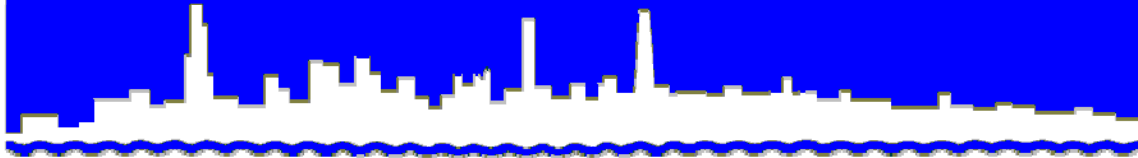


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

*MONITORING AND RESEARCH
DEPARTMENT*

REPORT NO. 13-45

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

THIRD QUARTER 2013

NOVEMBER 2013

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street

Chicago, Illinois 60611-3154

312.751.5190

THOMAS C. GRANATO, Ph.D.

Director of Monitoring and Research

312.751.5190 f: 312.751.5194

thomas.granato@mwrdd.org

BOARD OF COMMISSIONERS

Kathleen Therese Meany

President

Barbara J McGowan

Vice President

Mariyana T. Spyropoulos

Chairman of Finance

Michael A. Alvarez

Frank Avila

Cynthia M. Santos

Debra Shore

Kari K. Steele

Patrick D. Thompson

November 18, 2013

Mr. S. Alan Keller, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794 - 9276

Dear Mr. Keller:

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0267, Monitoring Report for July, August, and September 2013

The attached nine tables contain the monitoring data for the Lawndale Avenue Solids Management Area for July, August, and September 2013 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2010-AO-0267.

The data reported are as follows:

Table 1, Analysis of Water from Monitoring Wells M-11 Through M-15 at the Lawndale Avenue Solids Management Area Sampled on July 11, 2013

Table 2, Analysis of Water from Lysimeters L-4N and L-6N at the Lawndale Avenue Solids Management Area Sampled During July, August, and September 2013

Table 3, Analysis of Water from Lysimeters L-1N Through L-9N at the Lawndale Avenue Solids Management Area Sampled During July and August 2013

Table 4, Analysis of Monthly Compositied Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During July 2013

Table 5, Analysis of Monthly Compositied Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During August 2013

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0267, Monitoring Report for July, August, and September 2013

Table 6, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During September 2013

Table 7, Analysis of Monthly Composited Processed Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During July 2013

Table 8, Analysis of Monthly Composited Processed Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During August 2013

Table 9, Analysis of Monthly Composited Processed Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During September 2013

Biosolids were placed in the solids drying area and removed from the site during July, August, and September.

Very truly yours,

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

TCG:PL:cm
Attachments
cc w/att: Mr. J. Patel, IEPA
Records Unit, IEPA

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELLS M-11
THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED ON JULY 11, 2013

Parameter ¹	Unit	Monitoring Well No.		
		M-11	M-12	M-13
pH ¹		7.8	7.4	7.6
EC	mS/m	91	80	135
Total Dissolved Solids	mg/L	720	892	1,348
Total Dissolved Organic Carbon	"	< 1	< 1	2
Cl ⁻	"	15	15	< 10
SO ₄ ⁼	"	195	358	657
Alkalinity as CaCO ₃	"	NA ²	NA ²	NA ²
TKN	"	< 1	< 1	< 1
NH ₃ -N	"	1	0.3	0.4
NO ₂ + NO ₃ -N	"	< 0.15	< 0.15	< 0.15
Total P	"	< 0.2	< 0.2	< 0.2
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	99	86	173
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	< 0.1	< 0.1	< 0.1
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	10	13	14
Mg	"	50	41	87
Mn	"	0.025	0.003	0.014
Na	"	60	142	98
Ni	"	0.007	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	0.69	0.53	0.39

TABLE 1 (Continued): ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON JULY 11, 2013

Parameter ¹	Unit	Monitoring Well No.	
		M-14	M-15
pH ¹		7.3	7.4
EC	mS/m	67	151
Total Dissolved Solids	mg/L	560	1,732
Total Dissolved Organic Carbon	"	< 1	2
Cl ⁻	"	23	< 10
SO ₄ ⁼	"	116	808
Alkalinity as CaCO ₃	"	NA ²	NA ²
TKN	"	< 1	< 1
NH ₃ -N	"	< 0.1	0.5
NO ₂ + NO ₃ -N	"	< 0.15	< 0.15
Total P	"	< 0.2	< 0.2
Al	"	< 1.0	< 1.0
Ca	"	81	239
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	< 0.1	0.3
Hg	μg/L	< 0.20	< 0.20
K	mg/L	10	13
Mg	"	46	117
Mn	"	0.009	0.010
Na	"	37	67
Ni	"	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02
Zn	"	2.2	0.67

¹pH analyzed beyond recommended holding time of 15 minutes.

