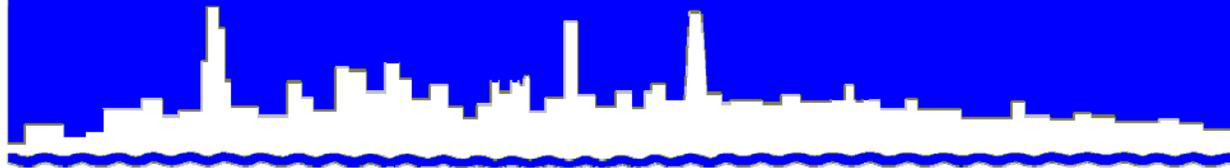


*Protecting Our Water Environment*



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

*MONITORING AND RESEARCH  
DEPARTMENT*

***REPORT NO. 17-20***

***ANNUAL BIOSOLIDS MANAGEMENT REPORT FOR***

***2016***

***April 2017***

**ANNUAL BIOSOLIDS MANAGEMENT REPORT  
FOR 2016**

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## LIST OF ACRONYMS

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Abbreviation/Acronym	Definition
CALSMA	Calumet Solids Management Area
CFR	Code of Federal Regulations
District	Metropolitan Water Reclamation District of Greater Chicago
DT	dry tons
Egan	John E. Egan Water Reclamation Plant
EQ	Exceptional Quality Biosolids
HASMA	Harlem Avenue Solids Management Area
IEPA	Illinois Environmental Protection Agency
Kirie	James C. Kirie Water Reclamation Plant
LASMA	Lawndale Avenue Solids Management Area
MGD	million gallons per day
O'Brien	Terrence J. O'Brien Water Reclamation Plant
Part 503	United States Environmental Protection Agency's Code of Federal Regulations Title 40 Part 503
PFRP	Process to Further Reduce Pathogens
USEPA	United States Environmental Agency
WRP	water reclamation plant

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## **DISCLAIMER**

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago (District).

## **FOREWORD**

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for 2016 for Biosolids Management by the District, as specified in the United States Environmental Protection Agency's (USEPA's) Code of Federal Regulations (CFR) Title 40 Part 503 (Part 503).

## INTRODUCTION

The Metropolitan Water Reclamation District of Greater Chicago (District) submitted the 2016 Part 503 biosolids management report electronically to the United States Environmental Protection Agency (USEPA) on February 21, 2017, as required under the USEPA Code of Federal Regulations Title 40 Part 503 at Section 503.18. This report serves as the District record in compliance with the frequency of monitoring, record keeping, and reporting (Sections 503.16, 503.17, and 503.18, respectively) of the District's 2016 biosolids management operations. The information in this report demonstrates the Class A pathogen requirements, Class B pathogen requirements, vector attraction reduction requirements, management practices, site restrictions, and requirements to obtain information as described in Sections 503.32(a)(5), 503.32(a)(6), 503.32(a)(7), 503.32(a)(8), 503.32(b)(2), 503.32(b)(3), 503.32(b)(5), 503.33(b)(1), 503.33(b)(5), 503.33(b)(9), 503.33(b)(10), 503.13, 503.14, and 503.16 for the District's 2016 biosolids management program.

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

1. Fulton County Dedicated Biosolids Application to Land (IEPA Permit No. 2013-SC-58146).
2. Hanover Park Fischer Farm Biosolids Application to Land (IEPA Permit No. 2012-SC-2255).
3. Controlled Solids Distribution Program (Biosolids Application to Land in the Chicago Area under IEPA Permit No. 2010-SC-0200 and 2015-SC-59620).
4. Farmland Application Program (Biosolids Application to Farmland from the Calumet, Stickney, and Egan WRPs under IEPA Permit No. 2014-SC-58425).

In the following sections, we have prepared a short description of the sludge processing and biosolids management operations at the District's seven WRPs. The Lemont, James C. Kirie (Kirie), and Terrence J. O'Brien (O'Brien) WRPs do not produce a final biosolids product, while the Calumet, Stickney, and Hanover Park WRPs produced final biosolids products that were beneficially used in 2016. The Egan WRP did not produce final biosolids products in 2016 due to scheduled digester maintenance. In addition, we discuss the utilization of the biosolids, outline the data-reporting requirements under Part 503, and present the required monitoring data in summary tables. The production and utilization of sludges and biosolids by the District in 2016 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 utilized, since biosolids may be utilized from production inventory for a previous year or biosolids produced in a given year may be stored or aged for utilization at a later time.

TABLE 1: PRODUCTION AND UTILIZATION OF SLUDGE AND BIOSOLIDS DURING 2016

Production and Utilization	Water Reclamation Plants						
	Stickney <sup>1</sup>	Calumet <sup>1</sup>	O'Brien	Egan <sup>1</sup>	Hanover Park <sup>1</sup>	Kirie	Lemont
----- Dry Tons (Metric Tons)-----							
Production <sup>2</sup>	120,279 (109,115)	21,323 (19,344)	35,604 (32,299)	8,156 (7,399)	796 (722)	6,554 (5,946)	309 (280)
Utilization	45,546 (41,319)	12,835(11,644)	-	-	650 (590)	-	-
Agricultural land	37,784 <sup>3</sup> (34,277)	7,514 (6,817)	-	-	650 (590)	-	-
Urban land (total)	7,762 (7,042)	5,321 (4,827)	-	-	-	-	-
air-dried	4,709 (4,272)	5,321 (4,827)	-	-	-	-	-
composted	1,766 (1,602)	-	-	-	-	-	-
District property	1,287 (1,168)	-	-	-	-	-	-
Landfill (total)	611 <sup>4</sup> (554)	2,512 (2,279)	-	-	-	-	-
Co-disposal	581 (527)	274 (249)	-	-	-	-	-
Daily cover	-	-	-	-	-	-	-
Final cover	30 (27)	2,238 (2,030)	-	-	-	-	-
To Other WRPs <sup>5</sup>	-	-	35,604 (32,299)	8,156 <sup>6</sup> (7,399)	-	6,554 (5,946)	309 (280)
Temporary Storage	-	-	-	-	-	-	-
Pelletizing facility <sup>7</sup>	37,143 (33,696)	-	-	-	-	-	-

<sup>1</sup>Differences between biosolids production and total use or disposal in 2016 were due to a net withdrawal or storage in lagoons or drying areas, and processing of biosolids imported from other WRPs.

<sup>2</sup>Stickney, Calumet, and Hanover Park WRPs produced biosolids while O'Brien, Kirie, Egan, and Lemont produced undigested or partially digested sludge. Figures represent total solids generated at the end of each plant's processing train plus those imported from other plants for further processing.

<sup>3</sup>Includes 5.23 DT used on Fulton County research plots.

<sup>4</sup>Includes shipment to Laraway Waste Management Landfill.

<sup>5</sup>For further processing.

<sup>6</sup>Includes 930 DT of centrate and 5,655 DT of solids pumped to the O'Brien WRP for further processing, and 1,543 DT of partially digested centrifuge cake solids and unsuitable material trucked to CALSMA for additional processing and to LASMA for landfill co-disposal, respectively; 28 DT are recycled at the Egan WRP for Anita Mox project.

<sup>7</sup>Sent to Stickney WRP pelletizing facility owned and operated by Metropolitan Biosolids Management, LLC, 6001 W. Pershing Road, Cicero, IL 60804. (Contract No. 98-RFP-10).

## LEMONT WATER RECLAMATION PLANT

The Lemont WRP, located in Lemont, Illinois, has a design average flow of 2.3 million gallons per day (MGD). The annual average treated flow in 2016 was 2.74 MGD. Wastewater reclamation processes include both primary (primary settling) and secondary (activated sludge process) treatments. In 2016, the Lemont WRP produced 309 dry tons (DT) of solids (Table 1), which were gravity concentrated and transported to the Stickney WRP for further processing.

No final biosolids product is generated at this WRP.

## **JAMES C. KIRIE WATER RECLAMATION PLANT**

The Kirie WRP, located in Des Plaines, Illinois, has a design average flow of 52 MGD. The annual average treated flow in 2016 was 37.8 MGD. Wastewater reclamation processes include grit tanks, secondary (activated sludge process), and tertiary (sand filtration) treatments. In 2016, the Kirie WRP produced 6,554 DT of solids (Table 1), which were sent via force main to the Egan WRP, then to the O'Brien WRP, and finally to the Stickney WRP for further processing.

No final biosolids product is generated at this WRP.

## **TERRENCE J. O'BRIEN WATER RECLAMATION PLANT**

The O'Brien WRP, located in Skokie, Illinois, has a design average flow of 333 MGD. The annual average treated flow in 2016 was 225 MGD. Wastewater reclamation processes at the O'Brien WRP include primary (primary settling) and secondary (activated sludge process) treatments. In 2016, the O'Brien WRP produced 35,604 DT of solids (Table 1), which were sent via pipeline to the Stickney WRP for further treatment. This total includes solids generated from water reclamation at the O'Brien WRP and solids conveyed from the Egan WRP to the O'Brien WRP via sewer, which is described in the next section.

No final biosolids product is generated at this WRP.

## **JOHN E. EGAN WATER RECLAMATION PLANT**

### **Treatment Plant and Biosolids Process Train Description**

The Egan WRP, located in Schaumburg, Illinois, has a design average flow of 30 MGD. The annual average treated flow in 2016 was 23.7 MGD. Wastewater reclamation processes include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatments. All solids generated at the Egan WRP, including solids conveyed from the Kirie WRP, are anaerobically digested. During some winters or when the centrifuges are not operating, liquid digested solids are sent via sewers to the O'Brien WRP. Centrifuge centrate is also sent via sewers to the O'Brien WRP.

