RESEARCH AND DEVELOPMENT DEPARTMENT

REPORT NO. 05-03

ANNUAL BIOSOLIDS MANAGEMENT REPORT

FOR 2004

February 2005

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3154 312•751•5600

Richard Lanyon
Director of Research & Development
312·751·5190

February 16, 2005

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

Dear Mr. Kuefler:

Subject: 2004 Reporting Requirements Under the 40 CFR Part 503 Regulations

The Metropolitan Water Reclamation District of Greater Chicago (District) herein submits the 2004 records required under the 40 CFR Part 503 Regulations at Section 503.18, titled "Annual Biosolids Management Report for 2003."

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 503.32a6, 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: 2004 Reporting Requirements Under the 40 CFR Part 503 Regulations

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

Very truly yours,

Richard Lanyon
Director
Research and Development

RL:AC:spy/nu
Attachment
cc w/att.: Aistars (USEPA)
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ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR 2004

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January 2005

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ACKNOWLEDGEMENT

The authors would like to acknowledge the following for their assistance, which is greatly appreciated: Mr. Neil Dorigan, Principal Civil Engineer, Lawndale Avenue Solids Management Area; Mr. John Sendera, Principal Civil Engineer, Calumet Solids Management Area; Mr. Brian Perkovich, Assistant Engineer of Treatment Plant Operations I, John E. Egan Water Reclamation Plant (WRP); Mr. Carl Athas, Treatment Plant Operator II, Hanover Park WRP; Mr. Matthew Schiltz, Senior Civil Engineer, Stickney WRP; Dr. James Zmuda, Microbiologist IV, of the Analytical Microbiology and Biomonitoring Section; Mr. John Chavich, Sanitary Chemist IV, of the John E. Egan Analytical Laboratory Section; Mr. Tom Liston, Sanitary Chemist IV, of the Calumet Analytical Laboratory Section; and Ms. Ellice Durham, Sanitary Chemist IV, of the Stickney Analytical Laboratory Section.

Special thanks are given to Ms. Sabina Yarn for the typing of 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.

INTRODUCTION

The Metropolitan Water Reclamation District of Greater Chicago (District) herein reports the 2004 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 Nos. 2002-SC-2188 and 2004-SC-0701).
2. Hanover Park Fischer Farm Biosolids Application to Land Site (IEPA Permit No. 2002-SC-0672).
3. Controlled Solids Distribution Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2000-SC-0872).
4. Land Application to Farmland (Application of biosolids from Calumet, Stickney, and John E. Egan Water Reclamation Plants (WRPs) to farmland under IEPA Permit Nos. 1999-SC-3932 and 2004-SC-0701).

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 WRPs. The Lemont, James C. Kirie, and North Side WRPs do not produce a final biosolids product, while the Calumet, Stickney, John E. Egan, and Hanover Park WRPs produced final biosolids products that were used beneficially or disposed of in 2004. In addition, we also discuss the uses for these biosolids, outline the data reporting requirements under the 40 CFR Part 503 Regulations, and present the required monitoring data in summary tables. The 2004 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 aged for distribution at a later time.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

2004 PRODUCTION AND USES OF SLUDGE AND BIOSOLIDS

Production And Use	Water Reclamation Plants						
	Stickney*	Calumet*	North Side	Egan	Hanover Park*	Kirie	Lemont
	----------Dry Tons----------						
Production**	125,028	26,648	42,771	7,942	884	7,249	317
Land Applied	69,464	34,572	0	3,677	1,210	0	0
Surface Disposal	0	0	0	0	0	0	0
Landfill (Total)	78,009	2,140	0	0	0	0	0
Co-disposal	1,469	824					
Daily cover	58,131	1,316					
Final Cover	18,408	0					
Incinerated	0	0	0	0	0	0	0
To Other WRPs for Further Processing	0	0	42,771	4,265	0	7,249	317

* Differences between biosolids production and total use or disposal in 2004 were due to a net withdrawal out of storage lagoons, and processing of biosolids imported from other WRPs.

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

LEMONT WRP

The Lemont WRP, located in Lemont, Illinois, has a design capacity of 3.4 mgd. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatment. In 2004, the Lemont WRP produced 317 dry tons of solids (Table 1), which were gravity concentrated. Of this quantity, 316 dry tons were transported to the Stickney WRP and 1 dry ton was transported to the Calumet WRP for further processing.

No final biosolids product is produced at this WRP.

JAMES C. KIRIE WRP

The James C. Kirie WRP, located in Des Plaines, Illinois, has a design capacity of 72 mgd. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatment. In 2004, the Kirie WRP produced 7,249 dry tons of solids (Table 1) which were sent via force main to the John E. Egan WRP for further treatment.

No final biosolids product is produced at this WRP.

NORTH SIDE WRP

The North Side WRP, located in Skokie, Illinois, has a design capacity of 333 mgd. Wastewater reclamation processes at the North Side WRP include primary (primary settling) and secondary (activated sludge process) treatment. In 2004, the North Side WRP produced 42,771 dry tons of solids (Table 1) that 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 WRP

The John E. Egan WRP, located in Schaumburg, Illinois, has a design 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 winter 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 2004, the total biosolids production at the John E. Egan WRP was 7,942 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 2004, none of the biosolids generated at the John E. Egan WRP were sent to landfills.

Biosolids Conveyed to Other WRPs for Further Processing

In 2004, 2,774 dry tons of biosolids were pumped to North Side WRP. Of this amount, 1,278 dry tons were conveyed to the North Side WRP in centrifuge centrate and 1,496 dry tons were conveyed as liquid digested biosolids.

In 2004, 1,491 dry tons of centrifuge cake biosolids were trucked to the Lawndale Avenue Solids Management Area (managed by the Stickney WRP). Of this amount 1,152 dry tons were subsequently applied to farmland (see Stickney WRP section of this report) and 339 dry tons, which were conveyed late in the year, were placed in storage for the following application season.

Land Application of Centrifuge Cake Biosolids

In 2004, the John E. Egan WRP land applied a total of 3,677 dry tons of centrifuge cake biosolids to farmland under IEPA Permit Nos. 1999-SC-3932 and 2004-SC-0701 through a contract with American Water Services, Inc. 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 that were land applied in 2004 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 2004.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
04/03/04	51,443	5,399	<1	4.6	796	NA	20	62	58	<0.8	814
04/10/04	55,290	8,316	<1	4.5	756	0.63	19	58	54	<0.8	787
04/17/04	60,327	5,645	<1	4.2	734	NA	19	56	59	<0.8	797
04/24/04	57,845	6,129	<1	4.5	739	NA	19	55	69	<0.8	787
05/01/04	44,822	5,854	<2	5.0	747	NA	18	58	84	<0.8	790
05/08/04	47,723	7,950	<1	4.1	685	1.10	16	47	65	<0.8	750
05/15/04	47,797	6,090	2.1	3.5	611	NA	14	40	68	<0.8	692
05/22/04	35,927	5,500	<1	4.1	711	NA	23	56	63	<0.8	715
05/30/04	36,344	4,852	<1	4.3	852	NA	21	54	60	<0.8	818
06/05/04	34,777	5,127	<1	4.0	748	NA	20	51	58	<0.8	790
06/12/04	41,881	5,073	<1	4.0	778	0.5	18	50	59	<0.8	802
06/19/04	48,212	6,314	<1	4.5	723	NA	22	60	83	<0.8	815
06/26/04	48,531	5,629	<1	4.2	669	NA	18	50	65	<0.8	784
07/03/04	52,670	6,583	<1	4.4	742	NA	18	56	68	<0.8	839
07/10/04	48,042	6,873	1.0	3.3	708	1.69	19	55	72	<0.8	829
07/17/04	50,028	5,138	<1	4.1	715	NA	18	51	62	<0.8	826
07/24/04	41,933	5,682	<1	4.4	698	NA	19	51	64	<0.8	861
07/31/04	48,248	6,064	<1	4.2	710	NA	20	50	69	<0.8	877
08/14/04	50,354	5,028	<1	4.4	713	1.01	20	54	65	<0.8	849
08/21/04	53,202	6,367	<1	3.4	731	NA	20	58	73	<0.8	827
08/28/04	58,532	5,095	2.0	4.3	731	NA	23	60	60	<0.8	912

