	15.0
February	95	28.5	yes	15.1
March	96	32.6	yes	15.0
April	97	36.9	yes	15.0
May	97	50.7	yes	15.0
June	97	45.6	yes	15.0
July	97	54.3	yes	15.0
August	97	37.6	yes	15.0
September	97	37.9	yes	15.0
October	97	42.3	yes	15.0
November	96	39.9	yes	15.0
December	96	52.9	yes	15.0

¹Temperatures and detention times are for primary digesters 1 through 12 at the Calumet WRP.

²For anaerobic digestion at average temperature achieved.

TABLE 9: SITES THAT UTILIZED CALUMET WATER RECLAMATION PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2009

User	Location
Blue Island Little League Blue Island	Baseball Field
Blue Island Park District Blue Island	Centennial, Hart, and Memorial Parks
Burbank Park District Burbank	McArthur, Loony, and Rice Parks
Cinder Ridge Wilmington	Golf Course
Coyote Run Golf Course Flossmoor	Golf Course
Frankfort Park District Frankfort	Commissioners, Main, Grand Prairie, and Lakeview Estates Parks
Franklin Park Park District Franklin Park	Franklin and Birch Parks
Hoffman Estates Park District Hoffman Estates	Canterbury Fields
Longwood Country Club Steger	Golf Course
Metropolitan Water Reclamation District of Greater Chicago Chicago	Landscaping, Calumet WRP
North Shore Country Club Glenview	Golf Course
Oak Forest High School Oak Forest	School Athletic Fields
Plainfield Community Consolidated School District 202 Plainfield	JFK Middle School Plainfield East High School

TABLE 9 (Continued): SITES THAT UTILIZED CALUMET WATER RECLAMATION
PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS
DISTRIBUTION PROGRAM IN 2009

User	Location
Reavis High School Burbank	School Athletic Fields
St. Charles Park District St. Charles	Campton Hills Park East Side Sports Complex
Thornton Township High School Harvey	Athletic Fields
Turf Care Landscaping Chicago	Landscaping
Village of Romeoville Romeoville	Volunteer Park
St. Charles Park District St. Charles	Campton Hills Park East Side Sports Complex
Westmont Park District Westmont	Bellrive Park
Wheatland Athletic Association Aurora	Athletic Fields
Woodridge Park District Woodridge	Cypress Cove Park

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 LAND IN 2009

Sample Date	TKN	NH ₃ -N	TVS ¹	TSV ¹		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
				Reduction										
	----- mg/kg -----		----- % -----											
6/29/30 - 7/1/09	9,622	1,584	37	56.8	9	4	481	1.3	12	35	127	7	1,115	
7/7-10/09	11,400	136	37	69.6	10	4	479	1.1	12	37	128	5	1,148	
7/7/2009	7,377	157	37	70.1	10	4	493	0.99	13	37	128	6	1,155	
7/14/2009	19,314	259	37	69.5	9	4	456	1.0	12	40	136	4	1,166	
7/14/2009	20,880	271	39	67.4	9	5	467	0.93	12	38	130	5	1,187	
7/21/2009	16,612	427	35	72.0	10	5	490	0.88	14	41	134	2	1,145	
7/22-23/09	16,977	91	36	71.1	10	5	495	0.71	13	42	133	2	1,166	
7/30/2009	17,603	263	35	72.6	11	5	466	1.4	14	47	131	5	1,113	
8/4-5/09	13,001	901	35	74.7	9	4	476	1.5	15	67	129	8	1,117	
8/14/2009	25,501	2,454	43	63.7	10	4	432	1.2	15	48	109	5	1,065	
8/24-25/09	28,340	3,026	41	66.9	9	4	456	1.0	14	52	112	6	1,067	
9/16-18/09	26,031	1,011	41	67.1	9	7	491	1.2	16	40	116	6	1,117	
10/1/2009	20,767	840	36	75.2	9	4	463	1.2	15	44	115	6	1,090	
11/12-14/09	13,155	907	40	65.2	10	4	489	1.0	15	41	118	5	1,143	
11/24/09	17,541	1,052	41	63.9	9	3	466	1.1	16	42	112	6	1,107	
11/24/09	20,830	1,230	40	64.8	8	3	428	0.88	12	40	106	5	1,085	
Minimum	7,377	91	35	57	8	3	428	0.71	12	35	106	2	1,065	
Mean ²	17,810	913	38	68	10	4	470	1.1	14	43	123	5	1,124	
Maximum	28,340	3,026	43	75	11	7	495	1.5	16	67	136	8	1,187	
503 Limit	NL	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800	

¹TVS = Total Volatile Solids.