In 2016, the total solids production at the Egan WRP was 8,156 DT ([Table 1](#)). Of that total, 6,585 DT (5,695 DT of biosolids and 930 DT of centrate) were pumped to the O'Brien WRP and then to the Stickney WRP for digestion and further processing. Solids were only partially digested at the Egan WRP for most of the year because at least one digester was temporarily out of service. A total of 1,543 DT of partially digested centrifuge cake biosolids was shipped to the LASMA and CALSMA sites for temporary storage and further processing, while the remaining 28 DT were recycled at the Egan WRP for use in their ANITA Mox N-recovery project. No further reporting is required because no Egan WRP biosolids were directly utilized.

### **Summary of Biosolids Use and Disposal at Landfills**

In 2016, no Egan biosolids were co-disposed in any landfill.

### **Biosolids Conveyed to Other Water Reclamation Plants for Further Processing**

In 2016, a total of 5,655 DT of solids and 930 DT of centrifuge centrate were pumped to the O'Brien WRP for further processing. In addition, a total of 1,543 DT of partially digested biosolids were trucked from the Egan WRP to the LASMA and CALSMA sites for additional processing and storage.

## HANOVER PARK WATER RECLAMATION PLANT

### Treatment Plant and Biosolids Process Train Description

The Hanover Park WRP, located in Hanover Park, Illinois, has a design average flow of 12 MGD. The annual average treated flow in 2016 was 8.71 MGD. Wastewater reclamation processes at this WRP include primary (primary settling), secondary (activated sludge process), and tertiary (sand filtration) treatments. All solids produced at the Hanover Park WRP are anaerobically digested and stored in lagoons and later land-applied by injection at the on-site Fischer Farm.

In 2016, the total biosolids production at this WRP was 796 DT (Table 1).

### Land Application of Class B Liquid Biosolids

In 2016, the Hanover Park WRP land-applied a total of 650 DT of biosolids at the on-site Fischer Farm under IEPA Permit No. 2012-SC-2255. The quantity of land-applied biosolids (650 DT) was lower than the quantity produced (796 DT) in 2016; hence 146 DT were placed in storage lagoons for later use. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is four times per year.

All Hanover Park WRP lagoon biosolids land-applied in 2016 met the pollutant concentration limits in Table 3 of Section 503.13 for all metals (Table 2). All biosolids also met the anaerobic digestion time and temperature requirements of the Class B pathogen standards of Section 503.32(b)(3) (Table 3), and the vector attraction reduction requirements of Section 503.33(b)(1) (Table 4). Management practices at this land-application site complied with Section 503.14 as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I).

TABLE 2: CONCENTRATIONS OF NITROGEN AND METALS IN BIOSOLIDS<sup>1</sup> GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED AT THE FISCHER FARM SITE IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
Supernatant											
----- mg/L -----											
05/28/16	546	521	<0.050	<0.0010	0.047	<0.20	<0.0100	0.020	<0.020	<0.005	0.086
06/04/16	607	486	<0.050	<0.0010	0.078	<0.20	<0.0100	0.023	<0.020	<0.005	0.095
06/18/16	632	553	<0.050	<0.0010	0.052	<0.20	<0.0100	0.024	<0.020	0.006	0.097
07/09/16	665	574	<0.020	<0.0010	0.060	<0.20	<0.0050	0.025	<0.010	0.023	0.101
07/16/16	639	548	<0.020	<0.0010	0.048	<0.20	<0.0050	0.026	<0.010	0.013	0.083
07/30/16	546	436	<0.020	<0.0010	0.048	<0.20	0.0086	0.028	<0.010	<0.005	0.086
08/06/16	495	404	<0.020	<0.0010	0.047	<0.20	0.0059	0.024	<0.010	0.010	0.071
08/13/16	495	387	<0.020	0.0012	0.042	0.32	0.0055	0.026	<0.010	<0.005	0.068
08/27/16	479	377	0.020	<0.0010	0.063	<0.05	0.0077	0.031	<0.010	0.011	0.083
09/03/16	494	388	<0.020	<0.0010	0.062	<0.05	<0.0050	0.029	<0.010	0.030	0.090
09/17/16	478	395	<0.020	<0.0010	0.042	0.06	0.0053	0.029	<0.010	0.029	0.073
10/01/16	516	403	<0.020	<0.0010	0.054	0.07	0.0062	0.029	<0.010	0.017	0.082
10/29/16	558	487	<0.020	<0.0010	0.049	<0.05	<0.0050	0.029	<0.010	0.030	0.084
11/05/16	571	48	<0.020	<0.0010	0.052	<0.05	<0.0050	0.029	<0.010	0.036	0.074
Liquid Biosolids <sup>2</sup>											
----- mg/kg -----											
01/09/16	79,674	921	<5	2	813	1.7	13	36	29	<5	870
12/24/16	94,752	767	<5	2	791	1.2	13	26	21	<5	865
12/31/16	76,935	873	<5	2	861	1.3	14	33	24	<5	922
Minimum	76,935	767	<5	2	791	1.2	13	26	21	<5	865
Mean <sup>3</sup>	83,787	854	<5	2	822	1.4	13	32	25	<5	886
Maximum	94,752	921	<5	2	861	1.7	14	36	29	<5	922
503 Limit	NL <sup>4</sup>	NL	41	39	1,500	1.7	75	420	300	100	2,800

<sup>1</sup>Concentrations of constituents in applied supernatant and biosolids reported in mg/L (volume basis) and mg/kg (dry weight basis), respectively.

<sup>2</sup>Descriptive statistics reported for liquid biosolids only.

<sup>3</sup>In computing each mean, any value less than the reporting limit was considered the reporting limit.

<sup>4</sup>No limit.

TABLE 3: DIGESTER TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE HANOVER PARK WATER RECLAMATION PLANT AND APPLIED AT THE FISCHER FARM SITE IN 2016

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3) <sup>1</sup>
	----- °F -----	----- days -----		----- days -----
January	95.0	24.0	yes	15.0
February	95.0	22.6	yes	15.0
March	95.0	20.7	yes	15.0
April	95.0	21.1	yes	15.0
May	95.0	20.6	yes	15.0
June	95.0	18.5	yes	15.0
July	95.0	18.9	yes	15.0
August	95.0	18.0	yes	15.0
September	95.0	18.9	yes	15.0
October	95.0	21.6	yes	15.0
November	95.0	24.9	yes	15.0
December	95.0	24.3	yes	15.0

<sup>1</sup>For anaerobic digestion at average temperature achieved.

TABLE 4: VOLATILE SOLIDS REDUCTION IN BIOSOLIDS GENERATED  
 AT THE HANOVER PARK WATER RECLAMATION PLANT  
 AND APPLIED AT THE FISCHER FARM SITE IN 2016

Month	Digester Feed	Digester Draw	Lagoon Biosolids <sup>1</sup>	Volatile Solids Reduction <sup>2</sup>
	----- % Total Volatile Solids -----			---- % ----
January	86.1	73.1	68.0	65.8
March	87.0	74.5	57.1	80.1
June	85.0	73.6	58.1	75.6
July	85.7	74.5	57.8	77.1
August	85.6	75.7	67.4	65.2
September	85.2	74.9	63.5	69.7
October	86.3	76.2	58.5	77.6
November	85.8	76.2	58.2	77.0
December	86.8	75.9	70.6	63.4

<sup>1</sup>Biosolids applied as supernatant from 5/28 through 11/5/2016; liquid biosolids applied on 1/9, 12/24, and 12/31/2016.

<sup>2</sup>Volatile solids reduction computed using total volatile solids for digester feed and lagoon biosolids.

## CALUMET WATER RECLAMATION PLANT

### Treatment Plant and Biosolids Process Train Description

The Calumet WRP, located in Chicago, Illinois, has a design average flow of 354 MGD. The annual average treated flow in 2016 was 253 MGD. Wastewater reclamation processes at this WRP include primary settling and secondary activated sludge processes. All solids produced at the Calumet WRP are anaerobically digested. Calumet WRP biosolids are then:

1. Placed in lagoons for dewatering, aging, and stabilization and then transported to paved cells and air-dried prior to:
  - a) Application of air-dried Exceptional Quality (EQ) biosolids to urban land under the District's Controlled Solids Distribution Program.
  - b) Use as air-dried biosolids at local municipal solid waste landfills as final cover.
2. Placed in lagoons for dewatering, transported to paved cells for air-drying, and then applied to farmland as semi-dried Class B biosolids by a private contractor or used as daily landfill cover.
3. Placed in lagoons for dewatering; transported to paved cells for composting with wood chips and landscape waste to produce EQ biosolids compost prior to application as a soil amendment to urban land.

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

In 2016, a total of 21,323 DT of biosolids was produced at the Calumet WRP (Table 1). The total quantity of 15,347 DT of biosolids utilized (12,835 DT land-applied and 2,512 DT disposed of at landfills) was less than the total 2016 production for the Calumet WRP. Hence, a total of 5,976 DT was stored in lagoons or on drying cells for further processing and/or later use.

### Summary of Biosolids Use and Disposal at Landfills

In 2016, a total of 2,238 DT of biosolids generated at the Calumet WRP was applied as final cover at the Land and Lakes Landfill, Dolton, Illinois. A total of 274 DT of unsuitable solids was co-disposed with municipal solid wastes at the Waste Management's Laraway Landfill site, Joliet, Illinois. No biosolids were used as daily cover.

