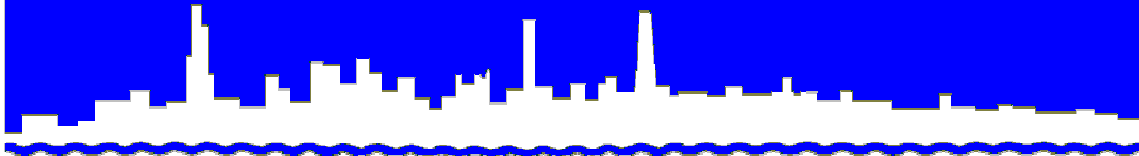


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 11-12

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

FOURTH QUARTER 2010

MARCH 2011

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Thomas C. Granato, Ph.D.
Acting Director of Monitoring and Research
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March 7, 2011

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 October, November, and December 2010

The attached eight tables contain the monitoring data for the Lawndale Avenue Solids Management Area for October, November, and December 2010 as required by Illinois Environmental Protection Agency 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 October 13, 2010

Table 2, Analysis of Water from Lysimeters L-4N and L-6N at the Lawndale Avenue Solids Management Area Sampled during October, November, and December 2010

Table 3, Analysis of Water from Lysimeters L-1N through L-9N at the Lawndale Avenue Solids Management Area Sampled on October 6, 2010

Table 4, Analysis of Monthly Compositing Biosolids Placed in the Lawndale Avenue Solids Management Drying Area during October 2010

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2010-AO-0267, Monitoring Report for October, November, and December 2010

Table 5, Analysis of Monthly Composited Biosolids Placed in the Lawndale Avenue Solids Management Drying Area during November 2010

Table 6, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area during October 2010

Table 7, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area during November 2010

Table 8, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area during December 2010

A new lysimeter L-7N-1 was installed in June 2010 as a replacement for L-7N. Biosolids were placed in the solids drying area during October and November and removed from the site during October, November, and December 2010.

Very truly yours,

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

TCG:PL:kq
Attachments

cc w/att: Mr. Sulski, IEPA
Records Unit, IEPA
Granato/O'Connor

TABLE 1: ANALYSIS OF WATER FROM MONITORING WELLS M-11
THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED ON OCTOBER 13, 2010

Parameter	Unit	Monitoring Well No.		
		M-11	M-12	M-13
pH ¹		7.5	7.6	7.5
EC	mS/m	33	47	62
Total Dissolved Solids	mg/L	692	904	1,288
Total Dissolved Organic Carbon	"	2	1	2
Cl ⁻	"	< 15	< 15	< 15
SO ₄ ⁼	"	188	333	577
TKN	"	1	< 0.5	< 0.5
NH ₃ -N	"	1	0.4	0.5
NO ₂ + NO ₃ -N	"	< 0.04	< 0.04	< 0.04
Total P	"	< 0.10	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	357	307	327
Al	"	< 1.0	< 1.0	< 1.0
As	"	< 0.02	< 0.02	< 0.02
B	"	1.3	1.8	1.5
Ca	"	97	83	170
Cd	"	< 0.001	< 0.001	< 0.001
Cr	"	< 0.003	< 0.003	0.004
Cu	"	< 0.005	< 0.005	< 0.005
Fe	"	1	< 0.2	< 0.2
Hg	μg/L	< 0.20	< 0.20	< 0.20
K	mg/L	9	10	10
Mg	"	46.0	38.2	79.0
Mn	"	0.016	0.004	0.007
Na	"	59	139	93
Ni	"	< 0.008	< 0.008	< 0.008
Pb	"	< 0.03	< 0.03	< 0.03
Se	"	< 0.03	< 0.03	< 0.03
Zn	"	1.2	1.3	1.2
Fecal coliform	MPN ²	<1	<1	<1
Static H ₂ O Elev.	ft	628	632	629

TABLE 1 (Continued): ANALYSIS OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 13, 2010

Parameter	Unit	Monitoring Well No.	
		M-14	M-15
pH ¹		7.7	7.6
EC	mS/m	41	67
Total Dissolved Solids	mg/L	512	1,652
Total Dissolved Organic Carbon	"	1	2
Cl ⁻	"	< 15	< 15
SO ₄ ⁼	"	121	744
TKN	"	< 0.5	0.6
NH ₃ -N	"	0.3	0.6
NO ₂ + NO ₃ -N	"	< 0.04	< 0.04
Total P	"	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	322	353
Al	"	< 1.0	< 1.0
As	"	< 0.02	< 0.02
B	"	1.3	1.2
Ca	"	79	243
Cd	"	< 0.001	< 0.001
Cr	"	< 0.003	0.005
Cu	"	< 0.005	< 0.005
Fe	"	< 0.2	0.9
Hg	μg/L	< 0.20	< 0.20
K	mg/L	8	11
Mg	"	43.4	108
Mn	"	< 0.003	0.011
Na	"	44	65
Ni	"	< 0.008	< 0.008
Pb	"	< 0.03	< 0.03
Se	"	< 0.03	< 0.03
Zn	"	0.52	1.9
Fecal coliform	MPN ²	<1	<1
Static H ₂ O Elev.	ft	623	NR ³

¹pH analyzed beyond recommended holding time of 15 minutes.