²In calculating each mean, any value less than the detection limit was considered the detection limit.

NL = No Limit.

TABLE 11: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS GENERATED BY COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS-CODIFIED PROCESSING TRAINS AT THE CALUMET WATER RECLAMATION PLANT IN 2009

Sample Date	Lagoon Source	Total Solids	Fecal Coliform
		---- % ----	---- MPN ¹ /g ----
6/25/2009	19	61.4	31
6/25/2009	19	63.9	300
7/9/2009	19	78.7	100
7/14/2009	19	75.8	120
8/11/2009	18	85.0	590
9/10/2009	18	78.3	240
9/22/2009	18	87.4	57
11/12/2009	18	63.3	300
6/25/2009	19	61.4	31

¹MPN = 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:

- a. Placed into lagoons for dewatering, aging, and stabilization, and then transported to paved cells and air-dried prior to:
 1. Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 2. Use at local municipal solid waste landfills as final landfill cover.
 3. Disposal in local municipal solid waste landfills.
- b. Dewatered by centrifuging to approximately 25 percent solids content, and then applied to land by a private contractor as Class B cake.
- c. Dewatered by centrifuging to approximately 25 percent solids content, transported to paved cells, and air-dried prior to use as daily landfill cover.
- d. Dewatered by centrifuging to approximately 25 percent solids content, and conveyed to Metropolitan Biosolids Management, LLC under Contract 98-RFP-10 for further processing.
- e. Dewatered by centrifuging to approximately 25 percent solids content, placed into lagoons for aging and stabilization, and transported to paved cells and air-dried prior to:
 1. Application to land as EQ biosolids under the District's Controlled Solids Distribution Permit.
 2. Use at local municipal solid waste landfills as final landfill cover.
 3. Disposal in local municipal solid waste landfills.

In 2009, the total biosolids production at the Stickney WRP was 117,056 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 and disposed of (130,488 dry tons) was higher than the total 2009 production for the Stickney WRP due to a net removal of biosolids from lagoons and drying cells.

Summary of Use and Disposal at Landfills

In 2009, the Stickney WRP sent 3,462 dry tons of biosolids for co-disposal with municipal solid waste in landfills. This practice is exempt from the Part 503 Regulations and requires no further reporting.

Land Application of Centrifuge Cake Biosolids

In 2009, the Stickney WRP land applied a total of 92,254 dry ton of biosolids (58,790 dry tons of centrifuge cake and 23,464 dry tons of air-dried biosolids) to farmland under IEPA Permit Nos. 2004-SC-0701 and 2009-SC-2056. These were utilized through contracts with Synagro Midwest, Inc. and Stewart Spreading, Inc., and 25 dry tons utilized on experimental fields at the District's Fulton County land reclamation site. The total does not include the 2,888 dry tons of centrifuge cake biosolids that were 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 biosolids land applied in 2009 met the pollutant concentration limits in Table 3 of Section 503.13 ([Table 12](#)), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 ([Table 13](#)), and the vector attraction reduction requirements of Section 503.33b10. [Table 12](#) also contains the biosolids nitrogen concentration data that were used by the land applier to compute the agronomic loading rates at the farmland sites.

Land Application of Aged, Air-Dried Biosolids

In 2009, the Stickney WRP land applied a total of 3,288 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2005-SC-3793 for 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.

These air-dried biosolids at the Stickney WRP were not generated by the 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 2009 met the pollutant concentration limits in Table 3 of Section 503.13 ([Table 15](#)), the Class A pathogen limits of Section 503.32a5 ([Table 16](#)), and the vector attraction reduction requirements of Section 503.33b1 ([Table 15](#)). Management practices complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 ([Appendix I](#)).