## Land Application of Class B Biosolids

In 2016, the Calumet WRP land-applied 7,514 DT of semi-dried Class B biosolids to farmland under IEPA Permit No. 2014-SC-58425 through contracts with Synagro Midwest, Inc. (Contract No. 14-692-12) and Stewart Environmental, Inc. (Contract No. 14-690-11). During 2016, approximately 1,500 DT centrifuge cake biosolids were transported from the Egan WRP to the CALSMA sites for storage and later land application. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

All Calumet WRP semi-dried Class B biosolids land-applied in 2016 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 5), the vector attraction reduction requirements of Section 503.33(b)(10) (by incorporation in soil within six hours after application), and the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 6). The biosolids nitrogen concentrations (Table 5) were used to compute the agronomic rates for farmland application.

## Application of Biosolids to Urban Land

In 2016, a total of 5,321 DT of air-dried Class A EQ biosolids generated at the Calumet WRP was applied to urban land and District property through the District's Controlled Solids Distribution Program under IEPA Permit Nos. 2010-SC-0200 and 2015-SC-59620 for maintenance of golf courses and recreation fields, landscaping, and for the construction of new recreation fields. The sites and method of utilization of these biosolids under the Controlled Solids Distribution Program are listed in Table 7.

**Air-Dried Exceptional Quality Biosolids.** In 2016, a total of 5,321 DT of air-dried Class A EQ biosolids generated at the Calumet WRP was applied to urban land. All Calumet WRP air-dried, EQ biosolids land-applied in 2016 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 8), the vector attraction reduction requirements of Section 503.33(b)(1) (Table 8), and the Class A pathogen limits of Section 503.32(a)(5) (Tables 9 and 10). Enteric viruses and helminth ova were analyzed before biosolids were dried (Table 9). The fecal coliform analysis was performed after the biosolids were dried and prior to utilization on urban land (Table 10). Management practices complied with Section 503.14 as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I). In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

**Composted Exceptional Quality Biosolids.** During 2016, semi-dried biosolids generated at the Calumet and Stickney WRPs were composted with woodchips and cured at the Calumet East Solids Management Area (CALSMA). Since this material was still in the curing stage at the end of 2016, no Calumet composted biosolids were applied to urban land in 2016. However, the material will be distributed during 2017. The fecal coliform analysis was performed after the composted EQ biosolids were cured and prepared for later utilization on urban land (Table 11). Class A pathogen reduction was achieved using the open windrow composting process through which all the requirements of Section 503.32(a)(7) were met. The temperature of the compost piles was maintained at  $\geq 55^{\circ}\text{C}$  for at least 15 days and the piles were

turned five times during this period (Table 12). Vector attraction reduction was achieved through the same open windrow composting process and met the requirements of Section 503.33(b)(5) by fulfilling the temperature and time requirements ( $\geq 45^{\circ}\text{C}$  for at least 14 days) in the open windrows (Table 12).

The composted EQ biosolids generated at the Calumet WRP in 2016 will be applied to urban land through the District's Controlled Solids Distribution Program in 2017. Provided all composting requirements of Sections 503.32(a)(7) and 503.33(b)(5) are met, no additional monitoring is required.

TABLE 5: CONCENTRATIONS OF NITROGEN AND METALS IN SEMI-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	-----mg/dry kg-----										
03/30/16	24,585	2,655	7	2	343	0.80	4	23	81	<5	977
03/30/16	24,583	1,857	7	2	328	0.55	3	22	75	<5	936
05/03/16	29,641	1,897	8	2	411	1.05	11	29	85	<5	1,256
05/03/16	27,268	3,632	9	2	371	0.75	6	27	89	<5	1,098
05/12/16	25,747	2,003	8	2	389	0.60	6	27	93	<5	1,152
06/15/16	25,588	2,559	7	2	371	0.75	7	27	89	<5	1,075
06/15/16	26,330	2,974	6	2	380	0.83	10	28	83	<5	1,070
06/22/16	23,872	1,836	7	2	404	0.67	6	28	93	<5	1,202
06/28/16	25,257	2,358	10	2	382	1.2	9	30	90	<5	1,180
06/29/16	21,158	5,621	7	2	386	0.83	11	28	74	<5	1,129
07/06/16	24,531	2,639	9	2	377	0.90	9	29	82	<5	1,155
07/19/16	26,147	3,596	13	3	338	0.79	11	24	78	<5	970
07/29/16	23,099	2,734	9	2	438	0.67	9	30	85	<5	1,308
08/03/16	20,966	4,633	9	2	370	0.77	8	28	87	<5	1,142
08/11/16	24,120	588 <sup>2</sup>	10	3	441	0.92	9	29	86	<5	1,251
08/18/16	20,588	187 <sup>2</sup>	9	2	433	0.85	10	30	89	<5	1,256
08/24/16	14,522	176 <sup>2</sup>	8	2	408	0.83	9	29	83	<5	1,198
09/26/16	34,538	2,198	9	3	396	0.98	8	31	77	<5	1,097
10/06/16	10,248	1,862	11	3	368	0.73	9	30	87	<5	977
11/02/16	18,943	4,234	10	3	378	0.71	8	30	87	<5	1,218
11/30/16	25,670	5,007	8	3	407	0.57	11	31	78	<5	1,232

TABLE 5 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN SEMI-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
Minimum	10,248	176	6	2	328	0.55	3	22	74	<5	936
Mean <sup>1</sup>	23,686	2,631	9	2	387	0.80	8	28	84	<5	1,137
Maximum	34,538	5,621	13	3	441	1.2	11	31	93	<5	1,308
503 Limit	NL <sup>3</sup>	NL	41	39	1,500	17	75	420	300	100	2,800

<sup>1</sup>In calculating each mean, any value less than the reporting limit was considered the reporting limit.

<sup>2</sup>Low NH<sub>3</sub>-N concentrations due to use of failed composted biosolids on farmland.

<sup>3</sup>No Limit.

TABLE 6: DIGESTER<sup>1</sup> TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Month	Average Temperature	Average Detention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3) <sup>2</sup>
	---- °F ----	----- days -----		----- days -----
January	97.9	78.8	yes	15.0
February	97.8	61.0	yes	15.0
March	97.3	36.3	yes	15.0
April	97.5	32.3	yes	15.0
May	97.8	51.7	yes	15.0
June	97.4	48.7	yes	15.0
July	97.7	65.7	yes	15.0
August	97.7	54.8	yes	15.0
September	97.7	68.6	yes	15.0
October	97.6	69.9	yes	15.0
November	97.6	78.3	yes	15.0
December	97.5	53.5	yes	15.0

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

<sup>2</sup>For anaerobic digestion at average temperature achieved.

TABLE 7: SITES THAT UTILIZED CALUMET WATER RECLAMATION  
PLANT AIR-DRIED BIOSOLIDS UNDER THE CONTROLLED  
SOLIDS DISTRIBUTION PROGRAM IN 2016

User	Use/Location
A. B. Sanchez Landscaping, Arlington Heights	Landscaping
Bolingbrook Park District, Bolingbrook	Athletic fields - 4 parks <sup>1</sup>
Chicago Park District, Chicago	Athletic fields - 14 parks <sup>2</sup>
Cinder Ridge Golf Course, Wilmington	Golf Course
Crete Monee High School, Crete	Athletic fields
De La Salle High School, Chicago	Athletic fields
Dolton Park District, Dolton	Athletic fields - Dolton Park
Evanston High School, Evanston	Athletic fields
Evergreen Park High School, Evergreen Park	Athletic fields
Frankfort Park District, Frankfort	Athletic fields - 3 parks <sup>3</sup>
Harvey Park District, Harvey	Athletic fields - 4 parks <sup>4</sup>
Highway Department, Orland Park	Landscaping
Land and Lakes Inc., Romeoville	Landscaping
MWRD, Calumet	Landscaping
MWRD, Skokie	Landscaping
Midlothian Park District, Midlothian	Athletic fields - Memorial Park
Moody Bible Institute, Chicago	Athletic fields - Soccer Field
Oak Lawn Spartan Athletic Complex, Oak Lawn	Athletic fields - Baseball fields
Olympia Fields Park District, Olympia Fields	Athletic fields - Sergeant Means Park
Village of Lincolnwood, Lincolnwood	Athletic fields - Proesel Park
Reavis High School, Burbank	Athletic fields
Reavis High school, Burbank	Athletic fields
St Ignatius High School, Chicago	Athletic fields
Stanley Palarz, Lockport	Landscaping
Thornton Reservoir, Thornton	Landscaping
Tinley Park Park District, Tinley Park	Athletic fields - 3 parks <sup>5</sup>
Troy Middle School, Plainfield	Athletic fields
Village of Orland Park, Orland Park	Athletic fields - Freedom Park
Wilmette Golf Course, Lemont	Golf Course

<sup>1</sup>Central Park, Lily Cache Park, Indian Chase Meadow, and Indian Boundary Park.

<sup>2</sup>Oriole, Athletic Field, Douglass, Horner, Kelvyn, Northerly Island, Norwood, Riis, Rogers, Touchy, Warren, Washington, Welles, and Winnemac Parks.

<sup>3</sup>Commissioners, Jackson Creek, and Michele Bingham Parks.

<sup>4</sup>Lexington, Martin L. King Jr., Medgar Evers, and Taft Parks.

<sup>5</sup>Community, Dog, and Centennial Parks.

