

*Protecting Our Water Environment*



**METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO**

***RESEARCH AND DEVELOPMENT  
DEPARTMENT***

***REPORT NO. 08-7***

***CALUMET WEST SOLIDS MANAGEMENT AREA  
MONITORING REPORT FOR  
FOURTH QUARTER 2007***

***MARCH 2008***

**Metropolitan Water Reclamation District of Greater Chicago**

100 EAST ERIE STREET CHICAGO, ILLINOIS 60611-3154 312-751-5600

Louis Kollias, P.E., BCEE  
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312-751-5190

March 5, 2008

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: Calumet West Solids Management Area - Calumet WRP, Contract No. 84-270-2P, C175399, IEPA Permit No. 2005-AO-4281-1, Monitoring Report for October, November, and December 2007

The attached five tables contain the monitoring data for the Calumet West Solids Management Area for October, November, and December 2007 as required by IEPA Operating Permit No. 2005-AO-4281-1.

The data reported are as follows:

Table 1, Analysis of Water from Lysimeters L-1 through L- 3 at the Calumet West Solids Management Area Sampled on October 3, 2007

Table 2, Analysis of Water from Lysimeters L-1 through L-3 at the Calumet West Solids Management Area Sampled on November 14, 2007

Table 3, Analysis of Water from Lysimeters L-1 through L-3 at the Calumet West Solids Management: Area Sampled on December 13, 2007

Table 4, Analysis of Monthly Compositated Digested Biosolids Placed in the Calumet West Solids Management Drying Area During October 2007

Table 5, Analysis of Monthly Compositated Processed Digested Biosolids Removed from the Calumet West Solids Management Drying Area During November 2007

Mr. S. Alan Keller

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March 5, 2008

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Biosolids were placed in the solids drying area during October 2007. Biosolids were removed from the solids drying area during November 2007.

Very truly yours,

Louis Kollias  
Director  
Research and Development

LK:PL:spy  
Attachments

cc w/att: Mr. Sulski, IEPA  
Records Unit, IEPA  
Stuba/Granato/Cox/Lindo/M. Patel

cc wo/att: Jamjun/Sharma/Garelli/Conway

TABLE 1: ANALYSIS OF WATER FROM LYSIMETERS  
L-1 THROUGH L-3 AT THE CALUMET WEST  
SOLIDS MANAGEMENT AREA SAMPLED ON OCTOBER 3, 2007

Parameter	Unit	Lysimeter No.		
		L-1	L-2	L-3
pH <sup>1</sup>		7.8	7.7	7.8
EC	mS/m	298	299	315
Total Dissolved Solids	mg/L	3,000	3,314	3,380
Total Diss. Org. Carbon	"	1	2	1
Cl <sup>-</sup>	"	136	31	31
SO <sub>4</sub> <sup>=</sup>	"	1,652	2,221	2,176
TKN	"	0.12	0.18	<0.08
NH <sub>3</sub> -N	"	0.04	<0.02	<0.04
NO <sub>2</sub> + NO <sub>3</sub> -N	"	3.1	0.83	1.4
Total P	"	<0.10	<0.05	<0.10
Alkalinity as CaCO <sub>3</sub>	"	154	180	150
Al	"	0.052	0.050	0.056
Ca	"	322	360	363
Cd	"	<0.0008	<0.0004	<0.0008
Cr	"	0.0030	0.0010	0.0020
Cu	"	<0.004	<0.002	<0.004
Fe	"	0.458	0.013	0.030
Hg	μg/L	<0.10	<0.05	<0.10
K	mg/L	7	8	6
Mg	"	147	185	190
Mn	"	0.1394	0.0763	0.0210
Na	"	208	181	181
Ni	"	<0.0008	0.0051	<0.0008
Pb	"	<0.008	<0.004	<0.008
Zn	"	0.012	0.015	0.018

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.

