

*Protecting Our Water Environment*



***Metropolitan Water Reclamation District of Greater Chicago***

***RESEARCH AND DEVELOPMENT  
DEPARTMENT***

***REPORT NO. 06-10***

***HARLEM AVENUE SOLIDS MANAGEMENT AREA***

***MONITORING DATA FOR***

***FOURTH QUARTER 2005***

***MARCH 2006***

March 10, 2006

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

Dear Mr. Keller:

Subject: HASMA Solids Drying Site - Stickney WRP Contract No. 84-111-2P,  
IEPA Permit No. 2004-AO-2591 Monitoring Data for October, No-  
vember, and December 2005

The attached eight tables contain the monitoring data for the HASMA site for October, November, and December 2005 as required by IEPA Operating Permit No. 2004-AO-2591. A new lysimeter, L-1N-1, was installed in May 2005 as a replacement for Lysimeters L-1 and L-1N. The District will continue to sample these three lysimeters simultaneously for the next three months, and will then submit a request to the IEPA to discontinue sampling of Lysimeters L-1 and L-1N. No samples were collected on December 7 and 21, 2005 due to the frozen condition of the lysimeters during frigid weather.

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 October 12, 2005

Table 2, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on October 26, 2005

Table 3, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on November 9, 2005

Table 4, Analysis of Water from Lysimeters L-1N through L-1N-1 at the Harlem Avenue Solids Management Area Sampled on November 22, 2005

Subject: HASMA Solids Drying Site - Stickney WRP Contract No. 84-111-2P,  
IEPA Permit No. 2004-AO-2591 Monitoring Data for October, No-  
vember, and December 2005

Table 5, Analysis of Monthly Composited Digested Biosolids Placed in the Har-  
lem Avenue Solids Management Drying Area During October 2005

Table 6, Analysis of Monthly Composited Digested Biosolids Placed in the Har-  
lem Avenue Solids Management Drying Area During November 2005

Table 7, Analysis of Monthly Composited Digested Biosolids Placed in the Har-  
lem Avenue Solids Management Drying Area During December 2005

Table 8, Analysis of Monthly Composited Processed Digested Biosolids Re-  
moved from the Harlem Avenue Solids Management Drying Area During Octo-  
ber 2005

Biosolids were placed in the drying site during the months of October, November, and  
December, but were removed during October only.

Very truly yours,

Richard Lanyon  
Director  
Research and Development

RL:PL:spy  
Enclosures  
cc w/enc.: Records Unit (IEPA)  
Sulski (IEPA)

cc via MWRDGC web site:  
Levy/Sharma  
Kollias/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 OCTOBER 12, 2005

Parameter	Units	Lysimeter No.				
		L-1N	L-1	L-2	L-3	L-1N-1
pH*			7.3	7.4	7.5	7.5
EC	mS/m		397	173	232	220
Total Dissolved Solids	mg/L		3,578	1,396	1,830	1,518
Total Dissolved Organic Carbon	"		55	6	8	39
Cl <sup>-</sup>	"	L	94	180	92	122
SO <sub>4</sub> <sup>=</sup>	"	Y	1,736	319	278	24
		S				
TKN	"	I	126	10	0.57	7.3
NH <sub>3</sub> -N	"	M	114	8.7	0.04	5.7
NO <sub>2</sub> +NO <sub>3</sub> -N	"	E	19.5	1.58	0.264	0.089
Total P	"	T	1.8	0.07	<0.04	0.10
Alkalinity as CaCO <sub>3</sub>	"	E	940	454	1,156	1,437
		R				
Al	"		<0.07	<0.07	<0.07	<0.07
Ca	"	I	441	209	316	284
Cd	"	N	<0.0003	0.0018	<0.0003	0.0018
Cr	"	A	<0.0007	<0.0007	<0.0007	<0.0007
Cu	"	C	0.002	<0.002	<0.002	<0.002
		C				
Fe	"	E	0.041	0.027	0.013	0.159
Hg	µg/L	S	<0.05	<0.05	<0.05	0.09
K	mg/L	S	20	2	1	6
Mg	"	I	257	64.0	152	192
Mn	"	B	0.5274	0.0794	0.1002	0.2924
		L				
Na	"	E	71	73	35	50
Ni	"		0.017	<0.002	<0.002	0.002
Pb	"		0.0020	0.0040	0.0020	0.0030
Zn	"		0.046	0.016	0.022	0.009

\*pH analyzed beyond recommended holding time of 15 minutes.