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
09/04/04	56,231	5,440	4.7	3.5	730	NA	22	61	61	<0.8	871
09/11/04	54,067	4,448	<1	4.1	769	1.68	24	61	57	<0.8	940
09/18/04	50,926	4,479	<1	3.8	741	NA	24	58	55	<0.8	915
09/25/04	55,976	4,519	<1	3.9	775	NA	25	53	50	<0.8	878
10/02/04	54,892	5,365	<1	4.6	784	NA	26	55	53	<0.8	896
11/06/04	34,000	4,954	<1	4.0	834	1.58	28	55	55	<0.8	901
11/13/04	37,058	4,594	<1	3.8	807	NA	27	53	52	<0.8	900
11/20/04	56,826	4,520	<1	3.7	799	NA	27	54	68	<0.8	945
11/27/04	54,685	3,814	1.2	3.4	813	NA	26	54	54	<0.8	900
12/04/04	39,457	4,053	<1	3.3	826	NA	25	52	65	<0.8	897
12/11/04	59,949	4,750	<1	3.6	814	1.51	23	54	51	<0.8	843
12/18/04	43,598	3,390	<1	3.0	761	NA	20	53	51	<0.8	878
12/25/04	33,432	4,974	<1	2.0	727	NA	17	52	56	<0.8	827
Mean*	48,383	5,412	1.2	4.0	749	1.21	21	54	62	<0.8	840
Minimum	33,432	3,390	<1	2.0	611	0.48	14	40	50	<0.8	692
Maximum	60,327	8,316	4.7	5.0	852	1.69	28	62	84	<0.8	945
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800
MDL	0.1	0.0	1	0.2	0.6	0.06	0.4	0.4	0.6	0.8	2.0

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	---------- mg/dry kg ----------										

* In calculating the means, values less than the detection limit were considered as the detection limit.
NA = No analysis.
NL = No limit; not applicable.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

DIGESTER* TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS FROM THE JOHN E. EGAN WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3**
	----°F----	--days--		------days------
January	95	25.0	yes	15.0
February	95	27.5	yes	15.6
March	93	23.2	yes	18.1
April	94	24.1	yes	16.0
May	95	25.6	yes	15.5
June	94	24.1	yes	16.1
July	97	25.4	yes	15.0
August	97	26.8	yes	15.0
September	98	25.7	yes	15.0
October	97	28.2	yes	15.0
November	96	28.4	yes	15.0
December	95	29.9	yes	15.0

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

** For anaerobic digestion at average temperature achieved.

HANOVER PARK WRP

Treatment Plant and Biosolids Process Train Description

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

Land Application of Liquid Biosolids

In 2004, the total biosolids production at this WRP was 884 dry tons (Table 1). Land application of liquid biosolids at the Hanover Park Fischer Farm site in 2004 utilized 1,210 dry tons. The quantity of land applied biosolids surpassed the quantity of biosolids produced in 2004 due to land application of additional biosolids that were produced in previous years and stored in a lagoon. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is four times per year.

All Hanover Park WRP lagooned biosolids that were land applied in 2004 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 4), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 5), and the vector attraction reduction requirements of Section 503.33b1 (Table 6). Management practices at this land application site complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

NITROGEN AND METALS CONCENTRATIONS IN BIOSOLIDS APPLIED TO THE HANOVER PARK FISCHER FARM IN 2004

Composite Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
01/03/04*	498,778	404,489	20	<0.7	91	<0.07	4	20	6	<3	139
04/10/04*	392,367	363,800	<4.4	<0.7	33	0.77	5	19	4	<3	60
04/17/04*	436,941	356,688	<2.4	0.8	133	0.68	3	12	7	<2	204
04/20/04	64,654	10,950	2	2.1	802	0.96	11	29	33	1	672
05/01/04	67,356	16,800	2	3.3	962	1.11	11	34	56	3	774
05/08/04	67,098	12,779	1	3.6	985	1.47	12	39	50	3	743
05/25/04	33,931	3,899	3	3.0	1,018	1.68	10	34	50	2	811
05/30/04*	367,029	294,118	4	1.0	124	0.69	1	14	5	<2	176
06/22/04	57,360	15,257	4	2.6	918	2.24	12	31	38	2	724
07/17/04*	484,170	392,430	19	<0.6	41	<0.06	4	20	7	<3	69
07/24/04*	220,416	154,600	3	0.8	203	0.50	4	16	11	<1	212
07/27/04	133,432	40,836	<1.0	2.2	878	2.61	12	30	36	4	689

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN BIOSOLIDS APPLIED TO THE HANOVER PARK FISCHER FARM IN 2004

Composite Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										
08/07/04*	290,929	243,757	13	<0.4	59	0.18	5	16	3	<2	84
08/24/04	97,497	20,806	0.4	1.1	897	1.65	10	28	40	2	669
08/28/04*	259,388	173,628	5	1.6	414	1.30	10	23	24	<1	370
08/28/04	118,582	24,559	2	2.8	993	2.90	13	39	48	3	755
09/04/04	87,002	8,739	6	3.3	967	3.09	12	37	48	3	732
09/18/04	69,928	13,935	1	5.5	1,049	3.15	12	39	62	2	805
09/25/04	98,790	18,225	1	3.5	986	3.46	13	39	49	3	752
09/28/04	132,227	15,379	1	2.4	820	2.36	11	24	34	3	679
12/18/04*	419,425	289,600	4	1.4	76	0.26	1	13	8	<2	124
Minimum	33,931	3,899	<1.0	<0.4	33	<0.06	1	12	3	<1	60
Mean**	209,395	136,918	5.1	2.4	593	1.63	8	27	29	3	488
Maximum	498,778	404,489	20	5.5	1,049	3.46	13	39	62	4	811
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN BIOSOLIDS APPLIED TO THE HANOVER PARK FISCHER FARM IN 2004

Composite Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg										

* Biosolids applied as supernatant.