²Most probable number/100 mL.

³No reading recorded.

TABLE 2: ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING OCTOBER, NOVEMBER, AND DECEMBER 2010

Parameter	Unit	Date Sampled			
		10/06/10		11/03/10	
		L-4N	L-6N	L-4N	L-6N
pH ¹		7.9	7.9	8.0	8.0
EC	mS/m	274	338	278	337
Total Dissolved Solids	mg/L	2,788	3,736	NA ²	NA ²
Total Dissolved Organic Carbon	"	4	63	6	75
Cl ⁻	"	NA ²	NA ²	21	NA ²
SO ₄ ⁼	"	1,305	1,356	1,330	1,399
TKN	"	4	15	4	17
NH ₃ -N	"	3	12	4	12
NO ₂ + NO ₃ -N	"	0.56	0.07	0.94	0.28
Total P	"	< 0.10	< 0.10	0.15	< 0.10
Alkalinity as CaCO ₃	"	570	1,022	299	NA ²
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
As	"	< 0.02	< 0.02	< 0.02	< 0.02
B	"	0.13	0.22	0.16	0.22
Ca	"	585	747	600	771
Cd	"	< 0.001	< 0.001	< 0.001	< 0.001
Cr	"	< 0.003	< 0.003	< 0.003	< 0.003
Cu	"	< 0.005	< 0.005	< 0.005	< 0.005
Fe	"	5	40	6	42
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	5	5	5	5
Mg	"	102	147	106	147
Mn	"	0.604	0.896	0.630	0.891
Na	"	64	77	63	78
Ni	"	< 0.008	< 0.008	< 0.008	< 0.008
Pb	"	< 0.03	< 0.03	< 0.03	< 0.03
Se	"	< 0.03	< 0.03	< 0.03	< 0.03
Zn	"	< 0.02	< 0.02	< 0.02	0.04

TABLE 2 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-4N
AND L-6N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT
AREA SAMPLED DURING OCTOBER, NOVEMBER, AND DECEMBER 2010

Parameter	Unit	Date Sampled	
		L-4N	L-6N
pH ¹		7.9	7.9
EC	mS/m	107	299
Total Dissolved Solids	mg/L	2,828	3,476
Total Dissolved Organic Carbon	"	4	64
Cl ⁻	"	27	73
SO ₄ ⁼	"	1,437	1,367
TKN	"	4	17
NH ₃ -N	"	4	13
NO ₂ + NO ₃ -N	"	1.0	0.24
Total P	"	0.26	< 0.10
Alkalinity as CaCO ₃	"	597	853
Al	"	< 1.0	< 1.0
As	"	< 0.02	< 0.02
B	"	0.67	0.23
Ca	"	605	730
Cd	"	< 0.001	< 0.001
Cr	"	< 0.003	< 0.003
Cu	"	< 0.005	< 0.005
Fe	"	3	22
Hg	μg/L	< 0.20	< 0.20
K	mg/L	5	5
Mg	"	115	146
Mn	"	0.567	0.775
Na	"	62	78
Ni	"	< 0.008	< 0.008
Pb	"	< 0.03	< 0.03
Se	"	< 0.03	< 0.03
Zn	"	< 0.02	< 0.02

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 ON OCTOBER 6, 2010

Parameter	Unit	Lysimeter No.			
		L-1N	L-2N	L-3N	L-5N
pH ¹		8.2	8.2	7.9	8.0
EC	mS/m	194	175	230	528
Total Dissolved Solids	mg/L	1,660	1,168	2,076	5,312
Total Dissolved Organic Carbon	"	7	5	24	4
Cl ⁻	"	NA ²	NA ²	NA ²	NA ²
SO ₄ ⁼	"	678	160	239	1,678
TKN	"	4	0.6	3	2
NH ₃ -N	"	4	< 0.1	1	2
NO ₂ + NO ₃ -N	"	0.06	0.48	0.16	0.27
Total P	"	< 0.10	< 0.10	0.36	< 0.10
Alkalinity as CaCO ₃	"	434	416	1,181	501
Al	"	< 1.0	< 1.0	< 1.0	< 1.0
As	"	< 0.02	< 0.02	< 0.02	< 0.02
B	"	0.58	0.15	0.08	0.27
Ca	"	232	122	364	569
Cd	"	< 0.001	< 0.001	< 0.001	< 0.001
Cr	"	< 0.003	< 0.003	< 0.003	< 0.003
Cu	"	< 0.005	< 0.005	< 0.005	< 0.005
Fe	"	2	< 0.2	9	9
Hg	μg/L	< 0.20	< 0.20	< 0.20	< 0.20
K	mg/L	13	1	1	16
Mg	"	114	61.2	137	240
Mn	"	0.050	0.089	0.668	0.258
Na	"	68	179	79	451
Ni	"	< 0.008	< 0.008	< 0.008	< 0.008
Pb	"	< 0.03	< 0.03	< 0.03	< 0.03
Se	"	< 0.03	< 0.03	< 0.03	< 0.03
Zn	"	< 0.02	< 0.02	< 0.02	< 0.02