²No analysis; insufficient sample.

TABLE 2: ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING JULY, AUGUST, AND SEPTEMBER 2013

Parameter	Unit	Date Sampled			
		07/10/13		08/07/13	
		L-4N	L-6N	L-4N	L-6N
pH ¹		7.9	7.8	7.9	7.8
EC	mS/m	221	296	199	222
Total Dissolved Solids	mg/L	2,732	3,440	2,576	3,684
Total Dissolved Organic Carbon	"	4	58	4	64
Cl ⁻	"	12	144	18	64
SO ₄ ⁼	"	1,240	1,184	1,304	1,550
Alkalinity as CaCO ₃	"	NA ²	NA ²	571	995
TKN	"	2	14	4	16
NH ₃ -N	"	2	11	4	11
NO ₂ + NO ₃ -N	"	1.8	0.48	0.52	< 0.15
Total P	"	< 0.20	< 0.20	< 0.20	< 0.20
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	499	642	474	612
Cd	"	< 0.001	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005	< 0.005
Fe	"	4	6	< 0.1	44
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	5	8	5	6
Mg	"	112	138	109	148
Mn	"	0.511	0.734	0.459	0.770
Na	"	42	68	45	81
Ni	"	< 0.005	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	0.04	0.02	0.02

TABLE 2 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING JULY, AUGUST, AND SEPTEMBER 2013

Parameter	Unit	Date Sampled	
		L-4N	L-6N
		09/04/13	
pH ¹		7.8	7.7
EC	mS/m	212	285
Total Dissolved Solids	mg/L	1,304	1,822
Total Dissolved Organic Carbon	"	5	59
Cl ⁻	"	29	76
SO ₄ ⁼	"	1,159	1,307
Alkalinity as CaCO ₃	"	526	996
TKN	"	3	16
NH ₃ -N	"	3	12
NO ₂ + NO ₃ -N	"	1.3	0.20
Total P	"	< 0.20	< 0.20
Al	"	< 1.0	< 1.0
Ca	"	463	591
Cd	"	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005
Fe	"	0.3	39
Hg	μg/L	< 0.20	< 0.20
K	mg/L	6	6
Mg	"	103	140
Mn	"	0.380	0.714
Na	"	46	80
Ni	"	< 0.005	0.007
Pb	"	< 0.02	< 0.02
Zn	"	0.02	0.04

¹pH analyzed beyond recommended holding time of 15 minutes.

²No analysis; insufficient sample.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED DURING JULY AND AUGUST 2013

Parameter	Unit	Date Sampled			
		07/10/13			
		L-2N	L-3N	L-5N	L-7N
pH ¹		8.1	7.8	7.9	8.3
EC	mS/m	173	196	423	135
Total Dissolved Solids	mg/L	1,620	1,944	5,280	1,300
Total Dissolved Organic Carbon	"	4	25	3	6
Cl ⁻	"	300	134	77	289
SO ₄ ⁼	"	308	142	1,645	25
Alkalinity as CaCO ₃	"	NA ²	NA ²	NA ²	NA ²
TKN	"	< 1	2	2	2
NH ₃ -N	"	< 0.1	0.9	2	1
NO ₂ + NO ₃ -N	"	7.9	0.16	0.44	0.18
Total P	"	< 0.20	< 0.20	< 0.20	< 0.20
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
Ca	"	162	317	488	112
Cd	"	< 0.001	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005	< 0.005
Fe	"	< 0.1	8	8	0.8
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	2	2	16	8
Mg	"	67	139	241	95
Mn	"	0.082	0.538	0.265	0.033
Na	"	170	75	286	87
Ni	"	0.006	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	< 0.01	< 0.01	< 0.01

TABLE 3 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-9N AT THE LAWDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED DURING JULY AND AUGUST 2013