** For computing the mean, detection limit was used for non-detected values.

NL = No limit; not applicable.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

DIGESTER TEMPERATURES AND DETENTION TIMES FOR BIOSOLIDS FROM THE HANOVER PARK WATER RECLAMATION PLANT APPLIED AT THE FISCHER FARM IN 2004

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3*
	----°F----	--days--		------days------
January	95	22.9	yes	15.3
February	95	31.6	yes	15.0
March	95	40.8	yes	15.0
April	95	29.6	yes	15.0
May	95	26.5	yes	15.0
June	96	27.9	yes	15.0
July	96	23.0	yes	15.0
August	96	22.2	yes	15.0
September	96	23.3	yes	15.0
October	95	24.9	yes	15.0
November	95	25.9	yes	15.0
December	95	26.2	yes	15.0

* For anaerobic digestion at average temperature achieved.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

VOLATILE SOLIDS REDUCTION FOR BIOSOLIDS FROM THE HANOVER PARK WATER RECLAMATION PLANT APPLIED AT THE FISCHER FARM IN 2004

Month	Digester Feed	Digester Draw	Lagoon Biosolids	Volatile Solids Reduction*
	---------- % Total Volatile Solids ----------			------ % ------
January	84.75	74.37	62.86	69.54
April	83.73	73.25	63.83	65.71
May	83.56	74.73	66.30	61.29
July	81.43	72.47	68.73	49.88
August	82.60	74.07	64.09	62.40
September	81.83	74.34	67.13	54.65
December	83.66	75.29	61.23	69.15

* Volatile solids reduction computed using digester feed and lagoon biosolids.

CALUMET WRP

Treatment Plant and Biosolids Process Train Description

The Calumet WRP, located in Chicago, Illinois, has a design capacity 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:

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 Exceptional Quality (EQ) biosolids under the District's Controlled Solids Distribution Permit.
   2. Use at local municipal solid waste landfills as final landfill cover.
   3. Application to land as EQ biosolids at the Fulton County, Illinois dedicated land application site.
   4. Application to farmland as EQ biosolids by a private contractor.
   5. Disposal in local municipal solid waste landfills.

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

c. 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.

d. 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. Application to land as EQ biosolids at the Fulton County, Illinois, dedicated land application site.
4. Application to farmland as EQ biosolids by a private contractor.
5. Disposal in local municipal solid waste landfills.

In 2004, the total biosolids production at the Calumet WRP was 26,648 dry tons (Table 1). This total includes biosolids generated from processing of sludge originating at the Calumet WRP as well as sludge imported from the Lemont WRP. The quantity of biosolids that were used and disposed of in 2004 exceeded the total production for the Calumet WRP due to processing of biosolids produced in previous years that were stored in lagoons.

Summary of Use and Disposal at Landfills

The Calumet WRP sent 2,140 dry tons of biosolids to landfills in 2004. Of this amount, 1,316 dry tons were used as daily cover, and 824 dry tons were co-disposed with municipal solid waste. These practices are exempt from the Part 503 Regulations and require no further reporting.

Land Application of Centrifuge Cake Biosolids

In 2004, the Calumet WRP land applied 11,871 dry tons of centrifuge cake biosolids to farmland under IEPA Permit Nos. 1999-SC-3932 and 2004-SC-0701 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 six times per year.

All Calumet WRP centrifuge cake biosolids that were land applied in 2004, 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 2004, the Calumet WRP land applied a total of 22,702 dry tons of air-dried EQ biosolids. Of this amount, 22,037 dry tons were trucked to the District's Fulton County, Illinois, site for land application under IEPA Permit No. 2002-SC-2188, and 665 dry tons were land applied under the Controlled Solids Distribution Program under IEPA Permit No. 2000-SC-0872 for maintenance of golf courses, landscaping, nurseries, and construction of recreation fields. The quantities of biosolids utilized by each site under the Controlled Solids Distribution Program are shown in Table 9. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is 12 times per year.

An exception to this frequency of monitoring was granted, effective March 1, 2000, by USEPA Region V, for compliance with Class A pathogen standards. The Calumet WRP biosolids that are land applied are required to be monitored only six times per year for compliance with Class A pathogen standards in Part 503 (Appendix II). Subsequent to this, 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). This PFRP equivalency took effect on August 1, 2002 (Appendix III), and on this basis, all EQ

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
01/06/04	43,440	5,972	10	5	417	0.65	17	37	131	7	999
01/13/04	53,040	5,643	8	5	427	NA	16	40	120	7	1,009
01/20/04	45,629	4,215	7	5	416	NA	16	38	110	6	946
01/27/04	50,012	7,176	10	4	431	NA	15	36	106	9	948
02/03/04	48,357	9,599	8	5	426	0.53	16	38	95	7	921
02/10/04	47,957	5,834	7	4	422	NA	15	37	87	5	899
02/17/04	55,115	7,974	6	4	410	NA	16	35	77	7	866
02/24/04	52,990	7,563	6	4	431	NA	17	36	84	4	908
03/02/04	53,912	6,514	7	4	421	0.49	17	35	76	5	925
03/09/04	41,777	5,256	8	4	423	NA	16	36	84	4	919
03/16/04	51,012	7,021	7	4	419	NA	17	33	84	6	899
03/23/04	49,162	6,344	8	4	405	NA	15	34	100	5	908
03/30/04	42,274	5,282	9	4	390	NA	15	37	91	5	842
04/05/04	39,551	7,391	8	4	436	0.39	16	36	107	5	936
04/06/04	43,097	5,256	8	4	386	0.67	13	34	98	3	854
04/13/04	47,217	6,189	9	4	422	NA	16	37	104	5	913
04/20/04	49,049	7,009	10	4	405	NA	16	34	99	5	859
04/27/04	44,874	6,501	8	4	396	NA	14	37	95	3	845

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
05/04/04	48,289	8,040	10	4	418	0.23	15	35	103	5	869
05/11/04	55,148	7,087	11	4	414	NA	15	32	101	6	876
05/19/04	44,182	5,647	10	5	405	NA	17	34	104	7	884
05/25/04	43,862	5,636	10	4	404	NA	15	39	107	7	874
07/08/04	35,990	3,615	10	3	347	0.37	14	34	116	6	873
07/13/04	24,864	2,393	7	4	328	NA	14	37	117	6	847
07/20/04	29,179	6,074	10	4	356	NA	14	35	119	10	963
07/26/04	29,479	7,334	11	4	343	0.65	14	36	116	9	931
07/27/04	33,113	5,499	8	4	364	NA	17	38	121	7	992
08/03/04	36,417	4,840	11	4	382	0.88	16	36	138	10	1,043
08/07/04	24,488	4,014	9	3	356	0.61	15	33	118	6	950
08/10/04	35,624	4,724	6	3	302	NA	16	35	100	5	858
08/14/04	25,013	7,919	7	3	346	0.46	14	31	116	6	896
08/17/04	27,831	4,533	4	4	310	NA	16	56	117	4	849
08/24/04	39,177	4,923	8	4	345	NA	19	35	119	2	990
08/31/04	32,721	4,446	9	3	363	NA	19	35	127	6	997
09/03/04	34,684	10,871	8	4	390	0.95	20	40	128	6	1,076
09/07/04	26,615	4,191	6	5	352	1.08	18	35	172	6	957
09/15/04	34,735	5,454	8	4	369	NA	21	36	128	8	1012