TABLE 8: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	TVS <sup>1</sup>	TVS <sup>2</sup> Reduction	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	----- mg/dry kg -----		----- % -----		----- mg/dry kg -----								
06/01/16	23,475	2,139	32.4	84.6	7	2	362	0.79	7	27	89	<5	1,116
06/08/16	24,993	2,620	39.3	79.3	5	2	355	0.59	7	26	85	<5	1,090
07/06/16	23,025	2,458	38.7	79.7	8	2	393	1.1	8	29	91	<5	1,188
07/13/16	22,948	3,050	33.2	84.0	8	2	384	0.86	7	27	87	<5	1,121
07/13/16	23,708	3,052	41.8	76.9	8	2	399	1.0	9	29	88	<5	1,174
07/20/16	18,299	1,433	31.1	85.5	7	3	269	0.68	8	29	76	<5	817
07/20/16	22,979	1,449	41.8	77.0	8	2	402	0.92	8	29	84	<5	1,216
07/29/16	14,800	969	25.8	88.8	8	4	273	0.65	6	30	79	<5	847
09/22/16	10,923	100	41.9	49.8	7	2	303	1.2	4	21	65	<5	921
09/22/16	14,393	78	44.3	60.6	7	3	449	1.1	9	32	92	<5	1,390
09/22/16	16,141	34	38.4	58.7	9	3	389	0.89	5	32	93	<5	1,137
09/29/16	14,390	44	39.6	31.1	8	3	382	0.67	10	28	87	<5	1,062
11/09/16	21,627	1,010	36.6	63.5	7	3	356	0.85	7	30	84	<5	1,174
11/16/16	14,306	1,050	37.6	62.0	9	3	384	0.35	9	30	89	<5	1,300
11/30/16	26,290	3,203	44.6	49.2	8	3	411	0.69	11	31	90	<5	1,237
Minimum	10,923	34	25.8	49.2	5	2	269	0.35	4	21	65	<5	817
Mean <sup>3</sup>	19,482	1,513	37.8	70.3	8	3	367	0.81	8	29	85	<5	1,119
Maximum	26,290	3,203	44.6	88.8	9	4	449	1.2	11	32	93	<5	1,390
503 Limit	NL <sup>4</sup>	NL	NL	38.0	41	39	1,500	17	75	420	300	100	2,800

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

<sup>2</sup>Total volatile solids for digester feed during 2014 were used to calculate TVS reductions because the biosolids used to produce air-dried biosolids were stored in lagoons during that year.

<sup>3</sup>In calculating each mean, any value less than the reporting limit was considered the reporting limit.

<sup>4</sup>No limit.

TABLE 9: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS<sup>1</sup> GENERATED BY NON-COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE CALUMET WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2016

Sample Date <sup>2</sup>	Total Solids	Fecal Coliform	Sample Date <sup>3</sup>	Helminth Ova	Enteric Virus
	---- % ----	----- MPN <sup>4</sup> /g -----		--- No./4g ---	--- PFU <sup>5</sup> /4g ---
10/01/15	66.6	150	08/25/15	<0.0800	<0.8000
10/01/15	62.5	180	10/01/15	0.0800	<0.8000
05/17/16	78.0	170	12/01/15	<0.0800	<0.8000
07/21/16	68.5	6	03/15/16	<0.0800	<0.8000
5/24/16	79.9	36	04/12/16	<0.0800	<0.8000
07/26/16	78.8	44	06/08/16	<0.0800	<0.8000

<sup>1</sup>All biosolids satisfied Part 503 Class A requirements.

<sup>2</sup>Sample dates apply to FC samples only.

<sup>3</sup>Non-PFRP biosolids sampled before the material was dried and subsequently used in 2016.

<sup>4</sup>Most probable number.

<sup>5</sup>Plaque-forming unit.

TABLE 10: MICROBIOLOGICAL ANALYSIS OF CLASS A BIOSOLIDS  
GENERATED AT THE CALUMET WATER RECLAMATION PLANT AND  
TESTED PRIOR TO UTILIZATION ON URBAN LAND IN 2016

Sample Date	Lagoon	Total Solids	Fecal Coliform
		---- % ----	---- MPN <sup>1</sup> /g ----
04/27/16	18	65.4	44
04/27/16	18	65.6	58
05/03/16	19	76.1	380
05/03/16	19	64.9	100
05/17/16	18	67.2	870
05/17/16	19	78.0	170
05/24/16	18	79.9	36
05/25/16	18	84.0	60
06/01/16	18	58.1	200
06/01/16	18	51.4	87
06/08/16	18	71.4	230
06/16/16	18	78.9	360
06/16/16	18	78.0	37
07/07/16	18	82.6	9
07/07/16	6	81.7	610
07/21/16	18	68.5	6
07/21/16	18	68.5	100
07/26/16	18	69.1	110
07/26/16	18	70.3	54
07/26/16	18	60.0	19
07/26/16	6	78.8	44
07/27/16	6	66.6	57
09/13/16	19	69.2	73
09/13/16	18	71.7	95
09/20/16	19	80.2	360
09/22/16	19	64.9	15
10/20/16	18	70.8	140
10/25/16	19	64.4	150
10/25/16	14	83.3	60

<sup>1</sup>Most probable number.

TABLE 11: MICROBIOLOGICAL ANALYSIS OF CURED COMPOSTED  
 EXCEPTIONAL QUALITY BIOSOLIDS<sup>1</sup> PROCESSED AT THE  
 CALUMET EAST SOLIDS MANAGEMENT AREA IN 2016 AND  
 STORED FOR UTILIZATION ON URBAN LAND IN 2017

Sample Date	Total Solids	Fecal Coliform
	----- %-----	----- MPN <sup>2</sup> /g -----
11/17/16	44.6	7

<sup>1</sup>Stickney WRP centrifuge cake utilized in the composting process.

<sup>2</sup>Most probable number.

TABLE 12: SUMMARY OF DAILY TEMPERATURE READINGS AND TURNING OF OPEN WINDROWS DURING PRODUCTION OF COMPOSTED BIOSOLIDS AT THE CALUMET EAST SOLIDS MANAGEMENT AREA IN 2016

Pile ID <sup>1</sup>	Composting Date (Range) <sup>2</sup>	Turning Date <sup>2</sup>					Composting Temperature °C (range)
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
16-03	06/11 - 07/22	6/27	7/01	7/05	7/11	7/18	55 – 74
16-04	06/12 - 07/06	6/16	6/22	6/27	7/01	7/06	58 – 72
16-05	06/13 - 07/11	6/17	6/23	6/28	7/05	7/11	58 – 73
16-07	08/05 - 09/02	8/09	8/13	8/18	8/23	8/29	57 – 69
16-08	08/08 - 09/04	8/12	8/16	8/20	8/25	9/01	58 – 73
16-09	08/06 - 09/04	8/11	8/16	8/20	8/25	9/01	61 – 73
16-10	08/08 - 09/04	8/12	8/16	8/20	8/25	9/01	55 – 71
16-11	09/06 - 10/19	9/12	9/19	9/23	9/29	10/15	56 – 67
16-12	08/09 - 09/09	8/13	8/18	8/23	8/29	9/03	55 – 71
16-14	09/06 - 10/09	9/14	9/19	9/23	9/29	10/05	55 – 72
16-15	09/06 - 10/03	9/06	9/12	9/19	9/23	9/29	56 – 73
16-16	08/20 - 09/23	8/25	9/01	9/08	9/14	9/19	55 – 70

<sup>1</sup>All piles reported are certified to fulfill the temperature and turning requirements (minimum of 55°C for 15 consecutive days and turned a minimum of five times during the composting period).

<sup>2</sup>Windrow turning date expressed as month/day in 2016.

### **Site-Specific Process to Further Reduce Pathogens**

The USEPA Region 5 designated, on a site-specific basis for the Calumet and Stickney WRPs, two of the District's biosolids processing trains as equivalent to PFRP according to Section 503.32(a)(8). The PFRP equivalency commenced on August 1, 2002 (Appendix II). The current renewable certification of the PFRP designation is valid from August 1, 2012, through July 31, 2017, and requires analysis of six samples for helminth ova and enteric viruses annually during this period.

All of the Calumet WRP EQ biosolids generated or utilized in 2016 were not PFRP-compliant with respect to the minimum required duration of lagoon aging (18 months) due to operational constraints. Therefore, no PFRP-compliant biosolids were available for sampling and analysis. All biosolids utilized as EQ material in 2016 were tested for pathogen compliance according to Section 503.32(a)(5).

## STICKNEY WATER RECLAMATION PLANT

### Treatment Plant and Biosolids Process Train Description

The Stickney WRP, located in Stickney, Illinois, has a design average flow of 1,200 MGD. The annual average treated flow in 2016 was 680 MGD. Wastewater reclamation processes include primary (Imhoff and primary settling) and secondary (activated sludge process) treatments. All solids produced at this WRP and coming from the O'Brien, Egan, Kirie, and Lemont WRPs are anaerobically digested. Stickney WRP biosolids are then:

1. Placed in lagoons for dewatering, aging, and stabilization and then transported to paved cells and air-dried prior to:
  - a. Application of air-dried Exceptional Quality (EQ) biosolids to urban land under the District's Controlled Solids Distribution Program.
  - b. Use as air-dried biosolids at local municipal solid waste landfills as final landfill cover.
2. Dewatered by centrifuging to approximately 25 percent solids content and then applied to farmland as Class B biosolids by a private contractor.
3. Dewatered by centrifuging to approximately 25 percent solids content, transported to paved cells, and air-dried prior to use as daily landfill cover.
4. Dewatered by centrifuging to approximately 25 percent solids content and conveyed to Metropolitan Biosolids Management, LLC, for further processing under Contract 98-RFP-10.
5. Dewatered by centrifuging to approximately 25 percent solids content and transported to Harlem Avenue Solids Management Area (HASMA) for co-composting with woodchips and yardwaste prior to application as a soil amendment to urban land to produce EQ biosolids compost under the District's Controlled Solids Distribution Program.
6. Dewatered by centrifuging to approximately 25 percent solids content, placed in lagoons for aging and stabilization, and transported to paved cells and air-dried prior to:
  - a. Application to urban land under the District's Controlled Solids Distribution Program.
  - b. Application to farmland as semi-dried Class B biosolids.
  - c. Use at local municipal solid waste landfills as final landfill cover.

d. Disposal in local municipal solid waste landfills.