TABLE 12: CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
-----mg/kg-----											
1/6/09	54,408	6,569	<10	3	345	0.80	13	42	97	<8	713
2/2-6/09	60,303	9,356	<10	3	353	0.94	14	36	97	<8	716
2/3/09	51,682	6,265	<10	3	348	0.63	13	35	79	<8	691
2/24/09	64,034	9,163	<10	3	331	0.85	15	35	90	<8	658
2/25/09	43,494	5,934	<10	3	360	0.65	13	37	111	10	802
2/25/09	59,459	9,025	<10	2	372	0.69	13	37	94	10	706
3/2-3/09	53,242	11,621	<10	3	343	0.73	11	36	87	<8	672
3/3/09	52,087	7,683	<10	2	319	0.56	13	34	91	<8	622
3/31/09	43,015	8,498	<10	3	430	0.72	14	44	114	<8	813
4/1-4/09	57,036	11,087	<10	3	405	0.74	15	42	103	<8	774
4/7/09	56,061	7,845	<10	2	318	0.55	11	34	97	<8	633
4/8-10/09	60,393	12,129	<10	3	374	0.80	13	39	104	<8	760
4/13-16/09	52,859	11,498	<10	3	396	0.81	14	40	117	<8	815
4/13-18/09	58,179	13,265	<10	3	385	0.71	13	39	111	<8	782
4/20-24/09	53,276	12,724	<10	3	364	1.1	12	43	84	<8	708
4/27-29/09	54,761	13,159	<10	2	337	0.67	13	50	83	<8	681
5/5/09	51,542	7,301	<10	2	308	0.56	10	36	106	<8	658
5/5-6/09	58,240	14,720	<10	3	351	0.74	12	38	94	<8	701
5/12/09	57,157	14,770	<10	3	352	0.76	11	35	98	<8	695
5/20-22/09	57,195	15,079	<10	3	358	0.60	12	37	90	<8	734
5/27-30/09	47,866	12,422	<10	3	327	0.71	11	34	94	<8	659
6/1/09	56,836	14,236	<10	3	367	0.60	11	39	97	<8	744
6/1/09	49,969	10,737	<10	3	333	0.69	10	36	97	<8	675
6/2/09	38,351	6,363	<10	2	308	0.66	10	34	111	<8	663
6/5-6/09	60,039	12,752	<10	3	329	0.98	11	36	105	<8	666
6/15-16/09	47,330	12,404	<10	3	334	0.62	11	36	99	<8	671
6/19/09	43,454	8,199	<10	3	336	0.90	10	36	118	<8	716

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE BIOSOLIDS
GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/kg -----											
7/6/09	41,169	5,790	<10	3	359	0.98	10	36	129	<8	798
7/13-14/09	43,076	8,537	<10	3	360	0.78	12	38	100	<8	753
7/16-18/09	55,205	12,482	<10	4	355	0.75	13	40	93	<8	747
7/20-22/09	37,856	8,753	<10	3	351	0.88	10	36	119	<8	730
7/23/09	39,417	7,103	<10	3	423	0.60	14	41	120	<8	847
7/24/09	50,084	8,026	<10	3	392	0.49	13	40	104	<8	785
7/27-28/09	39,417	7,103	<10	3	423	0.60	14	41	120	<8	847
7/28-30/09	46,996	12,832	<10	3	346	0.60	11	36	91	<8	692
8/1/09	25,339	4,742	<10	3	420	0.93	13	40	113	<8	799
8/1-7/09	44,877	9,840	<10	2	333	0.70	9	34	94	<8	631
8/4/09	32,109	6,179	<10	3	363	1.0	12	42	130	<8	812
8/4-6/09	51,342	11,813	<10	3	329	0.81	11	39	102	<8	688
8/10-15/09	52,869	13,619	<10	3	323	0.68	11	36	98	<8	648
8/19/09	48,907	13,290	<10	3	354	0.72	11	42	107	<8	740
8/24-26/09	47,380	12,683	<10	3	349	0.70	10	39	107	<8	720
8/27/09	51,206	9,445	<10	3	332	0.77	11	40	96	<8	655
9/8/09	33,959	5,221	<10	3	373	1.2	12	40	135	<8	832
9/8/09	44,067	3,788	<10	2	358	0.95	14	35	117	<8	761
9/8-12/09	54,537	13,579	<10	3	390	0.76	11	38	94	<8	793
9/14-19/09	50,604	13,654	<10	3	362	0.72	10	39	99	<8	723
9/16-19/09	43,595	12,959	<10	3	382	0.75	10	39	105	<8	748
9/28-30/09	47,805	13,293	<10	3	413	0.85	11	40	99	<8	767
10/1/09	36,396	8,326	<10	3	414	1.1	15	40	123	<8	817
10/6/09	38,595	4,039	<10	3	404	0.98	15	41	119	<8	885
10/7/09	69,383	6,707	<10	4	469	1.3	13	48	135	<8	952
10/19-21/09	34,792	10,748	<10	3	369	0.96	11	36	128	<8	789
10/29-30/09	33,964	11,325	<10	3	365	0.78	11	37	133	<8	803