Parameter	Unit	Date Sampled		
		07/10/13		08/07/13
		L-1N	L-8N	L-9N
pH ¹		8.0	7.9	7.9
EC	mS/m	208	219	155
Total Dissolved Solids	mg/L	1,916	2,512	1,568
Total Dissolved Organic Carbon	"	3	25	5
Cl ⁻	"	131	311	28
SO ₄ ⁼	"	202	209	682
Alkalinity as CaCO ₃	"	NA ²	NA ²	415
TKN	"	< 1	2	4
NH ₃ -N	"	< 0.1	0.5	4
NO ₂ + NO ₃ -N	"	0.92	0.17	0.27
Total P	"	< 0.20	< 0.20	< 0.20
Al	"	< 1.0	< 1.0	< 1.0
Ca	"	146	265	182
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.005	< 0.005	< 0.005
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	0.2	4	1
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	9	5	9
Mg	"	61	180	129
Mn	"	0.183	0.506	0.032
Na	"	255	103	57
Ni	"	< 0.005	< 0.005	< 0.005
Pb	"	< 0.02	< 0.02	< 0.02
Zn	"	< 0.01	< 0.01	< 0.01

¹pH analyzed beyond recommended holding time of 15 minutes.

²No analysis; insufficient sample.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING JULY 2013

Parameter	Unit	Concentration ¹
pH		7.4
Total Solids	%	12.5
Total Volatile Solids ²	"	43.5

¹Values are the means of 26 samples.

²Total volatile solids as a percentage of total solids.

TABLE 5: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING AUGUST 2013

Parameter	Unit	Concentration ¹
pH		7.1
Total Solids	%	7.3
Total Volatile Solids ²	"	47.0

¹Values are the means of 18 samples.

²Total volatile solids as a percentage of total solids.

TABLE 6: ANALYSIS OF MONTHLY COMPOSITED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING SEPTEMBER 2013

Parameter	Unit	Concentration ¹
pH		7.2
Total Solids	%	8.5
Total Volatile Solids ²	"	46.1

¹ Values are the means of 15 samples.

² Total volatile solids as a percentage of total solids.

TABLE 7: ANALYSIS OF MONTHLY COMPOSITED PROCESSED
 BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING JULY 2013

Parameter	Unit	Concentration ¹
pH		7.5
Total Solids	%	38.0
Total Volatile Solids ²	"	44.4
TKN	mg/kg	30,932
NH ₃ -N	"	6,957
Total P	"	21,442
Al	"	18,483
Ca	"	37,630
Cd	"	3
Cr	"	137
Cu	"	397
Fe	"	16,628
Hg	"	1.0
K	"	3,502
Mg	"	16,877
Mn	"	498
Na	"	1,284
Ni	"	42
Pb	"	108
Zn	"	806

¹Values are the means of 14 samples.

²Total volatile solids as a percentage of total solids.

TABLE 8: ANALYSIS OF MONTHLY COMPOSITED PROCESSED
 BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING AUGUST 2013

Parameter	Unit	Concentration ¹
pH		7.7
Total Solids	%	41.2
Total Volatile Solids ²	"	41.9
TKN	mg/kg	32,683
NH ₃ -N	"	6,805
Total P	"	20,782
Al	"	17,299
Ca	"	39,195
Cd	"	3
Cr	"	132
Cu	"	405
Fe	"	17,031
Hg	"	1.1
K	"	3,186
Mg	"	18,501
Mn	"	484
Na	"	1,220
Ni	"	42
Pb	"	112
Zn	"	787

¹Values are the means of 17 samples.

²Total volatile solids as a percentage of total solids.

TABLE 9: ANALYSIS OF MONTHLY COMPOSITED PROCESSED
 BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
 MANAGEMENT DRYING AREA DURING SEPTEMBER 2013

Parameter	Unit	Concentration ¹
pH		7.1
Total Solids	%	63.1
Total Volatile Solids ²	"	40.6
TKN	mg/kg	26,998
NH ₃ -N	"	4,361
Total P	"	20,253
Al	"	19,219
Ca	"	43,188
Cd	"	3
Cr	"	146
Cu	"	433
Fe	"	18,330
Hg	"	1.2
K	"	3,534
Mg	"	19,622
Mn	"	532
Na	"	1,424
Ni	"	45
Pb	"	121
Zn	"	869

¹Values are the means of 16 samples.

²Total volatile solids as a percentage of total solids.