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TABLE 2

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1 AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 26, 2005

Parameter	Units	Lysimeter No.				
		L-1N	L-1	L-2	L-3	L-1N-1
pH*			7.1	7.6	7.5	7.6
EC	mS/m		422	208	224	220
Total Dissolved Solids	mg/L		3,610	NA	1,566	1,572
Total Dissolved Organic Carbon	"		56	NA	9	38
Cl <sup>-</sup>	"		138	NA	87	85
SO <sub>4</sub> <sup>=</sup>	"		1,756	NA	263	12
TKN	"		116	NA	2.1	9.0
NH <sub>3</sub> -N	"	L	98	NA	1.0	5.0
NO <sub>2</sub> +NO <sub>3</sub> -N	"	Y	30.5	NA	0.561	0.048
Total P	"	S	<0.04	NA	<0.04	<0.04
Alkalinity as CaCO <sub>3</sub>	"	I	837	NA	1,149	1,198
		M				
Al	"	E	0.13	NA	0.10	0.10
Ca	"	T	452	NA	315	296
Cd	"	E	<0.0003	NA	<0.0003	<0.0003
Cr	"	R	0.0020	NA	<0.0007	0.0010
Cu	"		0.004	NA	<0.002	<0.002
		D				
Fe	"	R	0.046	NA	0.018	0.462
Hg	µg/L	Y	0.06	NA	<0.05	0.09
K	mg/L		19	NA	1	5
Mg	"		251	NA	152	188
Mn	"		0.4500	NA	0.1319	0.3009
Na	"		74	NA	32	47
Ni	"		0.018	NA	<0.002	0.002
Pb	"		<0.0009	NA	<0.0009	<0.0009
Zn	"		0.044	NA	0.020	0.016

\*pH analyzed beyond recommended holding time of 15 minutes.

NA = No analysis; insufficient sample.

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TABLE 3

ANALYSIS OF WATER FROM LYSIMETERS L-1N THROUGH L-1N-1 AT THE HARLEM AVENUE SOLIDS MANAGEMENT AREA SAMPLED ON NOVEMBER 9, 2005

Parameter	Units	Lysimeter No.				
		L-1N	L-1	L-2	L-3	L-1N-1
pH*		7.8	7.6	7.6	7.5	7.6
EC	mS/m	183	390	170	241	203
Total Dissolved Solids	mg/L	1,600	3,584	1,224	1,666	NA
Total Dissolved Organic Carbon	"	20	53	4	7	NA
Cl <sup>-</sup>	"	67	98	185	93	100
SO <sub>4</sub> <sup>=</sup>	"	30	1,800	286	260	NA
TKN	"	12	103	6.1	0.83	7.3
NH <sub>3</sub> -N	"	8.2	106	4.5	<0.02	5.2
NO <sub>2</sub> +NO <sub>3</sub> -N	"	1.62	33.1	1.61	0.240	<0.010
Total P	"	<0.08	<0.08	<0.04	<0.04	<0.08
Alkalinity as CaCO <sub>3</sub>	"	1,344	840	440	1,102	1,022
Al	"	<0.14	0.16	0.07	0.10	NA
Ca	"	252	452	203	309	NA
Cd	"	<0.0006	<0.0006	<0.0003	<0.0003	NA
Cr	"	<0.0014	0.0020	<0.0007	<0.0007	NA
Cu	"	0.006	0.022	<0.002	<0.002	NA
Fe	"	3.17	0.036	0.008	0.007	NA
Hg	µg/L	<0.10	<0.10	<0.05	<0.05	NA
K	mg/L	6	20	1	1	NA
Mg	"	147	256	56.6	148	NA
Mn	"	0.3374	0.5582	0.0259	0.0911	NA
Na	"	53	71	74	33	NA
Ni	"	<0.004	0.020	<0.002	<0.002	NA
Pb	"	0.0020	0.0120	<0.0009	<0.0009	NA
Zn	"	0.034	0.040	0.008	0.010	NA

\* pH analyzed beyond recommended holding time of 15 minutes.