TABLE 3 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 6, 2010

Parameter	Unit	Lysimeter No.		
		L-7N	L-8N	L-9N
pH ¹			8.2	8.1
EC	mS/m		228	218
Total Dissolved Solids	mg/L		1,592	2,128
Total Dissolved Organic Carbon	"		3	29
Cl ⁻	"		NA ²	NA ²
SO ₄ ⁼	"		202	239
TKN	"		0.8	2
NH ₃ -N	"		0.6	0.9
NO ₂ + NO ₃ -N	"		0.27	0.29
Total P	"	L	< 0.10	< 0.10
Alkalinity as CaCO ₃	"	Y	306	1,020
		S		
Al	"	I	< 1.0	< 1.0
As	"	M	< 0.02	< 0.02
B	"	E	0.18	0.27
Ca	"	T	140	281
Cd	"	E	< 0.001	< 0.001
		R		
Cr	"		< 0.003	< 0.003
Cu	"	D	< 0.005	< 0.005
Fe	"	R	0.3	5
Hg	μg/L	Y	< 0.20	< 0.20
K	mg/L		5	5
Mg	"		52.6	159
Mn	"		0.219	0.753
Na	"		262	128
Ni	"		< 0.008	< 0.008
Pb	"		< 0.03	< 0.03
Se	"		< 0.03	< 0.03
Zn	"		< 0.02	< 0.02

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 OCTOBER 2010

Parameter	Unit	Concentration ¹
pH		7.8
Total Solids	%	22.6
Total Volatile Solids ²	"	42.0

¹Values are the means of 18 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 NOVEMBER 2010

Parameter	Unit	Concentration ¹
pH		7.7
Total Solids	%	14.9
Total Volatile Solids ²	"	42.2

¹Values are the means of 12 samples.

²Total volatile solids as a percentage of total solids.

TABLE 6: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED
BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
MANAGEMENT DRYING AREA DURING OCTOBER 2010

Parameter	Unit	Concentration ¹
pH		7.4
Total Solids	%	54.0
Total Volatile Solids ²	"	38.9
TKN	mg/kg	32,491
NH ₃ -N	"	6,863
Total P	"	21,797
Al	"	18,945
Ca	"	37,772
Cd	"	3
Cr	"	148
Cu	"	425
Fe	"	16,689
Hg	"	1.2
K	"	2,566
Mg	"	18,348
Mn	"	524
Na	"	778
Ni	"	38
Pb	"	126
Zn	"	895

¹Values are the means of 20 samples.

²Total volatile solids as a percentage of total solids.

TABLE 7: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED
BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
MANAGEMENT DRYING AREA DURING NOVEMBER 2010

Parameter	Unit	Concentration ¹
pH		8.0
Total Solids	%	23.8
Total Volatile Solids ²	"	50.1
TKN	mg/kg	48,003
NH ₃ -N	"	8,688
Total P	"	19,478
Al	"	16,420
Ca	"	33,378
Cd	"	3
Cr	"	121
Cu	"	436
Fe	"	15,288
Hg	"	0.99
K	"	2,023
Mg	"	14,520
Mn	"	541
Na	"	813
Ni	"	41
Pb	"	113
Zn	"	853

¹Values are the means of seven samples.

²Total volatile solids as a percentage of total solids.

TABLE 8: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED
BIOSOLIDS REMOVED FROM THE LAWNSDALE AVENUE SOLIDS
MANAGEMENT DRYING AREA DURING DECEMBER 2010

Parameter	Unit	Concentration ¹
pH		8.1
Total Solids	%	19.8
Total Volatile Solids ²	"	46.5
TKN	mg/kg	43,690
NH ₃ -N	"	11,872
Total P	"	18,733
Al	"	19,462
Ca	"	31,332
Cd	"	3
Cr	"	129
Cu	"	401
Fe	"	15,561
Hg	"	1.3
K	"	2,723
Mg	"	14,557
Mn	"	496
Na	"	1,071
Ni	"	40
Pb	"	115
Zn	"	786

¹Values are the means of three samples.

²Total volatile solids as a percentage of total solids.