

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 06-57

RIDGELAND 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: Ridgeland Avenue Solids Management Area - Stickney WRP, Contract No. 89-202-2P, IEPA Permit No. 2005-AO-4283, Monitoring Data for April, May, and June 2006

The attached six tables contain the monitoring data for the Ridgeland Avenue Solids Management Area for April, May, and June 2006 as required by IEPA Operating Permit No. 2005-AO-4283. During the quarter, there was a minor problem with Lysimeter L-1N and no sample could be collected. The problem was, however, corrected later in the quarter and samples were obtained.

The data reported are as follows:

Table 1, Analysis of Water from Lysimeters L-1 through L-4N at the Ridgeland Avenue Solids Management Area Sampled on April 12, 2006

Table 2, Analysis of Water from Lysimeters L-1 through L-4N at the Ridgeland Avenue Solids Management Area Sampled on April 26, 2006

Table 3, Analysis of Water from Lysimeters L-1 through L-4N at the Ridgeland Avenue Solids Management Area Sampled on May 10, 2006

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

Table 5, Analysis of Water from Lysimeters L-1 through L-4N at the Ridgeland Avenue Solids Management Area Sampled on June 7, 2006

Subject: Ridgeland Avenue Solids Management Area - Stickney WRP, Contract No. 89-202-2P, IEPA Permit No. 2005-AO-4283, Monitoring Data for April, May, and June 2006

Table 6, Analysis of Water from Lysimeters L-1 through L-4N at the Ridgeland 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-1 THROUGH L-4N
 AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
 SAMPLED ON APRIL 12, 2006

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3	L-4	L-1N
pH ¹						
EC	mS/m					
Total Dissolved Solids	mg/L					L
Total Dissolved Organic Carbon	"					Y
Cl ⁻	"					S
SO ₄ ⁼	"					I
						M
TKN	"					E
NH ₃ -N	"	L	L	L	L	T
NO ₂ + NO ₃ -N	"	Y	Y	Y	Y	E
Total P	"	S	S	S	S	R
Alkalinity as CaCO ₃	"	I	I	I	I	
		M	M	M	M	V
Al	"	E	E	E	E	A
Ca	"	T	T	T	T	L
Cd	"	E	E	E	E	V
Cr	"	R	R	R	R	E
Cu	"					
		D	D	D	D	D
Fe	"	R	R	R	R	E
Hg	μg/L	Y	Y	Y	Y	F
K	mg/L					E
Mg	"					C
Mn	"					T
						I
Na	"					V
Ni	"					E
Pb	"					
Zn	"					

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON APRIL 12, 2006

Parameter	Unit	Lysimeter No.		
		L-2N	L-3N	L-4N
pH ¹		8.0	8.1	8.2
EC	mS/m	220	214	159
Total Dissolved Solids	mg/L	1,424	1,360	1,034
Total Dissolved Organic Carbon	"	7	2	5
Cl ⁻	"	238	406	367
SO ₄ ⁼	"	203	279	69
TKN	"	34	0.51	1.9
NH ₃ -N	"	32	0.08	1.1
NO ₂ + NO ₃ -N	"	0.03	0.25	0.03
Total P	"	< 0.05	0.20	0.92
Alkalinity as CaCO ₃	"	858	359	254
Al	"	0.023	0.013	0.010
Ca	"	211	167	113
Cd	"	< 0.0004	< 0.0004	< 0.0004
Cr	"	< 0.0005	< 0.0005	0.0011
Cu	"	< 0.002	0.015	< 0.002
Fe	"	0.023	0.026	0.028
Hg	μg/L	< 0.05	< 0.05	< 0.05
K	mg/L	14	5	5
Mg	"	133	79.0	35.4
Mn	"	0.1827	0.0958	0.1386
Na	"	77	209	178
Ni	"	< 0.0004	< 0.0004	< 0.0004
Pb	"	< 0.004	< 0.004	< 0.004
Zn	"	0.006	0.008	0.005

¹pH analyzed beyond recommended holding time of 15 minutes.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
 AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
 SAMPLED ON APRIL 26, 2006

