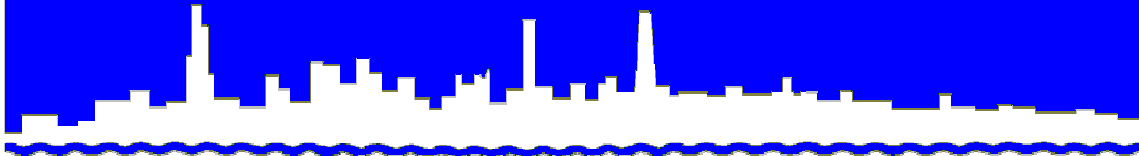


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 10-11

LAWNDALE AVENUE SOLIDS MANAGEMENT AREA

MONITORING REPORT FOR

FOURTH QUARTER 2009

FEBRUARY 2010

Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street

Chicago, Illinois 60611-3154

312.751.5190

Louis Kollias, P.E., BCEE

Director of Monitoring and Research

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February 26, 2010

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. 2005-AO-4283-2, Monitoring Report for October, November, and December 2009

The attached eight tables contain the monitoring data for the Lawndale Avenue Solids Management Area for October, November, and December 2009 as required by Illinois Environmental Protection Agency (IEPA) Operating Permit No. 2005-AO-4283-2.

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 21, 2009

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 2009

Table 3, Analysis of Water from Lysimeters L-1 through L-9N at the Lawndale Avenue Solids Management Area Sampled on October 7, 2009

Table 4, Analysis of Monthly Compositated Digested Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During October 2009

Table 5, Analysis of Monthly Compositated Digested Biosolids Placed in the Lawndale Avenue Solids Management Drying Area During November 2009

Subject: Lawndale Avenue Solids Management Area - Stickney Water Reclamation Plant, Illinois Environmental Protection Agency Permit No. 2005-AO-4283-2, Monitoring Report for October, November and December 2009

Table 6, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During October 2009

Table 7, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During November 2009

Table 8, Analysis of Monthly Composited Processed Digested Biosolids Removed from the Lawndale Avenue Solids Management Drying Area During December 2009

Two new lysimeters, L-1N and L-2N, were installed at this site in September 2008 as replacements for L-1 and L-2, respectively. The new and old lysimeters are monitored simultaneously. A request has been submitted to the IEPA to terminate monitoring of the old lysimeters.

A supplemental permit was issued by the IEPA on July 30, 2009, to modify the monitoring schedule for lysimeters at this drying site from monthly to quarterly, except lysimeters L-4N and L-6N, which will be monitored monthly.

Biosolids were placed in the solids drying area during October and November, and removed during October, November and December 2009.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:PL:kq
Attachments
cc w/att: Mr. Sulski, IEPA
Records Unit, IEPA
O'Connor/Cox/Lindo

TABLE 1: ANALYSIS¹ OF WATER FROM MONITORING WELLS M-11 THROUGH M-15 AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 21, 2009

Parameter	Unit	Monitoring Well No.				
		M-11	M-12	M-13	M-14	M-15
pH ²		7.6	7.6	7.7	7.6	7.7
EC	mS/m	80	100	133	80	149
Total Dissolved Solids	mg/L	690	888	1,344	578	1,444
Total Dissolved Org. Carbon	"	1	1	2	1	3
Cl ⁻	"	11	15	11	10	11
SO ₄ ⁼	"	183	333	609	124	821
TKN	"	1	0.3	0.4	0.3	0.5
NH ₃ -N	"	1	0.3	0.4	0.3	0.5
NO ₂ +NO ₃ -N	"	<0.04	<0.04	<0.04	<0.04	<0.04
Total P	"	<0.1	<0.1	<0.1	<0.1	<0.1
Alkalinity as CaCO ₃	"	358	301	336	326	354
Al	"	0.037	<0.035	0.048	<0.035	0.082
As	"	<0.025	<0.025	<0.025	<0.025	<0.025
B	"	1.2	1.7	1.4	1.2	1.1
Ca	"	95	74	153	70	234
Cd	"	<0.002	<0.002	<0.002	<0.002	<0.002
Cr	"	<0.003	<0.003	<0.003	<0.003	<0.003
Cu	"	<0.01	<0.01	<0.01	<0.01	<0.01
Fe	"	0.02	0.07	0.02	0.04	0.84
Hg	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
K	mg/L	9	10	10	8	11
Mg	"	46	36	74	40	108
Mn	"	0.018	0.003	0.006	0.003	0.018
Na	"	60	133	87	41	66
Ni	"	<0.002	<0.002	<0.002	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.02	<0.02	<0.02
Se	"	<0.1	<0.1	<0.1	<0.1	<0.1
Zn	"	0.71	1.7	1.0	0.45	1.2
Fecal coliform	MPN ³	<1	<1	<1	<1	<1
Static H ₂ O Elev.	ft	630	632	630	624	605

¹Limit of quantitation (LOQ) instead of MDL used as reporting limit.