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
09/18/04	31,588	6,817	9	4	398	1.03	19	58	137	7	1,084
09/20/04	30,741	8,715	6	4	393	1.2	21	37	132	4	1,095
09/21/04	33,331	4,696	6	4	377	NA	22	39	122	8	1056
09/28/04	38,945	4,282	9	4	397	NA	21	46	122	3	1078
10/07/04	43,079	NRR	7	4	399	1.23	22	35	120	6	1,110
10/11/04	36,363	5,088	9	4	399	6.97	20	32	117	4	1,069
10/26/04	51,799	7,199	7	4	437	1.16	20	30	114	7	1,047
11/02/04	37,664	4,392	6	4	439	1.67	22	34	101	10	993
11/09/04	35,862	4,054	8	4	421	NA	21	44	105	6	997
11/15/04	49,208	9,794	4	4	395	1.08	19	30	100	10	874
11/16/04	37,947	4,974	4	3	363	NA	16	27	87	7	785
11/23/04	47,701	8,416	9	4	456	1.29	21	39	113	5	1,020
11/23/04	43,841	5,368	5	4	404	NA	21	31	102	10	917
11/30/04	35,413	4,617	7	3	411	NA	19	34	99	10	919
12/07/04	37,903	5,392	7	4	425	0.94	21	38	100	7	946
12/14/04	40,904	7,622	5	3	412	0.99	19	32	97	5	901
12/14/04	44,257	5,634	8	4	413	NA	19	38	102	10	919
Minimum	24,488	2,393	4	3	302	0.23	13	27	76	2	785

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARM LAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
Mean*	40,674	6,057	8	4	395	1.11	17	36	109	6	943
Maximum	55,148	10,871	11	5	456	6.97	22	58	172	10	1,110
503 Limit	NL	NL	41	39	1,500	17	75	420	300	100	2,800

* In calculating the mean, values less than the detection limit were considered as the detection limit.
NA = No analysis.
NL = No limit; not applicable.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

DIGESTER* TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32b3**
	----°F----	--days--		------days------
January	97	24.9	yes	15.0
February	97	21.9	yes	15.0
March	96	19.7	yes	15.0
April	97	23.9	yes	15.0
May	97	27.0	yes	15.0
June	97	28.9	yes	15.0
July	97	22.7	yes	15.0
August	97	29.7	yes	15.0
September	97	15.1	yes	15.0
October	96	16.0	yes	15.0
November	97	19.6	yes	15.0
December	97	20.0	yes	15.0

* Temperatures and detention times are for primary digesters 1 through 8 at the Calumet WRP. All biosolids exiting these primary digesters also received additional processing in secondary digesters 9 through 12.

** For anaerobic digestion at average temperature achieved.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 9

QUANTITIES OF CALUMET WATER RECLAMATION PLANT BIOSOLIDS UTILIZED BY EACH SITE UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2004

Site	Description of Use	Quantity
		------Dry Tons -----
Illinois Mining Corp. Crestwood, Il	Blended with soil for testing suitability of blend as topsoil	56
Water's Edge Golf Course Worth, IL	Soil conditioner and nutrient source for golf course	24
Fuller Park Community Development, Chicago, IL	Soil conditioner and nutrient source for trees, shrubs, and turf	29
Oak Lawn Community High School, Oak lawn, IL	Soil conditioner; for establishing soccer field turf	27
Village of Riverside, IL	Soil conditioner and nutrient source for recreational field	126
North Shore Country Club, Glenview, IL	Soil conditioner and nutrient source for golf course	51
Cinder Ridge Golf Course Wilmington, IL	Soil conditioner and nutrient source for golf course	352

biosolids produced by the Calumet WRP met the Part 503 Class A pathogen requirements of 503.32a8 in 2004.

All Calumet WRP EQ biosolids that were land applied in 2004 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) or Section 503.33b2 (Table 12). Management practices complied with Section 503.14 as previously described in a letter to Mr. Michael J. Mikulka dated January 28, 1994 (Appendix I).

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2004

Sample Date	TKN	NH_3-N	TVS*	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg		%		mg/kg								
5/6	34,617	2,001	50.0	50.2	6	8	606	1.43	20	43	116	16	1,216
5/6	33,956	1,956	49.9	50.4	7	8	614	1.20	20	44	107	17	1,220
5/6	27,730	2,206	49.4	51.4	6	8	616	1.16	21	44	109	16	1,206
6/7-11	20,906	78	40.0	56.7	7	11	447	1.30	16	43	129	14	1,170
6/14-16	NRR	399	41.1	54.7	6	8	499	1.19	17	43	133	18	1,304
6/16-18	NRR	56	38.1	60.1	7	10	459	1.21	17	40	139	16	1,294
6/21-23	13,951	1,519	40.5	55.8	6	8	465	2.00	17	42	153	15	1,332
6/24-26	15,879	754	41.4	54.1	7	10	459	1.12	18	42	135	15	1,337
6/28	NRR	1,538	32.4	68.9	6	8	372	0.37	14	42	114	11	950
6/28-29	30,563	686	42.7	51.6	6	7	505	0.69	16	41	140	17	1,254
6/29-30	22,636	67	45.9	44.9	5	8	593	1.10	18	46	117	16	1,261
6/29-7/2	NRR	2,036	44.2	48.6	7	7	576	1.09	18	46	132	21	1,347
7/2	23,200	3,370	47.5	43.4	4	8	743	1.22	23	55	107	20	1,369
7/6-10	10,799	909	33.2	68.8	8	9	369	0.50	13	35	118	17	1,034
7/8-9	27,882	2,018	48.9	40.1	4	8	730	1.62	22	55	117	16	1,344

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2004

Sample Date	TKN	NH_3-N	TVS*	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg		%		mg/kg								
7/12	18,876	2,886	48.6	40.8	1	8	729	1.60	21	54	109	15	1,331
7/13-14	15,484	654	32.7	69.6	7	9	353	0.69	12	34	113	15	993
7/14-17	16,411	1,061	33.7	68.2	8	9	358	0.71	13	36	120	14	1,049
7/19-20	NRR	1,529	47.2	44.1	5	8	646	1.78	20	47	113	16	1,257
7/19-24	NRR	1,541	32.0	70.5	6	7	300	0.95	12	38	106	10	917
7/27-29	NRR	601	30.9	72.0	11	7	332	0.93	12	43	103	10	909
8/2-3	14,507	1,929	35.9	67.3	9	6	362	0.82	14	36	118	11	1,089
8/2-6	29,350	5,117	45.7	50.8	10	7	400	0.80	17	36	135	16	1,311
8/3-5	25,818	4,991	46.4	49.4	10	7	419	0.84	17	35	133	15	1,339
9/7	15,449	3,474	46.4	52.0	12	8	453	1.15	19	118	135	18	1,405
9/7	NRR	2,190	46.1	52.5	11	8	422	1.05	17	171	131	16	1,356
9/15	15,404	2,798	45.2	54.2	11	8	458	1.33	19	77	145	19	1,447
9/20-24	18,975	3,336	44.8	55.1	4	8	434	1.16	18	40	134	18	1,369
9/27-10/2	19,451	2,694	44.5	55.6	11	8	436	1.34	19	36	134	18	1,357
9/27-10/2	19,451	10,684	44.5	55.6	11	8	436	1.34	19	36	134	18	1,357