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3	L-4	L-1N
pH ¹						
EC	mS/m					
Total Dissolved Solids	mg/L					L
Total Dissolved Organic Carbon	"					Y
Cl ⁻	"					S
SO ₄ ⁼	"					I
						M
TKN	"					E
NH ₃ -N	"	L	L	L	L	T
NO ₂ + NO ₃ -N	"	Y	Y	Y	Y	E
Total P	"	S	S	S	S	R
Alkalinity as CaCO ₃	"	I	I	I	I	
		M	M	M	M	V
Al	"	E	E	E	E	A
Ca	"	T	T	T	T	L
Cd	"	E	E	E	E	V
Cr	"	R	R	R	R	E
Cu	"					
		D	D	D	D	D
Fe	"	R	R	R	R	E
Hg	μg/L	Y	Y	Y	Y	F
K	mg/L					E
Mg	"					C
Mn	"					T
						I
Na	"					V
Ni	"					E
Pb	"					
Zn	"					

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON APRIL 26, 2006

Parameter	Unit	Lysimeter No.		
		L-2N	L-3N	L-4N
pH ¹		7.6	7.8	7.9
EC	mS/m	223	231	159
Total Dissolved Solids	mg/L	1,862	1,946	1,170
Total Dissolved Organic Carbon	"	9	2	5
Cl ⁻	"	220	427	364
SO ₄ ⁼	"	219	317	89
TKN	"	33	2.3	1.7
NH ₃ -N	"	32	1.5	1.1
NO ₂ + NO ₃ -N	"	0.04	0.17	0.04
Total P	"	< 0.05	< 0.05	1.7
Alkalinity as CaCO ₃	"	904	420	248
Al	"	< 0.007	< 0.007	< 0.007
Ca	"	223	189	110
Cd	"	0.0017	0.0018	0.0015
Cr	"	0.0010	0.0013	0.0017
Cu	"	< 0.002	< 0.002	< 0.002
Fe	"	0.352	0.048	0.076
Hg	μg/L	< 0.05	< 0.05	< 0.05
K	mg/L	15	6	5
Mg	"	146	92.5	34.3
Mn	"	0.1968	0.1060	0.4072
Na	"	75	254	213
Ni	"	0.0027	0.0027	0.0011
Pb	"	0.011	0.012	0.010
Zn	"	0.216	0.098	0.038

¹pH analyzed beyond recommended holding time of 15 minutes.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
 AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
 SAMPLED ON MAY 10, 2006

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3	L-4	L-1N
pH ¹						
EC	mS/m					
Total Dissolved Solids	mg/L					L
Total Dissolved Organic Carbon	"					Y
Cl ⁻	"					S
SO ₄ ⁼	"					I
						M
TKN	"					E
NH ₃ -N	"	L	L	L	L	T
NO ₂ + NO ₃ -N	"	Y	Y	Y	Y	E
Total P	"	S	S	S	S	R
Alkalinity as CaCO ₃	"	I	I	I	I	
		M	M	M	M	V
Al	"	E	E	E	E	A
Ca	"	T	T	T	T	L
Cd	"	E	E	E	E	V
Cr	"	R	R	R	R	E
Cu	"					
		D	D	D	D	D
Fe	"	R	R	R	R	E
Hg	μg/L	Y	Y	Y	Y	F
K	mg/L					E
Mg	"					C
Mn	"					T
						I
Na	"					V
Ni	"					E
Pb	"					
Zn	"					

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON MAY 10, 2006

Parameter	Unit	Lysimeter No.		
		L-2N	L-3N	L-4N
pH ¹		7.5	7.5	7.9
EC	mS/m	223	222	152
Total Dissolved Solids	mg/L	1,722	1,736	1,064
Total Dissolved Organic Carbon	"	7	2	6
Cl ⁻	"	219	387	287
SO ₄ ⁼	"	210	280	79
TKN	"	34	0.81	2.6
NH ₃ -N	"	31	0.04	1.1
NO ₂ + NO ₃ -N	"	0.17	0.31	0.10
Total P	"	0.12	< 0.05	2.1
Alkalinity as CaCO ₃	"	770	348	256
Al	"	< 0.007	< 0.007	< 0.007
Ca	"	203	184	103
Cd	"	0.0019	0.0013	0.0018
Cr	"	0.0018	0.0013	0.0016
Cu	"	< 0.002	< 0.002	< 0.002
Fe	"	0.280	0.069	0.304
Hg	μg/L	0.07	< 0.05	< 0.05
K	mg/L	15	5	4
Mg	"	137	75.0	31.9
Mn	"	0.1620	0.1493	0.5043
Na	"	82	235	182
Ni	"	< 0.0004	< 0.0004	< 0.0004
Pb	"	0.011	0.011	0.010
Zn	"	0.013	0.018	0.004