²pH analyzed beyond recommended holding time of 15 minutes.

³Most Probable Number.

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 2009

Parameter	Unit	October 7, 2009		November 4, 2009		December 2, 2009	
		L-4N	L-6N	L-4N	L-6N	L-4N	L-6N
pH ¹		7.5	7.3	7.5	7.3	7.4	7.3
EC	mS/m	325	367	317	337	313	344
Total Dissolved Solids	mg/L	2,964	3,608	3,066	NA ²	3,014	3,398
Total Diss. Org. Carbon	“	5	56	5	59	6	36
Cl ⁻	“	27	74	24	74	27	85
SO ₄ ⁼	“	1,428	1,359	1,459	2,016	1,439	1,383
TKN	“	3	14	NRR ³	17	5	17
NH ₃ -N	“	3	12	4	12	5	13
NO ₂ +NO ₃ -N	“	1.3	0.08	0.78	0.06	0.73	0.10
Total P	“	<0.1	<0.1	0.1	<0.1	0.2	<0.1
Alkalinity as CaCO ₃	“	592	932	628	968	656	983
Al	“	0.134	0.199	0.179	0.182	0.077	0.079
As	“	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
B	“	0.13	0.13	0.13	0.11	0.14	0.16
Ca	“	555	671	579	624	587	687
Cd	“	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cr	“	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cu	“	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Fe	“	3.7	36	6.1	35	7.9	34
Hg	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
K	“	6	5	6	5	6	5
Mg	“	113	143	115	132	118	147
Mn	“	0.661	0.730	0.671	0.775	0.742	0.759
Na	“	89	72	103	66	87	75
Ni	“	<0.002	0.004	<0.002	0.005	<0.002	0.005
Pb	“	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Se	“	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zn	“	<0.01	0.01	<0.01	<0.01	0.02	<0.01

¹pH analyzed beyond recommended holding time of 15 minutes.

²No Analysis.

³No Reportable Result.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-9N AT THE LAWNSDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 7, 2009

Parameter	Unit	Lysimeter No.				
		L-1	L-1N	L-2	L-2N	L-3N
pH ¹		7.5	7.9	8.0	7.9	7.7
EC	mS/m	157	203	627	232	279
Total Dissolved Solids	mg/L	1,540	1,682	2,516	1,468	1,982
Total Diss. Org. Carbon	"	9	9	NA	4	23
Cl ⁻	"	64	42	472	326	130
SO ₄ ⁼	"	508	514	NA	173	207
TKN	"	5	5	0.5	0.4	2
NH ₃ -N	"	5	4	0.3	<0.1	0.8
NO ₂ +NO ₃ -N	"	0.10	0.19	0.34	0.22	0.46
Total P	"	<0.1	<0.1	<0.1	<0.1	0.2
Alkalinity ²	"	495	495	394	394	1,133
Al	"	0.079	0.077	0.092	0.046	0.090
As	"	<0.025	<0.025	<0.050	<0.025	<0.025
B	"	0.45	0.50	0.16	0.15	0.06
Ca	"	222	224	245	129	349
Cd	"	<0.002	<0.002	<0.004	<0.002	<0.002
Cr	"	<0.003	<0.003	<0.006	<0.003	<0.003
Cu	"	<0.01	<0.01	<0.02	<0.01	<0.01
Fe	"	2.5	1.1	0.52	0.05	7.3
Hg	µg/L	<0.20	<0.20	<0.40	<0.20	<0.20
K	mg/L	6	14	4	2	2
Mg	"	91	107	108	72	129
Mn	"	0.109	0.035	0.029	0.041	0.658
Na	"	40	47	262	199	77
Ni	"	<0.002	<0.002	<0.004	<0.002	<0.002
Pb	"	<0.02	<0.02	<0.04	<0.02	<0.02
Se	"	<0.1	<0.1	<0.2	<0.1	<0.1
Zn	"	<0.01	<0.01	<0.02	0.01	<0.01

TABLE 3 (Continued): ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-9N AT THE LAWNDALE AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 7, 2009

