Metropolitan Water Reclamation District of Greater Chicago

RESEARCH AND DEVELOPMENT DEPARTMENT

REPORT NO. 06-54

HARLEM AVENUE SOLIDS MANAGEMENT AREA

MONITORING DATA FOR

SECOND QUARTER 2006

August 2006

August 31, 2006

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: Harlem Avenue Solids Management Area - Stickney WRP, Contract No. 84-111-2P, IEPA Permit No. 2004-AO-2591, Monitoring Data for April, May, and June 2006

The attached six tables contain the monitoring data for the Harlem Avenue Solids Management Area for April, May, and June 2006 as required by IEPA Operating Permit No. 2004-AO-2591. On a few occasions during the quarter, no samples could be obtained from Lysimeter L-1N, but its replacement (L-1N-1) compensated for the missing samples. The District will continue to sample the corresponding devices (L-1N and L-1N-1) simultaneously while a request to the IEPA is in process for permission to terminate monitoring of the old lysimeter.

The data reported are as follows:

Table 1, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on April 12, 2006

Table 2, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on April 26, 2006

Table 3, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on May 10, 2006

Table 4, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on May 24, 2006

Subject: Harlem Avenue Solids Management Area - Stickney WRP, Contract No. 84-111-2P, IEPA Permit No. 2004-AO-2591, Monitoring Data for April, May, and June 2006

Table 5, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on June 7, 2006

Table 6, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on June 21, 2006

No biosolids were placed in or removed from the solids drying area during the period of April to June.

Very truly yours,

Louis Kollias
Director
Research and Development

LK:PL:spy
Enclosure
cc w/enc: Records Unit (IEPA)
Sulski (IEPA)

cc via MWRDGC Web Site:
Levy/Sharma
Stuba/Granato
O'Connor/Cox
Lindo/Patel, M.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1
AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON APRIL 12, 2006

		Lysimeter No.				
Parameter	Unit	L-1N	L-1	L-2	L-3	L-1N-1
pH[1]		7.7	7.5	7.6	7.7	7.7
EC	mS/m	183	341	157	210	238
Total Dissolved Solids	mg/L	1,344	3,264	1,140	1,548	616
Total Dissolved Organic Carbon	,,	20	45	3	6	38
Cl^-	,,	50	88	185	108	106
$SO_4^=$	,,	17	1,467	239	241	4
TKN	,,	10	81	3.4	0.64	8.1
NH_3-N	,,	8.2	78	2.6	< 0.02	4.5
$NO_2 + NO_3$-N	,,	1.9	50	1.6	0.36	0.08
Total P	,,	0.12	< 0.10	0.05	0.06	0.08
Alkalinity as $CaCO_3$	,,	1,286	670	428	1,048	1,465
Al	,,	< 0.014	0.038	0.009	0.017	0.013
Ca	,,	246	443	209	310	290
Cd	,,	< 0.0008	< 0.0008	< 0.0004	< 0.0004	< 0.0004
Cr	,,	0.0014	0.0024	0.0008	0.0006	< 0.0005
Cu	,,	< 0.004	< 0.004	< 0.002	< 0.002	< 0.002
Fe	,,	0.962	0.056	0.026	0.012	2.14
Hg	μg/L	< 0.10	< 0.10	< 0.05	< 0.05	< 0.05
K	mg/L	4	18	0.9	1	5
Mg	,,	149	236	56.8	134	187
Mn	,,	0.2636	0.4520	0.0733	0.1824	0.3007
Na	,,	48	65	77	41	47
Ni	,,	< 0.0008	0.0136	0.0006	< 0.0004	0.0020
Pb	,,	< 0.008	< 0.008	< 0.004	< 0.004	< 0.004
Zn	,,	0.010	0.012	0.005	0.005	0.012

[1]pH analyzed beyond recommended holding time of 15 minutes.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1
AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON APRIL 26, 2006