TABLE 2: ANALYSIS OF WATER FROM LYSIMETERS  
L-1 THROUGH L-3 AT THE CALUMET WEST  
SOLIDS MANAGEMENT AREA SAMPLED ON NOVEMBER 14, 2007

Parameter	Unit	Lysimeter No.		
		L-1	L-2	L-3
pH <sup>1</sup>		7.5	7.5	7.8
EC	mS/m	287	329	304
Total Dissolved Solids	mg/L	3,044	3,416	3,504
Total Diss. Org. Carbon	"	2	2	1
Cl <sup>-</sup>	"	100	34	28
SO <sub>4</sub> <sup>=</sup>	"	1,629	1,981	1,951
TKN	"	0.94	0.42	0.36
NH <sub>3</sub> -N	"	0.46	0.16	<0.04
NO <sub>2</sub> + NO <sub>3</sub> -N	"	0.89	0.39	1.2
Total P	"	0.05	<0.05	<0.10
Alkalinity as CaCO <sub>3</sub>	"	171	182	140
Al	"	0.052	0.057	0.052
Ca	"	318	353	367
Cd	"	0.0004	0.0004	<0.0008
Cr	"	0.0010	0.0013	0.0022
Cu	"	<0.002	<0.002	<0.004
Fe	"	4.19	0.181	0.048
Hg	μg/L	0.40	<0.05	<0.10
K	mg/L	7	8	6
Mg	"	148	184	192
Mn	"	0.1069	0.2095	0.0154
Na	"	194	182	183
Ni	"	<0.0004	0.0060	<0.0008
Pb	"	<0.004	<0.004	<0.008
Zn	"	0.068	0.020	0.038

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.

TABLE 3: ANALYSIS OF WATER FROM LYSIMETERS  
L-1 THROUGH L-3 AT THE CALUMET WEST  
SOLIDS MANAGEMENT AREA SAMPLED ON DECEMBER 13, 2007

Parameter	Unit	Lysimeter No.		
		L-1	L-2	L-3
pH <sup>1</sup>		7.9	8.2	8.0
EC	mS/m	255	262	271
Total Dissolved Solids	mg/L	2,892	3,248	3,384
Total Diss. Org. Carbon	"	0.9	2	1
Cl <sup>-</sup>	"	120	33	28
SO <sub>4</sub> <sup>=</sup>	"	1,561	1,922	2,015
TKN	"	0.34	0.21	0.12
NH <sub>3</sub> -N	"	0.21	<0.02	<0.02
NO <sub>2</sub> + NO <sub>3</sub> -N	"	0.15	0.55	0.55
Total P	"	<0.05	<0.05	<0.05
Alkalinity as CaCO <sub>3</sub>	"	159	171	144
Al	"	0.048	0.045	0.054
Ca	"	301	348	373
Cd	"	0.0004	0.0006	0.0004
Cr	"	0.0006	<0.0005	<0.0005
Cu	"	<0.002	<0.002	<0.002
Fe	"	1.44	0.046	0.011
Hg	μg/L	<0.05	<0.05	<0.05
K	mg/L	7	8	6
Mg	"	136	180	190
Mn	"	0.1536	0.0734	0.0209
Na	"	198	180	184
Ni	"	<0.0004	0.0054	<0.0004
Pb	"	<0.004	<0.004	<0.004
Zn	"	0.005	0.011	0.037

<sup>1</sup>pH analyzed beyond recommended holding time of 15 minutes.

TABLE 4: ANALYSIS OF MONTHLY COMPOSITED DIGESTED  
BIOSOLIDS PLACED IN THE CALUMET WEST  
SOLIDS MANAGEMENT DRYING AREA DURING OCTOBER 2007

Parameter	Unit	Concentration <sup>1</sup>
pH		7.9
Total Solids	%	22.9
Total Volatile Solids <sup>2</sup>	%	34.3
TKN	mg/kg	21,526
NH <sub>3</sub> -N	”	3,887

<sup>1</sup>Values are the means of seven samples.

<sup>2</sup>Total volatile solids as a percentage of total solids.

TABLE 5: ANALYSIS OF MONTHLY COMPOSITED PROCESSED DIGESTED  
BIOSOLIDS REMOVED FROM THE CALUMET WEST  
SOLIDS MANAGEMENT DRYING AREA DURING NOVEMBER 2007

Parameter	Unit	Concentration <sup>1</sup>
pH		7.5
Total Solids	%	42.8
Total Volatile Solids <sup>2</sup>	%	39.1
TKN	mg/kg	18,033
NH <sub>3</sub> -N	”	2,165
Total P	”	18,611
Al	”	15,286
As	”	10
Ca	”	50,385
Cd	”	4
Cr	”	88
Cu	”	427
Fe	”	24,960
Hg	”	1.1
K	”	3,700
Mg	”	17,826
Mn	”	898
Mo	”	17
Na	”	987
Ni	”	34
Pb	”	110
Se	”	4.0
Zn	”	978

<sup>1</sup>Values are the means of two samples.

<sup>2</sup>Total volatile solids as a percentage of total solids.