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 10 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE CALUMET WATER RECLAMATION PLANT APPLIED TO LAND IN 2004

Sample Date	TKN	NH_3-N	TVS*	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg		%		mg/kg								
10/04-07	21,419	5,631	43.4	64.7	6	8	453	1.23	16	34	141	21	1,421
10/19-20	18,028	5,124	31.1	79.2	9	8	468	1.34	16	38	155	17	1,485
10/26	20,068	4,072	40.7	68.5	7	17	286	1.15	12	32	176	12	1,155
10/27	30,743	5,790	42.3	66.3	8	9	471	1.15	18	37	150	22	1,452
Minimum	10,799	56	30.9	40.1	1	6	286	0.37	12	32	103	10	909
Mean	21,598	2,520	42.0	56.96	7	8	478	1.13	17	48	128	16	1,254
Maximum	34,617	10,684	50	79.24	12	17	743	2.00	23	171	176	22	1,485
503 Limit	NL	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

* TVS = Total Volatile Solids.
NL = No limit; not applicable.
NRR = No reportable result.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 11

DATA FOR MONITORING PART 503 CLASS A PATHOGEN COMPLIANCE AT THE CALUMET WATER RECLAMATION PLANT FOR 2004

Sample Date	Lagoon Source	Total Solids	Fecal Coliform*
		------%------	---No./g---
04/29/04	2	68.7	170
06/01/04	2	61.0	230
06/03/04	2	65.6	120
06/03/04	2	64.7	780
06/03/04	2	83.4	34
06/10/04	2	69.3	340
06/22/04	2	70.2	110
06/22/04	2	72.2	53
06/22/04	2	67.6	42
07/27/04	17	77.2	650
08/02/04	17	81.5	23
08/17/04	17	68.5	42
08/17/04	17	73.2	930
09/07/04	17	77.0	37
09/15/04	17	69.3	41
09/15/04	17	71.0	40

* Beginning August 1, 2002 the Calumet WRP EQ Processing Trains met Class A standards at Section 503.32a8 and required only Fecal Coliform analysis at the time of use.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 12

SUMMARY OF RESULTS OF ADDITIONAL ANAEROBIC DIGESTION TESTS FOR VOLATILE SOLIDS REDUCTION AT THE CALUMET WRP FOLLOWING OPTION 2 OF SECTION 503.33 (b)

Test Start Date	Before Test		After Test		Volatile Solids Reduction	
	TS*	TVS*	TS	TVS	By Equation**	By Mass
	%					
1/16/04	2.10	56.2	1.95	52.4	14.1	13.1
2/25/04	1.68	60.0	1.55	56.7	12.9	13.1
3/18/04	1.85	58.4	1.68	54.3	15.4	15.8
4/23/04	2.14	55.3	1.98	51.8	13.3	13.1
5/14/04	2.12	55.3	1.99	53.1	8.7	9.8
5/28/04	2.19	53.5	2.05	50.1	12.7	12.2
6/11/04	2.48	51.5	2.40	49.5	7.7	7.3
7/2/04	2.80	50.4	2.54	46.2	15.5	16.6
8/5/04	2.40	47.9	2.32	46.6	5.1	5.9
8/20/04	2.25	49.6	2.10	47.2	9.4	11.1
9/1/04	2.37	51.2	2.24	47.8	12.8	11.7
10/7/04	1.93	53.4	1.75	50.8	9.7	13.8
11/17/04	1.88	55.8	1.75	52.0	14.3	13.7
12/2/04	1.76	58.2	1.63	54.7	13.0	12.8

* TS = Total Solids content, TVS = Total Volatile Solids content.

** The Van Kleeck Equation was used in calculations.

STICKNEY WRP

Treatment Plant and Biosolids Process Train Description

The Stickney WRP, located in Stickney, Illinois, has a design capacity 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. Application to land as EQ biosolids at the Fulton County, Illinois, dedicated land application site.
    4. Application to farmland as EQ biosolids by a private contractor.
    5. 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 a 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, 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. Application to land as EQ biosolids at the Fulton County, Illinois, dedicated land application site.
4. Application to farmland as EQ biosolids by a private contractor.
5. Disposal in local municipal solid waste landfills.

In 2004, the total biosolids production at the Stickney WRP was 125,028 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 that were used and disposed of in 2004 was 147,473 dry tons. This total is greater than the total 2004 production for the Stickney WRP due to a net withdrawal of biosolids from lagoon storage.

Summary of Use and Disposal at Landfills

The Stickney WRP sent 78,009 dry tons of biosolids to landfills in 2004. Of this amount, 58,131 dry tons were used as daily cover, 18,408 dry tons were used as final cover, and 1,469 dry tons were co-disposed with municipal solid waste. These practices are exempt from the Part 503 Regulations and require no further reporting.

Land Application of Centrifuge Cake Biosolids

In 2004, the Stickney WRP land applied 69,449 dry tons of centrifuge cake biosolids to farmland under IEPA Permit Nos. 1999-SC-3932 and 2004-SC-0701 through contracts with Synagro Midwest, Inc. and with Continental Farms Inc. This included 1,496 dry tons of solids pumped from

the John E. Egan WRP to the North Side WRP for further processing and 1,152 dry tons of centrifuge cake that was transported to the Lawndale 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 that were land applied in 2004 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 13), the Class B pathogen anaerobic digester time and temperature requirements of Section 503.32b3 (Table 14), and the vector attraction reduction requirements of Section 503.33b10. Table 13 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 2004, the Stickney WRP land applied a total of 15 dry tons of air-dried EQ biosolids through the District's Controlled Solids Distribution Program under IEPA Permit No. 2000-SC-0872. These biosolids were used as a nutrient source at Chalet Hills golf course in Cary, Illinois. In accordance with Table 1 of Section 503.16, the frequency of monitoring for this biosolids product is one time per year.

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 PFRP. This PFRP equivalency took effect on August 1, 2002 (Appendix III) and on this basis, all EQ biosolids produced by the Stickney WRP met the Part 503 Class A pathogen requirements of 503.32a8 in 2004.