		Lysimeter No.				
Parameter	Unit	L-1N	L-1	L-2	L-3	L-1N-1
pH[1]		7.4	7.1	7.4	7.4	7.7
EC	mS/m	198	374	164	212	241
Total Dissolved Solids	mg/L	NA	3,754	1,400	1,780	1,734
Total Dissolved Organic Carbon	,,	20	51	4	7	38
Cl^-	,,	47	91	181	101	112
$SO_4^=$	,,	26	1,708	292	280	1
TKN	,,	13	100	4.6	0.64	11
NH_3-N	,,	9.7	97	3.5	< 0.02	4.7
$NO_2 + NO_3$-N	,,	2.1	31	1.2	0.17	0.04
Total P	,,	< 0.05	< 0.05	< 0.05	< 0.05	1.8
Alkalinity as $CaCO_3$	,,	917	835	440	1,054	1,507
Al	,,	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Ca	,,	254	458	219	323	307
Cd	,,	0.0017	0.0016	0.0018	< 0.0004	0.0019
Cr	,,	0.0021	0.0026	0.0016	0.0013	0.0015
Cu	,,	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Fe	,,	3.52	0.035	0.026	0.023	8.21
Hg	μg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
K	mg/L	3	22	1	1	5
Mg	,,	148	273	61.5	150	201
Mn	,,	0.3354	0.5611	0.0270	0.1507	0.3802
Na	,,	47	79	80	43	56
Ni	,,	< 0.0004	0.0180	0.0005	< 0.0004	0.0179
Pb	,,	0.013	0.012	0.013	0.013	0.013
Zn	,,	NRR	NRR	NRR	NRR	NRR

[1]pH analyzed beyond recommended holding time of 15 minutes.
NA = No analysis; insufficient sample.
NRR = No reportable result.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1
AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON MAY 10, 2006

		Lysimeter No.				
Parameter	Unit	L-1N	L-1	L-2	L-3	L-1N-1
pH[1]			6.9	7.1	7.1	7.5
EC	mS/m	|	376	199	213	235
Total Dissolved Solids	mg/L	|	3,416	1,504	1,558	1,322
Total Dissolved Organic Carbon	”	|	51	3	7	37
Cl^-	”	|	82	189	88	92
$SO_4^=$	”	|	1,656	386	268	4
		|				
TKN	”		108	4.3	0.76	7.2
NH_3-N	”	L	104	3.2	< 0.02	4.5
$NO_2 + NO_3$-N	”	Y	29	1.2	0.29	0.22
Total P	”	S	0.09	< 0.05	< 0.05	< 0.05
Alkalinity as $CaCO_3$	”	I	785	409	941	1,088
		M				
Al	”	E	< 0.007	< 0.007	< 0.007	< 0.007
Ca	”	T	454	267	314	285
Cd	”	E	0.0018	0.0016	0.0008	0.0018
Cr	”	R	0.0047	0.0018	0.0018	0.0029
Cu	”		< 0.002	< 0.002	< 0.002	< 0.002
		D				
Fe	”	R	0.041	0.015	0.022	1.40
Hg	μg/L	Y	0.09	0.06	< 0.05	0.06
K	mg/L		22	1	1	5
Mg	”	|	274	73.9	149	191
Mn	”	|	0.5456	0.0209	0.1394	0.3449
		|				
Na	”	|	78	75	39	48
Ni	”	|	0.0154	< 0.0004	< 0.0004	< 0.0004
Pb	”	|	0.010	0.014	0.011	0.009
Zn	”		0.024	0.008	0.008	0.013

[1]pH analyzed beyond recommended holding time of 15 minutes.

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TABLE 4

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1
AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON MAY 24, 2006

		Lysimeter No.				
Parameter	Unit	L-1N	L-1	L-2	L-3	L-1N-1
pH[1]			7.0	7.2	7.2	7.6
EC	mS/m	|	403	176	218	237
Total Dissolved Solids	mg/L	|	3,608	1,580	3,484	1,680
Total Dissolved Organic Carbon	”	|	49	2	15	37
Cl^-	”	|	93	178	178	91
$SO_4^=$	”	|	1,634	370	545	28
		|				
TKN	”		111	0.57	1.3	7.8
NH_3-N	”	L	95	0.16	< 0.04	4.9
$NO_2 + NO_3$-N	”	Y	37	0.52	1.3	0.16
Total P	”	S	0.12	0.05	0.12	0.10
Alkalinity as $CaCO_3$	”	I	824	381	2,000	1,190
		M				
Al	”	E	< 0.014	< 0.007	< 0.014	< 0.014
Ca	”	T	461	270	645	302
Cd	”	E	0.0026	0.0020	0.0032	0.0022
Cr	”	R	0.0036	0.0010	< 0.0010	0.0020
Cu	”		0.014	< 0.002	< 0.004	0.020
		D				
Fe	”	R	0.058	0.019	0.024	2.82
Hg	μg/L	Y	0.22	0.12	0.26	0.24
K	mg/L		21	0.5	3	5
Mg	”	|	260	68.1	304	196
Mn	”	|	0.4488	0.0411	0.2492	0.2808
		|				
Na	”	|	73	74	78	48
Ni	”	|	0.0306	< 0.0004	< 0.0008	0.0058
Pb	”	|	0.020	0.010	0.012	0.018
Zn	”		0.082	0.008	0.022	0.060

[1]pH analyzed beyond recommended holding time of 15 minutes.