TABLE 12 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE BIOSOLIDS
GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

Sample Date	TKN	NH ₃ -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----mg/kg-----										
11/2-7/09	39,070	10,425	<10	3	375	0.90	12	39	131	<8	813
11/3/09	51,140	5,305	<10	3	359	0.84	17	37	108	<8	746
11/5-6/09	30,938	3,880	<10	4	435	0.99	13	44	132	<8	925
11/9-14/09	40,053	9,412	<10	2	305	0.98	9	31	105	<8	646
11/13-14/09	40,484	8,880	<10	3	411	1.7	13	40	131	<8	836
11/23-24/09	38,582	8,154	<10	2	386	0.71	18	41	127	<8	798
12/8/09	46,852	5,917	<10	3	371	0.48	13	38	92	<8	773
Minimum	25,339	3,788	<10	2	305	0.48	9	31	79	<8	622
Mean ¹	47,937	9,767	<10	3	365	0.80	12	39	108	8	749
Maximum	69,383	15,079	<10	4	469	1.7	18	50	139	10	952
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

¹In calculating each mean, any value less than the detection limit was considered the detectable limit.
NL = No Limit.

TABLE 13: DIGESTER TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2009

Month	Average Temperature ----- °F -----	Average Retention Time ----- days -----	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3 ¹ ----- days -----
January	97	24.3	yes	15.0
February	97	20.4	yes	15.0
March	97	24.9	yes	15.0
April	98	23.8	yes	15.0
May	98	28.0	yes	15.0
June	98	32.0	yes	15.0
July	98	45.9	yes	15.0
August	98	31.7	yes	15.0
September	98	45.3	yes	15.0
October	98	30.2	yes	15.0
November	98	36.7	yes	15.0
December	98	29.6	yes	15.0

¹For 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 2009

User	Location
August Lusko Farm Frankfort	Farmhouse Landscaping
Chicago Highlands Westchester ¹	Golf Course
Corey Steel Company, Inc. Cicero	Revegetation of Park
Frankfort High School Frankfort	School Soccer Field
Frankfort Park District Frankfort	Commissioners, Main, Grand Prairie, and Lakeview Estates Parks
Glenbrook High School Northbrook	School Athletic Fields
Greener Gardens Sod Farm Frankfort	Sod Farm
Heritage Bluffs Golf Course Channahon	Golf Course
Jane Adams Middle School Bolingbrook	School Athletic Fields
Lombard Park District Lombard	Four Seasons, Madison, and Meadows Parks
Metropolitan Water Reclamation District of Greater Chicago, Chicago ¹	Landscaping Research WRP
Midlothian Park District Midlothian	Howie Minas Field

TABLE 14 (Continued): SITES THAT UTILIZED STICKNEY WATER ECLAMATION
 PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED SOLIDS
 DISTRIBUTION PROGRAM IN 2009