NA = No analysis; insufficient sample.

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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 NOVEMBER 22, 2005

Parameter	Units	Lysimeter No.				
		L-1N	L-1	L-2	L-3	L-1N-1
pH*			7.1	7.3	7.2	7.4
EC	mS/m		345	168	237	231
Total Dissolved Solids	mg/L		3,544	1,268	1,800	1,916
Total Dissolved Organic Carbon	"		48	3	7	35
Cl <sup>-</sup>	"		91	184	97	108
SO <sub>4</sub> <sup>=</sup>	"		1,568	262	269	5
TKN	"		89	4.0	0.66	7.9
NH <sub>3</sub> -N	"	L	85	3.2	<0.02	5.5
NO <sub>2</sub> +NO <sub>3</sub> -N	"	Y	35.4	1.41	0.229	0.040
Total P	"	S	<0.08	<0.04	<0.04	0.08
Alkalinity as CaCO <sub>3</sub>	"	I	728	435	1,125	1,540
		M				
Al	"	E	<0.14	<0.07	<0.07	<0.14
Ca	"	T	434	200	315	281
Cd	"	E	<0.0006	0.0003	<0.0003	<0.0006
Cr	"	R	<0.0014	<0.0007	<0.0007	<0.0014
Cu	"		0.006	<0.002	<0.002	<0.004
		D				
Fe	"	R	0.040	0.009	0.006	0.822
Hg	µg/L	Y	<0.10	<0.05	<0.05	<0.10
K	mg/L		19	1	1	5
Mg	"		243	55.1	149	184
Mn	"		0.5594	0.0241	0.0838	0.3286
Na	"		68	74	34	46
Ni	"		0.016	<0.002	<0.002	<0.004
Pb	"		<0.0018	<0.0009	<0.0009	<0.0018
Zn	"		0.046	0.014	0.015	0.022

\*pH analyzed beyond recommended holding time of 15 minutes.

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TABLE 5

ANALYSIS OF MONTHLY COMPOSITED DIGESTED BIOSOLIDS PLACED IN THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA DURING OCTOBER 2005

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Constituent	Units	Concentration*
pH		7.8
Total Solids	%	26.5
Total Volatile Solids	%	52.3
TKN	mg/dry kg	45,569
NH <sub>3</sub> -N	"	3,888

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\*Values are the data for one sample.



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TABLE 6

ANALYSIS OF MONTHLY COMPOSITED DIGESTED BIOSOLIDS PLACED IN THE  
HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA  
DURING NOVEMBER 2005

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Constituent	Units	Concentration*
pH		7.7
Total Solids	%	25.3
Total Volatile Solids	%	53.3
TKN	mg/dry kg	39,049
NH <sub>3</sub> -N	"	4,006

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\*Values are the data for one sample.

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TABLE 7

ANALYSIS OF MONTHLY COMPOSITED DIGESTED BIOSOLIDS PLACED IN THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA DURING DECEMBER 2005

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Constituent	Units	Concentration*
pH		8.2
Total Solids	%	23.7
Total Volatile Solids	%	65.1
TKN	mg/dry kg	31,256
NH <sub>3</sub> -N	"	4,635

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\*Values are the means of six samples.

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TABLE 8

ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED BIOSOLIDS  
REMOVED FROM THE HARLEM AVENUE SOLIDS MANAGEMENT DRYING AREA  
DURING OCTOBER 2005

Constituent	Units	Concentration*
pH		7.9
Total Solids	%	27.5
Total Volatile Solids	%	49.0
TKN	mg/dry kg	47,824
NH <sub>3</sub> -N	"	7,573
Total P	"	19,510
Al	"	22,859
As	"	6
Ca	"	36,688
Cd	"	5
Cr	"	230
Cu	"	450
Fe	"	18,489
Hg	"	1.0
K	"	3,870
Mg	"	16,667
Mn	"	462
Mo	"	21
Na	"	843
Ni	"	63
Pb	"	152
Se	"	<0.7
Zn	"	961

\*Values are the means of two samples.