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

In 2016, the Stickney WRP produced a total of 120,279 DT of biosolids (Table 1). This total includes biosolids generated by processing sludge originating at the Stickney WRP as well as the sludge imported from the O'Brien, Egan, Kirie, and Lemont WRPs for further processing. The quantity of biosolids used and disposed of (75,538 DT) was lower than the total 2016 production (120,279 DT) for the Stickney WRP. Hence, 44,741 DT were stored in lagoons and/or on drying cells for further processing or later use.

### **Summary of Biosolids Use and Disposal at Landfills**

In 2016, a total of 581 DT of biosolids, generated at the Stickney WRP and including 70 DT unsuitable solids generated by digester cleaning and trucked from the Egan WRP to LASMA, were co-disposed with municipal solid wastes at the Laraway Landfill, Joliet, Illinois. A total of 30 DT of biosolids was also used as final cover.

### **Application of Class B Biosolids to Farmland**

In 2016, a total of 37,784 DT of centrifuge cake and semi-dried biosolids generated at the Stickney WRP was applied to agricultural land under IEPA Permit No. 2014-SC-58425. This total includes 5.2 DT applied to research plots at the Fulton County site. Application to agricultural land was done through contracts with Synagro Midwest, Inc. (Contract No. 14-692-12) and Stewart Environmental, Inc. (Contract No. 14-690-11). During 2016, a minimal amount of centrifuge cake biosolids was shipped from the Egan WRP to the Lawndale Avenue Solids Management Area for further processing and drying. In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is 12 times per year.

All Stickney WRP centrifuge cake and semi-dried biosolids land applied in 2016 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 13), the vector attraction reduction requirements of Section 503.33(b)(10) (by incorporation in soil within six hours after application), and the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 14). The biosolids nitrogen concentrations (Table 13) were used to compute the agronomic rates for farmland application.

### **Application of Biosolids to Urban Land**

In 2016, through the District's Controlled Solids Distribution Program, a total of 6,475 DT of Stickney WRP air-dried (4,709 DT) and composted EQ (1,766 DT) biosolids was applied under IEPA Permit Nos. 2010-SC-0200 and 2015-SC-59620 to urban land for the construction and maintenance of golf courses, recreation fields, and parks. An amount of 1,287 DT of partially composted biosolids was applied to District property as Class B biosolids for construction and landscaping. This site met the low public access requirement. The sites and method of utilization of these biosolids under the program are listed in Table 15.

TABLE 13: CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
03/29/16	28,188	6,329	7	5	412	0.32	12	41	107	<5	874
03/29/16	46,350	9,200	5	5	452	0.40	20	42	85	<5	790
03/29/16	37,926	9,196	9	4	399	0.66	12	41	107	<5	861
04/25/16	29,011	6,247	6	4	450	0.74	12	43	116	<5	948
04/25/16	30,650	5,491	6	4	425	1.1	12	42	107	<5	906
04/26/16	28,126	6,660	7	4	427	0.76	12	42	113	<5	900
04/26/16	49,818	12,286	<5	4	456	0.63	21	42	86	<5	795
05/19/16	57,499	6,150	8	5	427	0.77	12	43	114	<5	955
05/19/16	46,997	14,350	5	4	424	0.74	22	42	84	<5	782
05/20/16	29,729	5,918	7	7	451	0.72	12	46	93	<5	905
05/20/16	27,591	5,422	5	7	450	0.77	11	44	91	<5	839
06/06/16	43,812	13,012	<5	4	394	0.67	16	41	96	<5	739
06/08/16	33,133	6,910	7	4	419	0.83	13	42	109	<5	890
06/08/16	37,054	5,338	<5	7	467	0.71	12	46	92	<5	881
06/16/16	42,333	15,037	<5	4	414	0.78	16	44	87	<5	793
07/11/16	27,248	5,949	8	5	437	0.87	13	46	121	<5	969
07/29/16	57,016	20,226	6	4	408	0.92	9	38	76	<5	715
07/29/16	30,398	9,159	8	5	448	0.88	10	44	119	<5	920
07/29/16	30,522	6,177	9	5	433	0.94	11	44	116	<5	911
07/29/16	26,572	5,765	8	5	437	1.2	11	44	118	<5	918

TABLE 13 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
08/01/16	49,591	17,241	5	4	420	0.81	11	38	78	<5	729
08/08/16	49,738	16,072	5	4	396	0.79	10	37	74	<5	684
08/17/16	39,243	13,060	6	4	421	0.99	9	39	99	<5	789
08/22/16	38,431	11,429	5	3	425	0.44	11	42	105	<5	848
08/30/16	30,140	5,221	6	5	414	0.99	12	44	102	<5	881
09/20/16	26,316	4,582	6	6	448	0.85	12	46	109	<5	949
09/20/16	38,228	10,271	<5	4	430	0.73	12	43	88	<5	816
09/22/16	24,323	4,816	8	6	438	0.54	12	45	102	<5	918
09/23/16	46,607	12,662	5	4	442	0.73	14	43	87	<5	807
10/12/16	31,548	6,918	7	5	427	0.76	12	43	93	<5	815
10/20/16	28,875	4,352	8	6	426	1.0	9	43	106	<5	920
10/25/16	39,265	11,965	6	4	416	0.72	10	46	116	<5	883
11/01/16	38,791	11,722	6	4	418	0.78	10	46	121	<5	809
11/09/16	39,080	11,056	6	4	390	0.88	10	44	109	<5	834
11/11/16	46,986	9,245	5	3	410	0.85	12	42	94	<5	834
11/14/16	45,013	8,944	5	3	414	0.77	12	43	91	<5	850
11/14/16	16,740	1,005	8	6	463	0.80	11	47	127	<5	1,013
11/15/16	42,337	12,485	6	4	424	0.72	10	47	123	<5	905
11/15/16	41,274	10,220	5	4	417	1.1	12	42	95	<5	857
11/16/16	40,070	11,814	6	4	424	0.71	10	42	111	<5	854
11/23/16	40,843	12,917	6	3	373	0.80	10	40	105	<5	774

TABLE 13 (Continued): CONCENTRATIONS OF NITROGEN AND METALS IN CENTRIFUGE CAKE AND SEMI-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
----- mg/dry kg -----											
Minimum	16,740	1,005	<5	3	373	0.32	9	37	74	<5	684
Mean <sup>1</sup>	37,400	9,337	6	5	426	0.78	12	43	102	<5	855
Maximum	57,499	20,226	9	7	467	1.2	22	47	127	<5	1,013
503 Limit	NL <sup>2</sup>	NL	41	39	1,500	17	75	420	300	100	2,800

<sup>1</sup>In calculating each mean, any value less than the reporting limit was considered the reporting limit.

<sup>2</sup>No limit.

TABLE 14: DIGESTER TEMPERATURES AND DETENTION TIMES DURING PROCESSING OF BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO FARMLAND IN 2016

Month	Average Temperature	Average Retention Time	Meets Part 503 Class B Requirements	Minimum Detention Time Required by 503.32(b)(3) <sup>1</sup>
	---- °F ----	--- days ---		--- days ---
January	97.5	19.9	yes	15.0
February	97.2	20.0	yes	15.0
March	98.7	20.6	yes	15.0
April	97.4	23.3	yes	15.0
May	97.8	23.6	yes	15.0
June	98.0	21.2	yes	15.0
July	97.8	22.6	yes	15.0
August	97.7	24.1	yes	15.0
September	98.1	27.1	yes	15.0
October	97.6	25.4	yes	15.0
November	98.1	23.0	yes	15.0
December	97.4	22.9	yes	15.0

<sup>1</sup>For anaerobic digestion at average temperature achieved.