User	Location
Oak Lawn Park District Oak Lawn	Stony Creek Golf Course
River Forest Park District River Forest	Priory Park
Summit Park District Summit	Main Park
Turf Care Landscaping Evanston	Landscaping
Village of Maywood Maywood	Landscaping at Prairie Path Project I
Village of Romeoville Romeoville	Village 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 2009

Sample Date	TKN	NH ₃ -N	TVS ¹		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
			TVS ¹	Reduction									
----- mg/dry kg-----		-----%-----		----- mg/dry kg-----									
5/28/09	22,890	1,478	38.8	51.5	<10	5	460	1.4	12	48	168	<8	1,092
6/5/09	25,723	107	37.5	52.0	<10	4	455	1.2	10	39	162	<8	1,054
6/12/09	24,757	76	38.5	49.9	<10	5	444	1.2	13	49	161	<8	1,055
6/16/09	20,979	249	37.1	52.7	<10	5	440	1.3	11	48	157	<8	1,024
7/3/09	19,944	958	39.1	46.5	<10	5	478	1.5	12	49	149	<8	1,028
7/7/09	22,007	952	38.9	47.1	<10	5	450	1.1	11	51	153	<8	1,047
9/5/09	21,015	1,788	37.7	63.7	<10	4	441	1.4	13	46	132	<8	955
9/9/09	27,086	1,337	36.2	65.9	<10	4	423	1.3	10	43	125	<8	917
9/10/09	21,883	2,219	39.6	60.6	<10	4	419	1.2	10	42	122	<8	909
9/11/09	12,482	1,548	39.8	60.3	<10	4	439	1.0	11	44	127	<8	931
9/15-17/09	26,336	2,136	34.6	68.2	<10	4	473	1.4	15	49	132	<8	954
9/24/2009	16,900	3,204	37.8	63.5	<10	4	411	1.0	11	42	122	<8	846
9/28-30/09	30,452	5,973	41.4	57.6	<10	4	451	1.2	13	45	134	<8	913
10/1/09	25,982	4,682	41.7	60.4	<10	3	412	1.7	13	43	127	<8	850
10/19-20/09	24,191	6,118	39.8	63.3	<10	4	447	1.1	15	47	134	<8	963
11/9/09	21,758	903	40.5	60.5	<10	4	468	1.0	14	48	147	<8	983
Minimum	12,482	76	34.6	46.5	<10	3	411	1.0	10	39	122	<8	846
Mean ²	22,774	2,108	38.7	57.7	<10	4	445	1.2	12	46	141	<8	970
Maximum	30,452	6,118	41.7	68.2	<10	5	478	1.4	15	51	168	<8	1,092
503 Limit	NL	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

¹TVS = Total Volatile Solids.

²In calculating each mean, any value less than the detection limit was considered the detection limit.

NL = No Limit.

TABLE 16: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS¹ GENERATED BY NON-COMPLIANT PROCESS TO FURTHER REDUCE PATHOGEN-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE STICKNEY WATER RECLAMATION PLANT IN 2009

Sample Date	Lagoon Source	Total Solids	Fecal Coli-form	Helminth Ova	Enteric Virus
		%	-----MPN ² /g---	No./4g	PFU ³ /4g
5/28/2009	28	66.9	35	<0.0800	<0.8000
6/30/2009	28	74.8	7	<0.0800	<0.8000
6/16/2009	28	67.4	86	<0.0800	<0.8000
7/22/2009	30	76.7	58	<0.0800	<0.8000
7/30/2009	30	67.9	4	<0.0800	<0.8000
8/4/2009	30	72.0	94	<0.0800	<0.8000

¹Biosolids satisfied Part 503 Class A requirements.

²MPN = Most Probable Number.

³PFU = Plaque-Forming Unit.

Centrifuge Cake Biosolids to Pelletizing Facility

In 2009, the Stickney WRP sent 31,474 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.

DISTRICT 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 2009 for co-disposal with municipal solid waste, use as daily cover, and use as final cover. Biosolids going to these landfills are either processed to meet the requirements of AS 95-4, AS 98-5, and AS 03-02 (Adjusted Standards) approved by the Illinois Pollution Control Board for biosolids used as a final vegetative cover, or they are centrifuged and air-dried to various end points, and analyzed as specified in 40 CFR Part 261 to establish the nonhazardous nature of this material for biosolids used as daily cover and co-disposed. Analytical results, including TCLP constituents, such as PCBs, 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).