Parameter	Unit	Lysimeter No.				
		L-5N	L-6	L-7N	L-8N	L-9N
pH ¹		7.6	NA ²	8.0	7.9	7.8
EC	mS/m	577	NA	128	242	272
Total Dissolved Solids	mg/L	5,292	1,760	876	1,506	NA
Total Diss. Org. Carbon	"	6	NA	7	4	29
Cl ⁻	"	822	93	111	462	220
SO ₄ ⁼	"	1,723	NA	145	179	256
TKN	"	2	0.5	0.6	1	2
NH ₃ -N	"	2	0.5	0.3	0.9	0.6
NO ₂ +NO ₃ -N	"	0.18	0.13	<0.04	0.10	0.25
Total P	"	<0.1	<0.1	<0.1	<0.1	<0.1
Alkalinity ³	"	497	435	341	286	982
Al	"	0.126	NA	0.048	0.077	0.070
As	"	<0.025	NA	<0.025	<0.025	<0.025
B	"	0.26	NA	0.21	0.17	0.14
Ca	"	547	NA	101	120	240
Cd	"	<0.002	NA	<0.002	<0.002	<0.002
Cr	"	<0.003	NA	<0.003	<0.003	<0.003
Cu	"	<0.01	NA	<0.01	<0.01	<0.01
Fe	"	10	NA	1.9	0.21	6.5
Hg	µg/L	<0.20	NA	<0.20	<0.20	<0.20
K	mg/L	17	NA	5	5	5
Mg	"	228	NA	59	46	141
Mn	"	0.255	NA	0.067	0.203	0.400
Na	"	465	NA	60	255	150
Ni	"	<0.002	NA	<0.002	<0.002	<0.002
Pb	"	<0.02	NA	<0.02	<0.02	<0.02
Se	"	<0.1	NA	<0.1	<0.1	<0.1
Zn	"	0.01	NA	<0.01	0.01	<0.01

¹pH analyzed beyond recommended holding time of 15 minutes.

²No Analysis, insufficient sample.

³As CaCO₃.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED DIGESTED BIOSOLIDS PLACED IN
THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
DURING OCTOBER 2009

Parameter	Unit	Concentration ¹
pH		7.7
Total Solids	%	10.1
Total Volatile Solids ²	"	45.9
TKN	mg/kg	41,430
NH ₃ -N	"	13,334

¹Values are the means of six samples.

²Total volatile solids as a percentage of total solids.

TABLE 5: ANALYSIS OF MONTHLY COMPOSITED DIGESTED BIOSOLIDS
 PLACED IN THE LAWNSDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING NOVEMBER 2009

Parameter	Unit	Concentration ¹
pH		7.9
Total Solids	%	14.4
Total Volatile Solids ²	“	46.3
TKN	mg/kg	41,786
NH ₃ -N	“	10,992

¹Values are the means of five 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 2009

Parameter	Unit	Concentration ¹
pH		7.3
Total Solids	%	44.6
Total Volatile Solids ²	“	40.9
TKN	mg/kg	28,655
NH ₃ -N	“	6,516
Total P	“	21,615
Al	“	18,992
As	“	<10
Ca	“	38,714
Cd	“	3
Cr	“	158
Cu	“	411
Fe	“	17,570
Hg	“	1.1
K	“	2,621
Mg	“	18,036
Mn	“	579
Mo	“	13
Na	“	900
Ni	“	43
Pb	“	130
Se	“	<8
Zn	“	876

¹Values are the means of nine samples.

²Total volatile solids as a percentage of total solids.

TABLE 7: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED BIOSOLIDS REMOVED FROM THE LAWDALE AVENUE SOLIDS MANAGEMENT DRYING AREA DURING NOVEMBER 2009

Parameter	Unit	Concentration ¹
pH		6.9
Total Solids	%	40.0
Total Volatile Solids ²	“	46.0
TKN	mg/kg	30,681
NH ₃ -N	“	4,997
Total P	“	21,153
Al	“	17,682
As	“	<10
Ca	“	36,968
Cd	“	3
Cr	“	153
Cu	“	419
Fe	“	16,926
Hg	“	1.1
K	“	2,127
Mg	“	16,378
Mn	“	535
Mo	“	13
Na	“	<800
Ni	“	43
Pb	“	132
Se	“	<8
Zn	“	882

¹Values are the means of ten samples.

²Total volatile solids as a percentage of total solids.

TABLE 8: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED BIOSOLIDS
 REMOVED FROM THE LAWNDALE AVENUE SOLIDS MANAGEMENT DRYING AREA
 DURING DECEMBER 2009

Parameter	Unit	Concentration ¹
pH		8.1
Total Solids	%	23.5
Total Volatile Solids ²	“	44.3
TKN	mg/kg	45,154
NH ₃ -N	“	7,968
Total P	“	17,707
Al	“	18,459
As	“	<10
Ca	“	36,426
Cd	“	3
Cr	“	143
Cu	“	404
Fe	“	17,920
Hg	“	0.68
K	“	3,150
Mg	“	16,073
Mn	“	584
Mo	“	15
Na	“	881
Ni	“	42
Pb	“	130
Se	“	<8
Zn	“	875

¹Values are the means of three samples.

²Total volatile solids as a percentage of total solids.