All Stickney WRP EQ biosolids that were land applied in 2004 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 15), the Class A pathogen limits of

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
02/05	68,610	7,991	3	3	386	0.47	17	46	91	<0.7	715
02/05	73,983	7,446	<0.9	3	761	0.77	27	51	58	<0.7	828
02/05	73,426	9,541	<0.9	4	738	0.61	26	68	63	<0.7	890
2/26	47,610	5,617	6	3	384	0.61	18	51	93	<0.7	682
3/16	54,811	6,971	5	4	452	0.28	17	56	131	<0.7	823
3/16	66,974	8,896	<0.9	3	880	0.50	27	69	68	<0.7	715
3/23	72,264	9,051	<0.9	4	894	0.58	21	70	70	<0.7	957
3/23	33,998	7,122	7	4	460	0.26	21	70	152	<0.7	821
04/12-16	53,398	15,472	3	3	367	1.16	16	50	121	<0.7	742
4/13	41,176	6,154	7	4	392	0.59	19	58	136	<0.7	804
4/13	60,382	11,136	5	4	439	0.32	16	55	90	<0.7	786
4/16	63,432	12,894	<0.9	3	776	1.08	25	56	66	<0.7	865
4/16	65,555	13,164	<0.9	5	763	0.64	25	67	70	<0.7	992
04/19-20	55,146	14,386	3	3	379	1.84	17	53	112	<0.7	745
4/27	44,009	7,198	8	4	451	0.68	26	64	147	<0.7	914
04/28-29	56,060	15,370	2	3	374	1.22	16	48	129	<0.7	764
5/5-6	55,838	9,846	1	3	414	0.88	17	44	98	<0.7	727
5/7	22,665	1,084	3	5	396	2.19	16	53	151	<0.7	998

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
5/17	68,325	13,516	<0.9	3	732	2.02	23	58	56	<0.7	804
5/17	40,263	8,523	6	5	376	1.78	19	62	155	<0.7	834
5/19-21	NRR	NRR	<0.9	20	152	1.48	4	46	118	<0.7	529
5/24-26	NRR	NRR	2	20	141	0.86	4	46	126	<0.7	532
5/28-29	58,939	11,019	<0.9	3	476	1.40	18	52	73	<0.7	706
6/2	41,301	6,577	5	7	461	0.99	19	105	136	<0.7	894
6/2	59,639	11,041	3	4	462	0.68	15	68	96	<0.7	867
06/21	17,757	2,646	3	9	317	1.31	13	48	141	<0.7	817
06/22	17,347	1,398	5	12	411	0.75	14	60	178	<0.7	1,057
7/1-9	58,270	18,509	4	2	301	0.78	11	46	72	<0.7	553
7/13-17	42,779	11,336	6	3	389	0.90	15	50	100	<0.7	649
7/14	27,457	3,825	6	4	411	0.83	16	59	156	<0.7	916
7/14	57,428	12,823	7	4	433	0.66	16	56	97	<0.7	842
7/19-22	50,452	15,199	7	3	428	0.77	14	50	118	<0.7	706
7/22-24	44,921	14,930	9	3	469	1.12	17	65	145	<0.7	796
7/26-29	52,261	17,010	7	3	369	1.00	15	58	125	<0.7	690
7/27-29	NRR	NRR	2	5	67	0.22	3	30	50	<0.7	176
7/30	15,486	2,233	5	14	310	1.10	10	58	179	<0.7	779
8/2-7	33,204	11,761	5	4	378	0.96	18	119	110	<0.7	762

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
8/3-6	NRR	NRR	8	18	180	0.94	7	72	110	<0.7	621
8/9	13,234	NRR	4	6	291	0.94	9	60	120	<0.7	681
8/9-14	44,190	16,484	9	4	416	0.99	17	63	127	<0.7	852
8/10-13	10,608	2,245	8	5	527	1.37	19	62	174	<0.7	1,138
8/11	53,142	14,719	6	4	413	1.14	16	54	133	<0.7	821
8/16-20	20,314	2,725	12	6	493	1.48	18	62	176	<0.7	1,084
8/16-21	49,904	16,500	13	4	418	0.98	16	63	129	<0.7	855
8/20-25	18,111	2,200	12	5	461	1.36	18	59	168	<0.7	1,053
8/23	30,360	3,961	8	4	338	0.76	17	51	151	<0.7	750
8/23-25	44,184	15,316	11	4	427	0.94	16	59	130	<0.7	895
8/30-31	20,791	2,161	12	5	483	1.52	20	65	165	<0.7	1,024
8/30-31	43,213	13,114	11	4	428	1.30	16	63	130	<0.7	901
9/1-3	15,106	NRR	6	5	453	1.05	16	53	171	<0.7	1,021
9/1-3	41,574	12,883	5	4	379	0.76	16	43	135	<0.7	808
9/7-11	37,213	13,249	6	3	399	0.92	17	48	139	<0.7	842
9/7-9	21,484	NRR	7	4	424	0.90	18	48	158	<0.7	910
9/13-18	40,135	13,303	6	4	452	1.12	19	48	152	<0.7	949
9/20	49,125	15,301	7	4	390	1.31	12	49	131	<0.7	826
9/20	32,458	5,460	8	4	405	1.31	16	49	156	<0.7	932

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
9/20-25	40,856	13,751	7	4	420	1.02	17	51	128	<0.7	841
9/24	37,115	3,317	5	4	415	1.22	20	49	146	<0.7	958
9/27	37,126	11,796	8	4	409	1.03	20	55	145	<0.7	804
9/27-30	36,380	7,964	9	4	434	1.28	21	56	174	<0.7	992
9/28	26,785	3,475	4	5	516	1.01	17	70	156	<0.7	1,078
10/1	43,324	7,361	7	5	434	1.24	24	55	160	<0.7	1,034
10/1	41,184	7,053	10	5	487	1.41	22	52	184	<0.7	1,113
10/4-8	43,099	6,439	9	4	408	1.21	24	47	157	<0.7	988
10/11-12	42,135	7,643	7	5	405	1.29	24	49	158	<0.7	986
10/18-22	41,616	8,408	7	5	526	1.37	26	55	224	<0.7	1,172
10/25	32,892	4,934	7	5	457	3.08	24	57	154	<0.7	1,076
10/26-28	40,674	6,961	9	5	409	1.30	22	46	167	<0.7	1,027
11/10	22,923	NRR	8	8	460	1.10	20	67	162	<0.7	1,053
11/10	16,519	2,649	5	24	359	1.30	12	73	171	<0.7	957
11/10	25,296	3,380	7	11	410	1.13	19	60	159	<0.7	967
11/13	31,491	3,277	1	4	429	1.05	21	60	138	<0.7	928
11/15-16	44,711	9,487	4	4	413	0.96	18	48	127	<0.7	962
11/8-13	38,744	10,088	2	4	403	1.11	21	73	133	<0.7	923
11/8-9	34,692	8,201	2	5	443	1.22	19	51	156	<0.7	983

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 13 (Continued)

NITROGEN AND METALS CONCENTRATIONS IN CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Sample Date	TKN	NH_3-N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg										
12/3	NRR	3,559	<0.9	8	400	1.75	13	58	174	<0.7	1,066
12/3	14,005	1,598	1	9	410	2.40	13	60	183	<0.7	1,067
12/8-9	10,083	2,466	1	6	365	1.78	12	55	143	<0.7	927
12/9-10	10,144	3,758	<0.9	8	398	1.34	14	64	189	<0.7	1,067
Minimum	10,083	1,084	<0.9	2	67	0.22	3	30	50	<0.7	176
Mean*	40,434	8,717	5	6	435	1.10	17	58	133	<0.7	868
Maximum	73,983	18,509	13	24	894	3.08	27	119	224	<0.7	1,172
503 Limit	NL	NL	41	39	1,500	17.0	75	420	300	100	2,800

* In calculating the mean, values less than the detection limit were considered as the detection limit.

NRR = No reportable result.