¹pH analyzed beyond recommended holding time of 15 minutes.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
 AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
 SAMPLED ON MAY 24, 2006

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3	L-4	L-1N
pH ¹						7.4
EC	mS/m					393
Total Dissolved Solids	mg/L					3,866
Total Dissolved Organic Carbon	"					5
Cl ⁻	"					661
SO ₄ ⁼	"					899
TKN	"					2.7
NH ₃ -N	"	L	L	L	L	1.4
NO ₂ + NO ₃ -N	"	Y	Y	Y	Y	0.08
Total P	"	S	S	S	S	0.10
Alkalinity as CaCO ₃	"	I	I	I	I	527
		M	M	M	M	
Al	"	E	E	E	E	< 0.007
Ca	"	T	T	T	T	459
Cd	"	E	E	E	E	0.0024
Cr	"	R	R	R	R	< 0.0005
Cu	"					< 0.002
		D	D	D	D	
Fe	"	R	R	R	R	1.31
Hg	μg/L	Y	Y	Y	Y	0.12
K	mg/L					10
Mg	"					306
Mn	"					0.1447
Na	"					138
Ni	"					< 0.0004
Pb	"					0.005
Zn	"					0.012

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON MAY 24, 2006

Parameter	Unit	Lysimeter No.		
		L-2N	L-3N	L-4N
pH ¹		7.5	7.6	
EC	mS/m	223	225	
Total Dissolved Solids	mg/L	1,664	1,768	L
Total Dissolved Organic Carbon	"	7	3	Y
Cl ⁻	"	205	391	S
SO ₄ ⁼	"	233	283	I
				M
TKN	"	37	0.64	E
NH ₃ -N	"	33	0.07	T
NO ₂ + NO ₃ -N	"	0.11	0.22	E
Total P	"	0.11	0.17	R
Alkalinity as CaCO ₃	"	735	344	V
				A
Al	"	< 0.007	< 0.007	A
Ca	"	216	179	L
Cd	"	0.0016	0.0020	V
Cr	"	< 0.0005	0.0005	E
Cu	"	< 0.002	< 0.002	
				D
Fe	"	0.295	0.052	E
Hg	μg/L	0.12	0.12	F
K	mg/L	15	5	E
Mg	"	143	83.2	C
Mn	"	0.2189	0.2551	T
				I
Na	"	82	250	V
Ni	"	< 0.0004	0.0018	E
Pb	"	0.008	0.009	
Zn	"	0.009	0.006	

¹pH analyzed beyond recommended holding time of 15 minutes.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
 AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
 SAMPLED ON JUNE 7, 2006

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3	L-4	L-1N
pH ¹			8.1			7.8
EC	mS/m		282			427
Total Dissolved Solids	mg/L		NA			4,280
Total Dissolved Organic Carbon	"		NA			4
Cl ⁻	"		55			178
SO ₄ ⁼	"		NA			879
TKN	"		4.2			3.0
NH ₃ -N	"	L	0.32	L	L	1.0
NO ₂ + NO ₃ -N	"	Y	4.9	Y	Y	0.06
Total P	"	S	0.18	S	S	< 0.05
Alkalinity as CaCO ₃	"	I	708	I	I	474
		M		M	M	
Al	"	E	< 0.014	E	E	< 0.007
Ca	"	T	435	T	T	527
Cd	"	E	0.0010	E	E	0.0013
Cr	"	R	0.0032	R	R	< 0.0005
Cu	"		0.006			< 0.002
		D		D	D	
Fe	"	R	0.348	R	R	7.69
Hg	μg/L	Y	< 0.10	Y	Y	< 0.05
K	mg/L		17			9
Mg	"		195			281
Mn	"		0.0186			0.1252
Na	"		60			152
Ni	"		0.0150			< 0.0004
Pb	"		0.026			0.006
Zn	"		0.048			0.022