TABLE 15: SITES THAT UTILIZED STICKNEY WATER RECLAMATION AIR-DRIED AND COMPOSTED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2016

User	Use/Location
<u>Composted Biosolids</u>	
A Block Ltd, Lemont	Landscaping
Beary Landscaping, Lockport	Landscaping
Bienia Janus, Lemont	Landscaping
Chicago Urban Farm, Chicago	Gardens
Clemens Gizynski, Chicago	Gardens
Cog Hill Golf Course and Country Club, Lemont	Trees and landscaping
Coyote Run Golf Course, Flossmoor	Trees and landscaping
Devotional Associates of Yogeshwar Church, Streamwood	Gardens
Frank Ratulowski, Homer Glen	Trees and landscaping
Glen Eagle Country Club, Lemont	Trees and landscaping
Harvey Park Districts, Harvey	Trees and landscaping
Helen Lekavich, Midlothian	Gardens
Hinsdale Fil-Am Church, Hinsdale	Gardens
Jerry Gould, Riverside	Landscaping
Joe Miller, Justice	Landscaping
JTP Lawn Service, Crete	Landscaping
Julian Plumber, Blue Island	Landscaping
Lake Street Supply, Chicago	Landscaping
Land Works Ltd, Bolingbrook	Landscaping
Luke Lobo, Homer Glen	Trees and landscaping
Mark Kobilca, Lemont	Trees and landscaping
Matt Larson, La Grange	Gardens
MWRD, Hanover Park	Trees and landscaping
MWRD, Willow Springs	Trees and landscaping
MWRD, Cicero	Trees and landscaping
Nava R Rijal, La Grange Highlands	Gardens
Nick Gabb, Frankfort	Gardens
Noel Paradela, Broadview	Gardens
Northeastern University, Chicago	Trees and landscaping
Oak Forest Park District, Oak Forest	Trees and landscaping
Richton Park District, Richton Park	Trees and landscaping

TABLE 15 (Continued): SITES THAT UTILIZED STICKNEY WATER RECLAMATION PLANT AIR-DRIED AND COMPOSTED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2016

User	Use Location
<u>Composted Biosolids (cont'd.)</u>	
Shodhan Patel, Streamwood	Gardens
Stanley Janik, Lockport	Trees and landscaping
State Tree Nursery, Topeka	Trees and Garden
The Pullman State Historic Site, Chicago	Trees and landscaping
Thornton Reservoir, Thornton	Trees and landscaping
Tinley Park Park District, Tinley Park	Trees and landscaping
Twin Oaks Landscaping Co, Oswego	Trees and landscaping
UPS, Hodgkins	Trees and landscaping
Village of Hanover Park , Hanover Park	Trees and landscaping
Village of Midlothian, Midlothian	Trees and landscaping
Village of Oak Lawn, Oak Lawn	Trees and landscaping
Village of Park Forest, Park Forest	Trees and landscaping
<u>Air-dried Biosolids</u>	
Bolingbrook Park District, Bolingbrook	Athletic fields - Indian Boundary Park
Brooks Elementary School, Harvey	Athletic fields
Chicago Park District, Chicago	Athletic fields - 8 parks <sup>1</sup>
Chicago Urban Farm, 2619 E. 76th Street, Chicago, IL 60649	Garden
Dolton Park District, Dolton	Athletic fields - Dolton Park
East Leyden High School, Franklin Park	Athletic fields
Evanston High School, Evanston	Athletic fields
Fairgrounds Golf Courses, Vernon Hills	Golf Course
Jim and Becky Mansell, Peotone	Garden and hay
Julian Plumber, Blue Island	Landscaping
Kinga Stanek, Orland Park	Landscaping
Luke Loboz, Homer Glen	Landscaping
MWRD, Cicero	Landscaping
MWRD, Skokie	Landscaping
Mid-Iron Golf Club, Lemont	Golf Course
Oak Lawn Park District, Oak Lawn	Athletic fields - 3 parks <sup>2</sup>
Otis P. Graves Elementary School, Summit	Athletic fields

TABLE 15 (continued): SITES THAT UTILIZED STICKNEY WATER RECLAMATION PLANT AIR-DRIED AND COMPOSTED BIOSOLIDS UNDER THE CONTROLLED SOLIDS DISTRIBUTION PROGRAM IN 2016

User	Use Location
<u>Air-dried Biosolids (cont'd.)</u>	
Republic Service, Chicago	Landscaping - 3 sites <sup>3</sup>
Richard G. Vega, Yorkville	Landscaping
St. Ignatius High School, Chicago,	Athletic fields
Stanley Janik, Lockport	Landscaping
Stanley Palarz, Lemont	Landscaping
Troy Middle School, Plainfield	Athletic fields
Village Greens Golf Course, Oak Lawn	Athletic fields
Village of Franklin Park, Franklin Park	Athletic fields - Franklin Park
Village of Lyons, Lyons	Athletic fields

<sup>1</sup>Addams/Medill, Garfield, Harrison, Humboldt, Marquette, McKinley, Smith, Union.

<sup>2</sup>Central, Keeler, Worthbrook.

<sup>3</sup>Dixon, Pontiac, Streator.

**Air-dried Exceptional Quality Biosolids.** In 2016, a total of 4,709 DT of Stickney WRP air-dried EQ biosolids was applied to urban land. All Stickney air-dried biosolids applied to urban land in 2016 met the pollutant concentration limits in Table 3 of Section 503.13 (Table 16) and the vector attraction reduction requirements of Section 503.33(b)(1) (Table 16). All of the air-dried, EQ biosolids met the Class A pathogen limits of Section 503.32(a)(5) (Tables 17 and 18). The remaining air-dried Class B biosolids (1,287 DT) met the anaerobic digestion time and temperature requirements of the Class B pathogen standard of Section 503.32(b)(3) (Table 14). These Class B biosolids were applied for landscaping purposes to the District's property with limited public access. The vector attraction reduction requirement was met by incorporation of the applied biosolids into the soil, as per Section 503.32(b)(10). These limited public-access sites are fenced and therefore met the public access requirements of Section 503.32(b). Management practices complied with Section 503.14, as previously described in a letter to the USEPA dated January 28, 1994 (Appendix I). In accordance with Table 1 of Section 503.16, the frequency of monitoring for these biosolids is six times per year.

**Composted Exceptional Quality Biosolids.** During the year, centrifuge cake biosolids generated at the Stickney WRP were composted with woodchips and cured at the Harlem Avenue Solids Management Area. The cured composted EQ biosolids were tested for chemical constituents and fecal coliform prior to utilization on urban land in 2016, and to validate the composting process. This material met the pollutant concentration limits in Table 3 of Section 503.13 (Table 19) and fecal coliform requirements for EQ biosolids (Table 20). Class A pathogen reduction was achieved using the open windrow composting process through which all the requirements of were met. The temperature of the compost piles was maintained at  $\geq 55^{\circ}\text{C}$  for at least 15 days and the piles were turned five times during this period (Table 21). Vector attraction reduction was achieved through the same open windrow composting process and met the requirements of Section 503.33(b)(5), by fulfilling the temperature and time requirements ( $\geq 45^{\circ}\text{C}$  for at least 14 days) in the open windrows (Table 21).

In 2016, a total of 1,766 DT of composted EQ biosolids generated at the Stickney WRP was applied to urban land through the District's Controlled Solids Distribution Program. Provided all composting requirements of Sections 503.32(a)(7) and 503.33(b)(5) are met, no additional monitoring is required.

TABLE 16: CONCENTRATIONS OF NITROGEN AND METALS AND VOLATILE SOLIDS REDUCTION IN AIR-DRIED BIOSOLIDS GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2016

Sample Date	TKN		NH <sub>3</sub> -N		TVS <sup>2</sup>		As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	mg/dry kg	mg/dry kg	mg/dry kg	mg/dry kg	%	%									
05/24/16	23,061	2,825	38.1	59.3	6	5	425	0.74	12	41	114	<5	899		
05/24/16	27,616	4,082	42.9	54.2	5	8	478	0.65	12	49	99	<5	940		
06/08/16	24,626	6,209	41.4	57.0	<5	8	508	0.72	13	51	104	<5	992		
06/13/16	21,834	2,630	41.9	56.1	7	8	502	0.66	12	54	104	<5	1,029		
06/20/16	55,447	3,161	41.6	56.6	6	8	496	0.76	13	51	99	<5	996		
06/27/16	27,642	3,913	42.7	54.7	6	8	482	0.80	13	51	101	<5	973		
08/10/16	20,573	1,293	39.2	57.5	8	5	443	0.93	11	45	116	<5	950		
09/07/16	18,669	820	36.1	62.7	8	5	450	1.1	11	45	118	<5	932		
09/12/16	17,345	130	37.0	61.3	8	5	441	0.94	12	46	120	<5	972		
09/20/16	17,773	63	36.3	62.4	9	6	461	0.82	12	48	122	<5	992		
09/27/16	17,481	87	37.0	61.3	7	5	465	0.94	14	46	121	<5	993		
10/05/16	22,842	1,849	36.6	61.9	9	5	456	0.85	13	47	121	<5	1,000		
10/11/16	20,167	1,494	37.8	60.0	8	5	454	0.87	14	47	120	<5	1,003		
10/25/16	20,942	1,356	36.7	61.7	8	5	445	1.0	12	46	121	<5	984		
11/22/16	18,964	872	37.0	61.3	7	5	469	0.88	13	51	128	<5	1,037		
Minimum	17,345	63	36.1	54.2	5	5	425	0.65	11	41	99	<5	899		
Mean <sup>3</sup>	23,665	2,052	38.8	59.2	7	6	465	0.84	12	48	114	<5	979		
Maximum	55,447	6,209	42.9	62.7	9	8	508	1.1	14	54	128	<5	1,037		
503 Limit	NL <sup>4</sup>	NL	NL	38.0	41	39	1,500	17	75	420	300	100	2,800		

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

<sup>2</sup>Total volatile solids for digester feed during 2013 - 2014 were used to calculate TVS reductions because the biosolids used to produce air-dried biosolids were stored in lagoons during those years.

<sup>3</sup>In calculating each mean, any value less than the reporting limit was considered the reporting limit. <sup>4</sup>No limit.