Stickney Water Reclamation Plant

In 2009, a total of 3,462 dry tons of biosolids from the Stickney WRP were co-disposed with municipal solid waste at Land and Lakes River Bend Prairie Landfill, Dolton, Illinois.

Calumet Water Reclamation Plant

In 2009, a total of 790 dry tons of biosolids from the Calumet WRP were co-disposed with municipal solid waste at Land and Lakes River Bend Prairie Landfill, Dolton, Illinois.

APPENDIX I

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



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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 Metro-
politan 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.

AI-1

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 subsection 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 sub-surface 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.

January 28, 1994

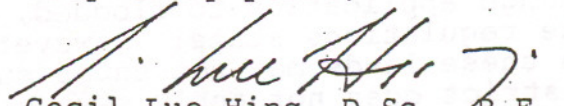
Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

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

APPENDIX II

DESIGNATION OF SITE-SPECIFIC EQUIVALENCY – FURTHER REDUCE PATHOGENS
FOR DISTRICT 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.

AII-1

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.

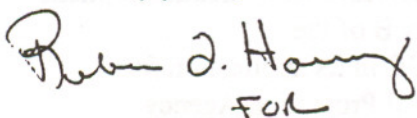
Our review of the MWRDGC's biosolids data submitted for 1994 to 2001 indicates Class A biosolids were produced at the Stickney and Calumet plants as they operated their respective low-and high-solids sludge processing trains (SPTs) according to codified protocols delineated in Attachment B of Mr. Lanyon's 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,


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

REPLY TO THE ATTENTION OF:

JUL 14 2008

WN-16J

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

Re: April 21, 2008, Request for Renewal of Site-specific Equivalency Determination for the Metropolitan Water Reclamation District of Greater Chicago (MWRD) Biosolids Processing Trains at the Stickney and Calumet Water Reclamation Plants

Dear Mr. Kollias:

We have received the above-referenced request on April 24, 2008, along with microbiological analyses of biosolids generated by MWRD between August 2002 and October 2007. We appreciate your interest in seeking renewal of MWRD's equivalency certification. The following discussion highlights the regulatory requirements of establishing equivalency, memorializes past Agency decisions, and provides Region 5's decision on your equivalency renewal request.

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 CFR Part 503 (503 Rules) addressing disease-causing organisms (pathogens) in biosolids. The 503 Rules establish requirements for classifying biosolids as either 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

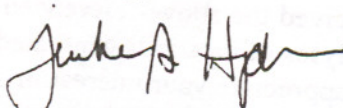
with the processes listed in Appendix B. Under the 503 rules, the Regional permitting authority (in this case, the U.S. Environmental Protection Agency Region 5) is responsible for determining equivalency. MWRD's sewage sludge processing trains differ from those listed in Appendix B. In March 1998, MWRD submitted an equivalency application to EPA's Pathogen Equivalency Committee (PEC) and the Region for approval. The Region and the PEC reviewed MWRD's initial request, and granted a site-specific and conditional equivalency certification in June 2002, for a period of two years. Subsequently, the Region granted two 2-year extensions, in effect until July 31, 2008.

We have reviewed your most recent renewal request. Based on the microbiological data provided to us, I am approving your equivalency renewal request for a period of two years, until August 1, 2010. This approval is subject to all the conditions that were included in the initial approval and all subsequent extensions.

We note that MWRD data show a reduction in fecal coliform concentrations in stored biosolids relative to initial concentrations. This finding is contrary to what we would expect based on observations elsewhere. Given the national interest in the subject of regrowth of fecal coliform with the storage of biosolids, we plan to review future data collected by MWRD in order to better understand this phenomenon.

If you have any further questions about this matter, please contact Mr. Ash Sajjad of my staff, at 312-886-6112.

Sincerely,



Tinka G. Hyde
Acting Director, Water Division

cc: Richard Lanyon, MWRDGC
Dr. Thomas Granato, MWRDGC