NL = No limit; not applicable.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 14

DIGESTER TEMPERATURES AND DETENTION TIMES FOR CENTRIFUGE CAKE BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO FARMLAND IN 2004

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required By 503.32b3*
	----°F----	-----days-----		------days-----
January	97	21.0	yes	15.0
February	97	20.3	yes	15.0
March	97	20.0	yes	15.0
April	98	20.5	yes	15.0
May	97	24.1	yes	15.0
June	97	24.2	yes	15.0
July	97	24.2	yes	15.0
August	99	24.1	yes	15.0
September	97	29.5	yes	15.0
October	97	25.3	yes	15.0
November	97	29.4	yes	15.0
December	97	21.0	yes	15.0

* For anaerobic digestion at average temperature achieved.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO LAND IN 2004

Sample Date	TKN	NH_3-N	TVS*	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg		%		mg/kg								
5/14	14,023	1,941	41.1	60.0	3	5	431	2.10	16	58	151	<0.7	1,119
5/17-18	16,711	3,245	38.1	64.7	4	6	435	2.27	17	58	157	<0.7	1,058
5/18-21	22,298	1,099	40.4	61.2	4	5	375	2.52	16	55	149	<0.7	932
5/24-25	19,974	2,393	41.4	59.5	3	5	342	1.64	17	55	138	<0.7	778
5/26	21,884	3,679	41.2	59.7	5	6	428	1.82	18	58	160	<0.7	1,053
9/7-10	23,872	5,466	41.6	40.5	6	5	440	1.29	18	54	180	<0.7	1,013
9/7-10	16,106	1,052	39.0	46.4	6	6	462	1.36	16	55	169	<0.7	1,090
9/13	12,463	1,003	38.6	47.3	8	6	498	1.32	17	60	174	<0.7	1,179
9/13-14	21,743	4,445	40.7	42.5	7	5	430	1.34	21	57	183	<0.7	1,014
9/14-17	17,968	3,529	40.4	43.3	6	5	434	1.31	18	55	194	<0.7	1,050
9/20	26,233	5,821	39.9	44.4	9	6	440	1.39	19	55	157	<0.7	1,050
9/20-23	20,940	4,110	41.3	41.2	9	6	484	1.25	21	57	176	<0.7	1,134
10/27	22,401	3,320	37.2	56.3	10	8	418	1.29	21	58	167	<0.7	1,001

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO LAND IN 2004

Sample Date	TKN	NH3-N	TVS*	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg		%		mg/kg								
10/29	17,953	2,310	31.2	66.5	9	12	445	1.41	17	61	185	<0.7	1,174
10/28-30	24,585	7,569	35.1	60.1	10	5	407	1.25	22	60	187	<0.7	1,070
11/1	17,679	2,152	36.1	60.9	3	6	432	1.21	16	55	149	<0.7	1,148
11/1-5	19,233	3,001	32.8	66.2	2	8	409	1.19	16	55	154	<0.7	1,057
11/1-6	22,414	6,632	37.3	58.7	3	5	420	1.16	18	48	163	<0.7	1,024
11/8-13	22,682	3,192	38.9	55.8	3	4	434	1.51	16	52	160	<0.7	958
11/8-13	19,167	3,286	35.2	62.3	2	6	432	1.71	18	61	148	<0.7	1,130
11/15-18	22,428	5,558	33.8	64.7	4	5	380	1.37	17	50	185	<0.7	1,049
11/15-20	27,601	5,212	42.6	48.5	3	4	432	1.16	20	62	141	<0.7	921
11/18-20	21,697	4,976	36.4	60.3	1	5	426	1.29	19	67	143	<0.7	1,062
11/22-24	19,713	4,481	34.5	63.5	2	5	394	1.78	18	52	192	<0.7	1,080
11/22-27	21,825	4,673	35.6	61.6	3	4	414	1.34	15	52	166	<0.7	1,022
11/29-30	22,185	6,797	38.2	57.1	2	4	390	1.17	16	55	165	<0.7	1,007
12/1-4	27,316	7,431	41.8	56.7	3	4	419	1.88	15	44	155	<0.7	978

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 15 (Continued)

NITROGEN CONCENTRATIONS, VOLATILE SOLIDS REDUCTION, AND METALS CONCENTRATIONS FOR AIR-DRIED BIOSOLIDS FROM THE STICKNEY WATER RECLAMATION PLANT APPLIED TO LAND IN 2004

Sample Date	TKN	NH3-N	TVS*	TVS Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/kg		%		mg/kg								
12/6-11	29,347	7,800	42.1	56.2	2	5	480	1.77	16	48	158	<0.7	1,042
12/13-17	12,597	6,739	40.4	59.1	3	4	435	1.36	15	46	175	<0.7	970
Minimum	12,463	1,003	31	41	1	4	342	1.16	15	44	138	<0.7	778
Mean**	20,863	4,238	38	56	5	6	426	1.50	18	55	165	<0.7	1,040
Maximum	29,347	7,800	43	66	10	12	498	2.52	22	67	194	<0.7	1,179
503 Limit	NL	NL	NL	38	41	39	1,500	17	75	420	300	100	2,800

* TVS = Total Volatile Solids.

** In calculating the mean, values less than the detectable level were considered as the detectable level.

NL = No limit; not applicable.

Section 503.32a8 (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).

METROPOLITAN WATER RECLAMATION DISTRICTR OF GREATER CHICAGO

TABLE 16

DATA FOR MONITORING PART 503 CLASS A PATHOGEN COMPLIANCE AT THE STICKNEY WATER RECLAMATION PLANT FOR 2004

Sample Date	Lagoon Source	Total Solids	Fecal Coliform*
		-----%-----	-----No./g-----
05/11/04	30	73.7	81
06/08/04	30	63.2	30
07/13/04	30	68.4	28
08/03/04	27	78.2	64
08/17/04	27	89.7	32
09/07/04	30	85.0	34
09/21/04	30	80.1	8
09/21/04	30	85.9	4
10/05/04	30	70.8	40
10/05/04	23	72.0	40
10/19/04	23	76.9	49
10/21/04	23	74.2	68
10/28/04	23	66.2	57
11/03/04	23	59.0	49

* Beginning August 1, 2002 the Stickney WRP EQ Processing Trains met Class A standards at Section 503.32a8 and required only Fecal Coliform analysis at the time of use.

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 2004 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, PCB, 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 WRP

A total of 78,009 dry tons of biosolids from the Stickney WRP were co-disposed, used as daily cover with municipal solid waste, or used as a final vegetative cover at nonhazardous waste landfills in 2004.

A total of 1,460 dry tons were co-disposed at Land and Lakes River Bend Prairie Landfill at 801 E. 138th St., Dolton, Illinois, and 9 dry tons were co-disposed at the Allied Waste Industries Environtech Landfill at Morris, Illinois.

A total of 35,353 dry tons were used as daily cover at Land and Lakes River Bend Prairie Landfill, and 22,778 dry tons were used as daily cover by Vision Resources, Inc. at the Allied Waste Industries Livingston Landfill in Pontiac, Illinois.

A total of 18,408 dry tons of biosolids were used as a final vegetative cover at the Waste Management of North America, Inc., CID Recycling and Disposal Facility in Calumet City, Illinois.

Calumet WRP

A total of 2,140 dry tons of biosolids from the Calumet WRP were co-disposed or used as a daily cover at nonhazardous waste landfills in 2004.