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON JUNE 7, 2006

Parameter	Unit	Lysimeter No.		
		L-2N	L-3N	L-4N
pH ¹		7.9	7.9	7.9
EC	mS/m	237	228	160
Total Dissolved Solids	mg/L	1,884	1,792	NA
Total Dissolved Organic Carbon	"	2	2	NA
Cl ⁻	"	208	85	NA
SO ₄ ⁼	"	288	279	NA
TKN	"	35	2.1	NA
NH ₃ -N	"	35	1.6	NA
NO ₂ + NO ₃ -N	"	0.08	0.11	NA
Total P	"	0.08	< 0.05	NA
Alkalinity as CaCO ₃	"	732	429	NA
Al	"	< 0.007	< 0.007	NA
Ca	"	238	197	NA
Cd	"	0.0006	0.0009	NA
Cr	"	0.0013	0.0015	NA
Cu	"	< 0.002	< 0.002	NA
Fe	"	4.90	0.388	NA
Hg	μg/L	0.05	< 0.05	NA
K	mg/L	15	6	NA
Mg	"	153	79.6	NA
Mn	"	0.2698	0.2008	NA
Na	"	87	249	NA
Ni	"	< 0.0004	0.0022	NA
Pb	"	0.007	0.009	NA
Zn	"	0.024	0.022	NA

¹pH analyzed beyond recommended holding time of 15 minutes.

NA = No analysis; insufficient sample.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
 AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
 SAMPLED ON JUNE 21, 2006

Parameter	Unit	Lysimeter No.				
		L-1	L-2	L-3	L-4	L-1N
pH ¹						7.5
EC	mS/m					408
Total Dissolved Solids	mg/L					4,612
Total Dissolved Organic Carbon	"					4
Cl ⁻	"					697
SO ₄ ⁼	"					918
TKN	"					1.7
NH ₃ -N	"	L	L	L	L	0.84
NO ₂ + NO ₃ -N	"	Y	Y	Y	Y	0.03
Total P	"	S	S	S	S	< 0.05
Alkalinity as CaCO ₃	"	I	I	I	I	533
		M	M	M	M	
Al	"	E	E	E	E	< 0.007
Ca	"	T	T	T	T	504
Cd	"	E	E	E	E	0.0073
Cr	"	R	R	R	R	< 0.0005
Cu	"					< 0.002
		D	D	D	D	
Fe	"	R	R	R	R	5.46
Hg	μg/L	Y	Y	Y	Y	< 0.05
K	mg/L					9
Mg	"					278
Mn	"					0.1091
Na	"					146
Ni	"					0.0077
Pb	"					< 0.004
Zn	"					0.016

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS L-1 THROUGH L-4N
AT THE RIDGELAND AVENUE SOLIDS MANAGEMENT AREA
SAMPLED ON JUNE 21, 2006

Parameter	Unit	Lysimeter No.		
		L-2N	L-3N	L-4N
pH ¹		7.7	7.7	8.0
EC	mS/m	223	220	148
Total Dissolved Solids	mg/L	1,854	1,854	1,048
Total Dissolved Organic Carbon	"	8	2	6
Cl ⁻	"	222	392	251
SO ₄ ⁼	"	256	302	118
TKN	"	36	0.68	1.8
NH ₃ -N	"	32	0.12	0.92
NO ₂ + NO ₃ -N	"	0.02	0.27	0.03
Total P	"	0.37	< 0.05	2.9
Alkalinity as CaCO ₃	"	736	335	227
Al	"	< 0.007	< 0.007	< 0.007
Ca	"	212	182	98
Cd	"	0.0060	0.0124	0.0062
Cr	"	0.0019	0.0005	0.0010
Cu	"	< 0.002	< 0.002	< 0.002
Fe	"	3.80	0.201	0.403
Hg	μg/L	< 0.05	< 0.05	< 0.05
K	mg/L	14	5	4
Mg	"	133	79.1	36.2
Mn	"	0.2444	0.1586	0.2019
Na	"	87	230	165
Ni	"	< 0.0004	0.0014	0.0022
Pb	"	< 0.004	< 0.004	< 0.004
Zn	"	0.009	0.011	0.006

¹pH analyzed beyond recommended holding time of 15 minutes.