TABLE 17: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS<sup>1</sup> GENERATED BY NON-COMPLIANT PROCESS TO FURTHER REDUCE PATHOGENS-EQUIVALENT CODIFIED PROCESSING TRAINS AT THE STICKNEY WATER RECLAMATION PLANT AND APPLIED TO URBAN LAND IN 2016

Sample Date <sup>2</sup>	Total Solids	Fecal Coliform	Sample Date <sup>3</sup>	Helminth Ova	Enteric Virus
	--- % ---	---- MPN <sup>4</sup> /g -----		--- No./4g ---	--- PFU <sup>5</sup> /4g ---
09/28/15	64.0	78	08/17/15	<0.0800	<0.8000
09/28/15	64.0	78	10/20/15	<0.0800	<0.8000
05/03/16	46.1	62	12/01/15	<0.0133 <sup>6</sup>	<0.8000
05/18/16	77.0	370	03/15/16	<0.0800	<0.8000
08/10/16	80.6	8	04/12/16	<0.0800	<0.8000
10/20/16	63.6	120	08/30/16	<0.0800	<0.8000

<sup>1</sup>All biosolids satisfied Part 503 Class A requirements.

<sup>2</sup>Sample dates apply to FC samples only.

<sup>3</sup>Non-PFRP biosolids sampled before the material was dried and subsequently used in 2016.

<sup>4</sup>Most probable number.

<sup>5</sup>Plaque-forming unit.

<sup>6</sup>Sample weight = 300 g; for all others, sample weight = 50 g.

TABLE 18 MICROBIOLOGICAL ANALYSIS OF CLASS A BIOSOLIDS  
 GENERATED AT THE STICKNEY WATER RECLAMATION PLANT AND  
 TESTED PRIOR TO UTILIZATION ON URBAN LAND IN 2016

Sample Date	Lagoon	Total Solids ----- % -----	Fecal Coliform ----- MPN <sup>1</sup> /g -----
05/03/16	24	46.1	62
05/18/16	30	77.0	370
06/07/16	30	84.0	34
07/13/16	24	60.5	160
08/10/16	24	80.6	8
09/08/16	24	70.8	30
09/28/16	24	71.0	4
10/20/16	24	63.6	120
11/17/16	24	66.7	15

<sup>1</sup>Most probable number.

TABLE 19: CONCENTRATIONS OF NITROGEN AND METALS IN CURED COMPOSTED EXCEPTIONAL QUALITY BIOSOLIDS<sup>1</sup> PROCESSED AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA AND APPLIED TO URBAN LAND IN 2016

Sample Date	TKN	NH <sub>3</sub> -N	As	Cd	Cu	Hg	Mo	Ni	Pb	Se	Zn
	----- mg/dry kg -----										
05/05/16	17,546	225	<5	2	477	0.67	5	44	50	<5	678
05/18/16	19,536	219	<5	1	466	0.59	5	41	47	<5	612
06/08/16	14,636	<0.1	5	2	246	<0.25	4	23	40	<5	326
08/23/16	20,232	467	<5	2	459	0.32	5	21	44	<5	341
09/07/16	17,128	72	<5	2	246	0.36	5	21	43	<5	333
09/13/16	13,333	28	<5	2	518	0.38	5	22	47	<5	368
09/20/16	19,282	96	<5	2	506	0.26	3	21	53	<5	404
09/27/16	19,519	51	<5	2	475	<0.25	4	20	51	<5	359
10/05/16	17,133	25	<5	2	494	0.25	4	19	51	<5	342
10/11/16	17,853	96	<5	2	357	0.39	3	25	59	<5	429
10/20/16	16,384	40	<5	2	469	0.35	4	22	55	<5	377
10/24/16	15,389	<0.1	<5	2	476	<0.25	2	23	55	<5	399
11/10/16	15,509	12	<5	2	505	0.38	2	22	57	<5	356
11/16/16	13,613	24	<5	2	501	<0.25	5	17	40	<5	281
11/22/16	14,985	57	<5	2	576	<0.25	3	21	54	<5	329
Minimum	13,333	12	<5	1	165	<0.25	2	17	40	<5	281
Mean <sup>1</sup>	16,805	109	<5	2	221	0.35	4	24	50	<5	396
Maximum	20,232	465	<5	2	413	0.67	5	44	59	<5	678
503 Limit	NL <sup>2</sup>	NL	41	39	1,500	17	75	420	300	100	2,800

<sup>1</sup>In calculating each mean, any value less than the reporting limit was considered the reporting limit.

<sup>2</sup>No limit.

TABLE 20: MICROBIOLOGICAL ANALYSIS OF CURED COMPOSTED EXCEPTIONAL QUALITY BIOSOLIDS<sup>1</sup> PROCESSED AT THE HARLEM AVENUE SOLIDS MANGEMENT AREA AND TESTED PRIOR TO UTILIZATION ON URBAN LAND IN 2016

Sample Date	Total Solids	Fecal Coliform
	----- % -----	----- MPN <sup>2</sup> /g -----
11/16/16	51.7	6
11/16/16	47.3	6
12/14/16	50.4	580
12/14/16	46.9	11

<sup>1</sup>Stickney WRP centrifuge cake utilized in the composting process.

<sup>2</sup>Most probable number.

TABLE 21: SUMMARY OF DAILY TEMPERATURE READINGS AND TURNING OF OPEN WINDROWS DURING PRODUCTION OF COMPOSTED BIOSOLIDS AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA IN 2016

Pile ID <sup>1</sup>	Composting Date (Range) <sup>2</sup>	Turning Date <sup>2</sup>					Composting Temperature °C (range)
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
16-01	02/23 - 03/14	2/26	2/29	3/3	3/7	3/10	55 - 67
16-03	04/11 - 05/09	4/16	4/21	4/25	4/29	5/3	55 - 71
16-04	03/31 - 04/26	4/8	4/11	4/14	4/18	4/22	59 - 71
16-05	04/08 - 05/06	4/12	4/16	4/21	4/26	4/30	57 - 78
16-06	04/07 - 04/30	4/11	4/14	4/18	4/22	4/26	55 - 74
16-07	04/26 - 05/23	4/30	5/5	5/9	5/13	5/19	58 - 73
16-08	04/27 - 05/23	4/30	5/5	5/9	5/13	5/19	61 - 70
16-09	04/26 - 05/23	4/30	5/5	5/9	5/13	5/19	56 - 73
16-10	04/27 - 05/24	5/2	5/6	5/10	5/16	5/20	57 - 68
16-11	05/05 - 06/03	5/9	5/13	5/19	5/23	5/27	60 - 75
16-12	05/20 - 06/30	5/31	6/6	6/10	6/15	6/20	55 - 73
16-13	05/24 - 06/30	5/31	6/6	6/10	6/15	6/20	56 - 72
16-14	05/31 - 06/30	6/6	6/10	6/15	6/20	6/27	55 - 75
16-15	05/24 - 06/30	6/6	6/10	6/15	6/20	6/27	57 - 75
16-16	06/11 - 07/07	6/6	6/10	6/15	6/20	6/29	56 - 73
16-17	06/10 - 07/11	6/15	6/20	6/27	7/1	7/7	56 - 77
16-18	06/06 - 07/04	6/14	6/18	6/23	6/27	7/1	56 - 74
16-19	06/07 - 07/25	7/5	7/9	7/13	7/18	7/22	56 - 77
16-20	06/08 - 07/08	6/14	6/18	6/23	6/28	7/5	57 - 77
16-21	06/12 - 07/16	6/22	6/28	7/5	7/9	7/13	57 - 74
16-22	06/12 - 07/12	6/17	6/22	6/28	7/5	7/9	56 - 75
16-23	06/12 - 07/21	6/17	6/28	7/6	7/11	7/18	56 - 73
16-24	06/12 - 07/14	6/17	6/22	6/28	7/6	7/11	60 - 78
16-25	06/17 - 07/31	7/7	7/11	7/19	7/25	7/28	56 - 76
16-26	06/19 - 07/31	7/6	7/14	7/19	7/25	7/28	56 - 75
16-27	06/29 - 07/31	7/6	7/14	7/18	7/25	7/28	61 - 78
16-28	06/30 - 07/30	7/6	7/14	7/18	7/22	7/27	61 - 78
16-29	06/30 - 07/30	7/6	7/14	7/18	7/25	7/27	59 - 77
16-30	06/29 - 08/01	7/7	7/12	7/19	7/25	7/29	58 - 75
16-31	06/30 - 07/30	7/6	7/12	7/18	7/22	7/27	63 - 77
16-32	06/30 - 07/30	7/6	7/12	7/18	7/22	7/27	57 - 78
16-33	06/30 - 08/02	7/7	7/11	7/19	7/25	7/29	57 - 77
16-34	06/30 - 08/02	7/7	7/11	7/19	7/25	7/29	58 - 75
16-35	06/30 - 08/02	7/7	7/11	7/19	7/25	7/29	55 - 76
16-36	06/30 - 08/02	7/8	7/13	7/19	7/26	7/29	57 - 77
16-37	06/30 - 08/03	7/8	7/13	7/19	7/26	7/30	56 - 76
16-38	06/30 - 08/03	7/8	7/13	7/19	7/26	7/30	56 - 76
16-39	06/30 - 08/03	7/8	7/13	7/19	7/26	7/30	55 - 77
16-40	06/30 - 08/03	7/8	7/13	7/19	7/26	7/30	55 - 77
16-41	06/30 - 08/03	7/6	7/12	7/18	7/22	7/30	61 - 76
16-42	07/13 - 08/12	7/20	7/26	7/30	8/3	8/8	57 - 76
16-43	07/15 - 08/12	7/20	7/26	7/30	8/3	8/8	57 - 77
16-44	07/12 - 08/12	7/20	7/26	7/30	8/3	8/8	55 - 78