A total of 824 dry tons of biosolids from the Calumet WRP were co-disposed with municipal solid waste at Land and Lakes River Bend Prairie Landfill at 801 E. 138th St., Dolton, Illinois.

A total of 1,316 dry tons of biosolids from the Calumet WRP were used as daily cover at Land and Lakes River Bend Prairie Landfill at 803 E. 138th St., Dolton, Illinois.

John E. Egan WRP

The John E. Egan WRP did not send any biosolids to landfills in 2004.

APPENDIX I

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

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

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

January 28, 1994

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

Dear Mr. Mikulka:

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

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

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

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

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

Fulton County Illinois Site

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Hanover Park Fischer Farm

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Controlled Solids Distribution

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

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

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

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

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

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

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

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

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

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

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

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

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

Very truly yours,

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

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

APPENDIX II

REDUCTION IN FREQUENCY OF MONITORING FOR PATHOGENS IN BIOSOLIDS

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

REPLY TO THE ATTENTION OF:

WN-16J

JAN 12 2000

Dr. Dick Lanyon
Director, Research and Development
Metropolitan Water Reclamation District
of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611-2803

Re: Reduction in Frequency of Monitoring for Pathogens in Biosolids

Dear Dr. Lanyon:

This is in response to verbal and written requests, regarding the referenced matter, that were made by your predecessor Dr. Cecil Lue-Hing, and Dr. Tata Prakasam, the District's Research Manager, to John Colletti and Ash Sajjad of the Regional Biosolids Team. Specifically, the District requested reduction in the frequency of monitoring for pathogens in biosolids generated at the District's Calumet and Stickney waste water treatment plants from 12 times per year to 4 times per year for reporting these data to the U.S. Environmental Protection Agency (U.S. EPA) as required by 40 Code of Federal Regulations (CFR) part 503.

Further, Dr. Lue-Hing in his June 15, 1999, letter to John Colletti referenced the biosolids pathogen data that the District collected from over 1,000 discreet samples. This was done during a period of 4 years from 1994 until 1998, as a part of the District's application to the National Pathogen Equivalency Recommendation Committee (PERC) for certification of the District's biosolids processing trains as equivalent to a Process for further Reduction of Pathogens (PFRP). As you may know, because the District's biosolids process to reduce pathogens is not listed under 40 CFR part 503, the District sought equivalency determination from the PERC. The PERC'S recommendation along with the Region's approval is necessary for the District to obtain PFRP equivalency.

After a review of the District's biosolids data, and in consideration of the District's commendable effort to characterize pathogen quality of more than 1,000 samples, the following is our response to your request.

To provide relief from the analytical burden of analyzing biosolids for pathogens 12 times per year, the U.S. EPA, Region 5, approves reducing the frequency of monitoring to 6 times per year. The reduced frequency of monitoring is effective March 1, 2000, and is renewable on a yearly basis.

If you have any questions about this matter, please contact Ash Sajjad, Regional Biosolids expert at (312) 886-6112.

Sincerely yours,

Robert D. Harvey
FOR

Jo Lynn Traub
Director, Water Division

cc: Dr. Tata Prakasam, MWRDGC

APPENDIX III

DESIGNATION OF SITE-SPECIFIC EQUIVALENCY TO PFRP FOR DISTRICT BIOSOLIDS PROCESSING TRAINS

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

REPLY TO THE ATTENTION OF:

AUG 1 2 2004

WN-16J

Richard Lanyon, Director
Research and Development
Metropolitan Water Reclamation
District of Greater Chicago
100 East Erie Street
Chicago, Illinois 60611

Re: Mr. Richard Lanyon's May 12, 2004, and July 27, 2004, Letters Requesting Renewal of Site-specific Process to Further Reduce Pathogens Equivalency Certification for the Metropolitan Water Reclamation District of Greater Chicago's Biosolids Processing Trains at the Stickney and Calumet Waste Water Treatment Plants.

Dear Mr. Lanyon:

We acknowledge receipt of the referenced letters requesting, along with the Metropolitan Water Reclamation District of Greater Chicago's (MWRDGC) biosolids microbiological data to extend the current site-specific Process to Further Reduce Pathogens (PFRP), equivalency certification. The MWRDGC sought the site-specific PFRP equivalency certification in November 2001 from the U.S. Environmental Protection Agency (U.S. EPA), Region 5, for biosolids processed at the referenced Waste Water Treatment Plants (WRPs), as provided for under Class A Alternative 6 of the Part 503 Standards for the Use and Disposal of Biosolids promulgated in March 1993. In June 2002, Region 5 granted the first two-year site-specific PFRP equivalency certification to the MWRDGC's biosolids processing trains after the Region reviewed the biosolids data and consulted with the Pathogen Equivalency Committee (PEC).

To be equivalent, a treatment process must be able to consistently reduce pathogens in biosolids to levels comparable with other PFRP processes listed in Part 503, Appendix B (Class A with respect to pathogens), and meet the pathogen standards specified in 40 CFR 503.32(a)(7)(i). Furthermore, the granting of site-specific equivalency is limited to a set of process and operating conditions in use at the Stickney and Calumet WRPs at the time of the application for equivalency designation (Appendix B of MWRDGC's Letter of Request dated November 30, 2001), and as described by the District in its application for National equivalency submitted to the PEC in March of 1998. Part 503 for PFRP equivalency requires that enteric viruses and viable helminth ova are reduced to below detection levels.

Based on site visits on July 22, 2004, by Ash Sajjad and John Colletti of my staff, our review of the MWRDGC's compliance record in the Permit Compliance System and MWRDGC's biosolids data submitted for 2002 to 2004, we believe Class A biosolids quality was achieved at the Stickney and Calumet WRPs through operation of their respective low and high-solids sludge

processing trains (SPTs) according to codified protocols delineated in Attachment B of Mr. Lanyon's letter of request dated November 30, 2001.

In consideration of the quality of data provided for our review and the consistent achievement of Class A performance results of the MWRDGC's SPTs, we are pleased to grant another two-year site-specific certification of equivalency to MWRDGC's SPTs at Stickney and Calumet WRPs for a period of two years effective August 1, 2004, to July 31, 2006, 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 of request dated November 30, 2001; and

2) The Stickney and Calumet plants must monitor biosolids once per month for the first year beginning in August 2004, and once every other month for pathogens in the second year. Additionally, both plants must certify the MWRDGC is in compliance with Class A standards and report the results semi-annually to the attention of Mr. Valdis Aistars, 77 West Jackson Boulevard, WC-15J, Chicago, Illinois 60604.

Please note that the site-specific equivalency is not a National equivalency and does not apply to the same process performed at a different location or for any modification of the process.

We appreciate the MWRDGC's ongoing efforts to improve the quality of its biosolids. If you have any further questions about this matter, please contact Ash Sajjad at (312) 886-6112 or John Colletti at (312) 886-6106.

Sincerely yours,

Sally K. Swain

for Jo Lynn Traub
Director, Water Division

cc: Dick Lanyon, MWRDGC
Dr. Tom Granato, MWRDGC
Dr. James Smith Jr., ORD, Cincinnati