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TABLE 5

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1
AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON JUNE 7, 2006

		Lysimeter No.				
Parameter	Unit	L-1N	L-1	L-2	L-3	L-1N-1
pH[1]		7.8	7.4	7.5	7.6	7.7
EC	mS/m	178	384	187	209	211
Total Dissolved Solids	mg/L	1,440	NS	1,488	1,760	1,574
Total Dissolved Organic Carbon	,,	19	54	3	7	39
Cl^-	,,	39	83	175	87	91
$SO_4^=$	,,	32	1,678	341	244	14
TKN	,,	9.6	112	4.4	0.79	8.3
NH_3-N	,,	7.3	103	3.2	0.04	4.6
$NO_2 + NO_3$-N	,,	1.9	39	1.3	0.27	0.08
Total P	,,	< 0.10	< 0.05	< 0.05	< 0.05	< 0.05
Alkalinity as $CaCO_3$	,,	1,130	767	407	950	999
Al	,,	< 0.014	< 0.007	< 0.007	< 0.007	< 0.007
Ca	,,	247	461	250	325	312
Cd	,,	< 0.0008	0.0007	0.0005	0.0007	0.0013
Cr	,,	0.0026	0.0031	0.0019	0.0013	0.0021
Cu	,,	< 0.004	< 0.002	< 0.002	< 0.002	< 0.002
Fe	,,	2.67	0.056	0.108	0.018	1.91
Hg	μg/L	< 0.10	< 0.05	< 0.05	< 0.05	< 0.05
K	mg/L	3	22	1	2	5
Mg	,,	137	282	70.0	156	206
Mn	,,	0.3414	0.5768	0.0220	0.1231	0.3930
Na	,,	42	80	75	39	53
Ni	,,	< 0.0008	0.0172	< 0.0004	< 0.0004	0.0011
Pb	,,	0.014	0.006	0.009	0.006	0.006
Zn	,,	0.034	0.016	0.007	0.007	0.018

[1]pH analyzed beyond recommended holding time of 15 minutes.

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TABLE 6

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1
AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON JUNE 21, 2006

		Lysimeter No.				
Parameter	Unit	L-1N	L-1	L-2	L-3	L-1N-1
pH[1]			7.1	7.2	7.3	7.4
EC	mS/m	|	382	168	213	236
Total Dissolved Solids	mg/L	|	3,664	1,510	1,724	1,768
Total Dissolved Organic Carbon	”	|	53	3	7	38
Cl^-	”	|	101	168	84	98
$SO_4^=$	”	|	1,829	349	278	11
		|				
TKN	”		123	3.8	0.84	9.7
NH_3-N	”	L	105	2.8	< 0.02	5.6
$NO_2 + NO_3$-N	”	Y	29	0.75	0.19	0.08
Total P	”	S	0.08	< 0.05	0.05	0.07
Alkalinity as $CaCO_3$	”	I	795	383	954	1,183
		M				
Al	”	E	0.064	< 0.007	< 0.007	< 0.007
Ca	”	T	472	243	330	305
Cd	”	E	0.0029	0.0019	0.0023	0.0033
Cr	”	R	0.0013	0.0006	< 0.0005	< 0.0005
Cu	”		< 0.002	< 0.002	< 0.002	< 0.002
		D				
Fe	”	R	0.595	0.134	0.364	13.5
Hg	μg/L	Y	< 0.05	< 0.05	< 0.05	< 0.05
K	mg/L		22	1	1	6
Mg	”	|	271	64.1	149	195
Mn	”	|	0.5490	0.0293	0.1221	0.3515
		|				
Na	”	|	89	75	38	53
Ni	”	|	0.0173	0.0004	< 0.0004	0.0015
Pb	”	|	< 0.004	< 0.004	< 0.004	< 0.004
Zn	”		0.017	0.007	0.011	0.015

[1]pH analyzed beyond recommended holding time of 15 minutes.