TABLE 21 (Continued): SUMMARY OF DAILY TEMPERATURE READINGS AND TURNING OF OPEN WINDROWS DURING PRODUCTION OF COMPOSTED BIOSOLIDS AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA IN 2016

Pile ID <sup>1</sup>	Composting Date (Range) <sup>2</sup>	Turning Date <sup>2</sup>					Composting Temperature °C (range)
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
16-45	07/16 - 08/14	7/20	7/27	8/2	8/6	8/10	59 -75
16-46	07/24 - 08/18	7/27	8/1	8/5	8/10	8/15	55 -77
16-47	07/21 - 08/18	7/27	8/1	8/5	8/10	8/15	60 -76
16-48	07/21 - 08/18	7/27	8/1	8/5	8/10	8/15	57 -76
16-49	07/22 - 08/18	7/27	8/1	8/5	8/10	8/15	58 -76
16-50	08/01 - 08/24	8/3	8/8	8/12	8/16	8/20	58 -75
16-51	08/01 - 08/24	8/3	8/8	8/12	8/16	8/20	56 -75
16-52	08/01 - 08/24	8/3	8/8	8/12	8/16	8/20	56 -74
16-53	08/01 - 08/24	8/3	8/8	8/12	8/16	8/20	57 -75
16-54	08/15 - 09/12	8/19	8/23	8/29	9/2	9/9	55 -74
16-55	08/15 - 09/12	8/19	8/23	8/29	9/2	9/6	56 -73
16-56	08/15 - 09/12	8/19	8/23	8/29	9/2	9/6	57 -71
16-57	08/16 - 09/12	8/20	8/25	8/29	9/2	9/6	56 -74
16-58	09/17 -10/14	9/21	9/26	9/30	10/4	10/10	56 -73
16-59	09/17 -10/14	9/21	9/26	9/30	10/4	10/10	56 -74
16-60	09/17 -10/14	9/21	9/26	9/30	10/4	10/10	56 -74
16-61	09/22 -10/18	9/26	9/30	10/4	10/10	10/14	56 -70
16-62	09/22 -10/18	9/26	9/30	10/4	10/10	10/14	55 -73
16-63	09/22 -10/18	9/26	9/30	10/4	10/10	10/14	58 -73
16-64	10/11 - 11/12	10/18	10/24	10/28	11/1	11/8	56 -71
16-65	10/10 - 11/12	10/18	10/24	10/28	11/1	11/8	55 -74
16-66	11/08 - 12/13	11/18	11/23	11/28	12/2	12/6	56 -69
16-67	11/01 - 12/06	11/18	11/23	11/28	12/2	12/6	56 -69
16-68	11/08 - 12/13	11/18	11/23	11/28	12/2	12/6	55 -68

<sup>1</sup>All piles reported are certified to fulfill the temperature and turning requirements (minimum of 55°C for 15 consecutive days and turned a minimum of five times during the composting period).

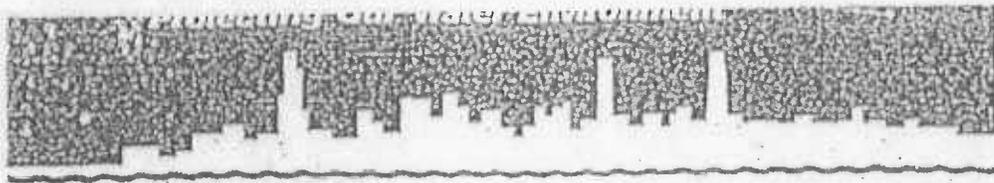
<sup>2</sup>Windrow turning date expressed as month/day in 2016.

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

Biosolids from the District's Stickney and Calumet WRPs were sent to landfills in 2016 for disposal. All biosolids sent to these landfills are usually analyzed as specified in 40 CFR Part 261 to establish the nonhazardous nature of these biosolids for co-disposal. Analytical results, including toxic characteristic leaching procedure constituents, polychlorinated biphenyls, cyanide, sulfide, and paint filter test, were submitted in 2015 to the landfill company to satisfy the requirements of their IEPA permit. No analyses were performed in 2016 since the analytical data are usually valid for two to three years. The analytical data generated in 2015 are still valid, and they should be updated next year. District sludge has always met the requirements of 40 CFR Parts 258 and 261 and the Illinois nonhazardous waste landfill regulations (Title 35, Subtitle G, Chapter I, Subchapter H, Part 810). In 2016, a total of 855 DT of District biosolids (581 DT from the Stickney WRP and 274 DT from the Calumet WRP) was co-disposed with municipal solid wastes at two non-hazardous waste landfills (Land and Lakes in Dolton and Laraway in Joliet, Illinois).

APPENDIX I

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



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**Metropolitan Water Reclamation District of Greater Chicago**

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611 312/751-5800

Cecil Lue-Hing  
 Director of R & D  
 312/751-5180

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.

AI-1



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.

January 28, 1994

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.

Mr. Michael J. Mikulka

-8-

January 28, 1994

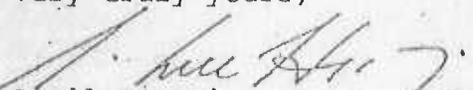
Subject: Sludge Management Programs of the Metropolitan Water Reclamation District of Greater Chicago Under 40 CFR Part 503

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 TO PROCESS TO FURTHER  
REDUCE PATHOGENS FOR METROPOLITAN WATER RECLAMATION DISTRICT OF  
GREATER CHICAGO BIOSOLIDS PROCESSING TRAINS



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

JUN 20 2002

REPLY TO THE ATTENTION OF:

WN-16J

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

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

Dear Mr. Farnan:

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

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

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.

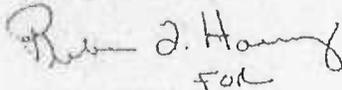
Our review of the MWRDGC's biosolids data submitted for 1994 to 2001 indicates Class A biosolids were produced at the Stickney and Calumet plants as they operated their respective low-and high-solids sludge processing trains (SPTs) according to codified protocols delineated in Attachment B of Mr. Lanyon's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

  
For

Jo Lynn Traub  
Director, Water Division

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



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

JUL 30 2012

REPLY TO THE ATTENTION OF:

WN-16J

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

Re: June 1, 2012, Request for Renewal of Site-Specific Equivalency Determination for the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) Biosolids Processing Trains at the Stickney and Calumet Wastewater Treatment Plants

Dear Dr. Granato:

We have received the above-referenced request on June 6, 2012, along with microbiological analyses of biosolids generated by MWRDGC between August 2002 and December 2011. We appreciate your interest in seeking renewal of MWRDGC's equivalency certification. You have also requested that data reporting be reduced and the sampling frequency for enteric viruses and helminth ova be retained at six times per year if your equivalency certification is renewed. The following discussion highlights the regulatory requirements of establishing equivalency, memorializes past Agency decisions, and provides Region 5's decision on your requests.

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

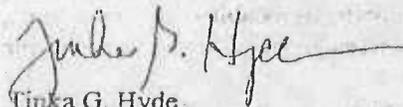
One of the Class A options is to treat the sewage sludge by a process equivalent to a process listed in the 503 Rules, Appendix B. To be equivalent, a sewage sludge treatment process must be able to consistently reduce pathogens to levels comparable with the processes listed in Appendix B. Under the 503 Rules, the permitting authority (in this case, EPA Region 5) is responsible for determining equivalency.

MWRDGC's sewage sludge processing trains differ from those listed in Appendix B. In March 1998, MWRDGC submitted an equivalency application to EPA's Pathogen Equivalency Committee (PEC) and the Region for approval. The Region and the PEC reviewed MWRDGC's initial request and granted a site-specific and conditional equivalency in June 2002, for a period of 2 years. Subsequently, the Region granted four 2-year extensions, in effect until August 1, 2012.

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

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

Sincerely,



Tirka G. Hyde  
Director, Water Division

cc: Albert Cox, MWRDGC  
Al Keller, IEPA

## Protecting Our Water Environment

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### Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3184 312.751.5190 F: 312.751.5194

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

September 14, 2012

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

Dear Ms. Hyde:

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

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

- Sampling for enteric viruses and helminth ova will be done six times per year as part of the PFRP equivalency as approved in the 2010 renewal (attached) of the two-year certification.
- Since the reporting frequency is changed from semi-annual to annual, and monitoring data will be included in the annual USEPA 40 Code of Federal Regulations Part 503 Rule (Part 503) report to the USEPA, the annual reporting begins with the 2012 calendar year. As such, no more semi-annual reports will be submitted from now onwards. The monitoring data for the period January through July 2012 of the previous certification period (August 2010 to July 2012) will be reported in the 2012 Part 503 report.

Ms. Tinka Hyde

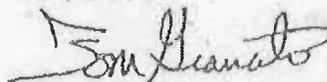
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September 14, 2012

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

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

Very truly yours,



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

TCG:AC:cm

Attachment

cc w/att: S. A. Keller, IEPA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3500

JUL 20 2010

REPLY TO THE ATTENTION OF: WN-16J

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

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

Dear Mr. Kollias:

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

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

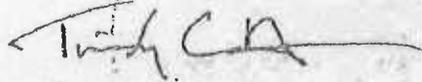
One of the Class A options is to treat the sewage sludge by a process equivalent to a process listed in the 503 Rules, Appendix B. To be equivalent, a sewage sludge treatment process must be able to consistently reduce pathogens to levels comparable with the processes listed in Appendix B. Under the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

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

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

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

Sincerely,



*for* Tinka G. Hyde  
Director, Water Division