

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 07-50

MONTHLY REPORT OF THE FULTON COUNTY

ENVIRONMENTAL PROTECTION SYSTEM

MARCH 2007

AUGUST 2007

Metropolitan Water Reclamation District of Greater Chicago

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

Louis Kollias, P.E., BCEE
Director of Research and Development

312-751-5190

August 7, 2007

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: Metropolitan Water Reclamation District of Greater Chicago – March 2007 Monthly Report of the Fulton County Environmental Protection System

This letter transmits information and data for the March 2007 monthly report of the Fulton County Environmental Protection System. No biosolids data are reported because supernatant and biosolids application was terminated in 1995 and 2004, respectively. Termination of monitoring of soil, crops, and surface water and groundwater sites was approved by the IEPA in September 2006.

During this month, a total of 1.64 MG water was released from the runoff retention basin (3-1). The analysis of water is presented in Table 1. A log of runoff retention basin discharge information is presented in Table 2.

The daily climatological observations for March 2007 are summarized in Table 3. Total precipitation for the month was 4.4 inches.

Subject: Metropolitan Water Reclamation District of Greater Chicago – March
2007 Monthly Report of the Fulton County Environmental Protection System

Lysimeters and drainage tiles at the reclaimed St. David coal refuse pile site, and lysimeters at Morgan Mine (Big Ten) and the United Electric coal refuse pile sites were sampled during the month. Water quality data for these monitoring devices are presented in Table 4 through 7.

Very truly yours,

Louis Kollias
Director
Research and Development

LK:GT:spy
Attachment
cc w/enc.:

Mr. Valdis Aistars, USEPA Region V
Mr. Ash Sajjad, USEPA Region V
Mr. Matthew Williams, USEPA Region V
IEPA Permit Section, Springfield
IEPA Surveillance Section, Peoria
Chairman of the Fulton County Board
Fulton County Board of Health
Fulton County Zoning Office
Mr. Sobanski
Drs.: Granato
O'Connor
Cox

Library
cc wo/enc.: Messrs.: Jamjun
Quintanilla

TABLE 1: FULTON COUNTY LAND RECLAMATION PROJECT
 FIELD RUNOFF BASIN DISCHARGE DATA MARCH 2007

Basin No.	Sample Date	pH	TSS (mg/L)	BOD ₅ (mg/L)	F. coli. per 100 ml	Discharge Date	Discharge Amount (MG)
3-1	3/13	7.8	8.8	5	10	3/14	0.74
3-1	3/19	8.5	20.0	9	10	3/20	0.90

TABLE 2: FIELD RUNOFF BASIN LOG AT THE FULTON COUNTY LAND RECLAMATION PROJECT MARCH 2007

Basin No.	Date Opened	Time Opened	Date Closed	Time Closed	Opening Stage (feet)	Closing Stage (feet)	Time Open	Volume Released	Release Type	Reason Closed	R&D Dept. OK	R&D Dept. Sample
3 - 1	3/14/07	10:30	3/14/07	10:40	4:50	3:80	9:17	0.74	Normal	RAIN	yes	yes
3 - 1	3/20/07	13:45	3/21/07	1:15	3:90	3:00	11:50	0.90	Normal	RAIN	yes	yes

TABLE 3: RECORD OF CLIMATOLOGICAL OBSERVATIONS FOR MARCH 2007,
 FULTON COUNTY, ILLINOIS, STATION SEQ, SEC.10, R3E, T6N

Date	Temperature °C			Precipitation		Wind		
	Max	Min	Avg	rain, melted snow	snow, sleet, hail	m/S	m/S	Dir
				(inches & hundredths)	(inches & tenths)	Avg	Max	
1	6.3	0.8	2.7	0.62		5.9	19.7	NE
2	1.4	-2.9	-0.8			2.4	17.9	SW
3	-2.9	-7.7	-4.6			3.5	11.2	W
4	4.7	-10.2	-3.2			2.6	8.5	SW
5	9.8	-1.3	2.7			1.2	6.7	N
6	4.5	-2.3	0.5			2.5	8.9	SE
7	4.4	-17.8	1.3			2.0	N/A	NE
8	13.8	-1.6	4.6			1.0	5.8	E
9	13.7	2.1	7.1	0.04		1.6	7.6	SE
10	15.6	0.7	7.3			1.0	6.7	W
11	19.3	-0.3	8.7			1.0	5.8	N
12	22.2	7.6	13.8	0.02		2.7	10.3	SW
13	25.4	11.6	17.8			3.6	12.5	SW
14	25.6	6.5	16.4	0.35		3.2	16.1	SW
15	13.4	3.3	7.0	0.13		3.8	12.1	NE
16	5.2	-1.2	2.1			1.6	8.0	NE
17	11.8	-1.7	3.4			0.4	4.5	N
18	14.1	-0.3	6.3			2.4	12.5	NE
19	18.4	5.8	10.9	0.33		2.4	10.3	S
20	15.8	2.8	8.6	0.19		3.8	10.3	E
21	24.7	9.3	16.9	0.29		4.8	14.3	SW
22	21.8	12.5	17.3	0.17		3.0	14.3	N
23	20.2	11.8	15.1	1.10		1.7	7.6	SW
24	24.6	15.9	18.7	0.02		1.3	5.4	SW
25	26.2	15.2	20.7			3.9	11.6	SW
26	26.5	17.3	20.6	0.19		3.7	11.2	SW
27	27.6	16.4	21.1			1.5	6.3	SW
28	25.9	14.3	18.4			2.4	8.9	NE
29	20.9	11.5	15.4			3.3	7.6	E
30	19.4	13.7	16.1	0.91		1.8	7.6	E
31	23.1	12.4	17.4	0.04		4.1	15.6	E
Sum				4.40	0.0	Observer: Josh DeWees Station: R&D Lab		
Avg	16.2	4.7	10.0					
Extreme	27.6	-17.8		1.10	0.0			

*N/A=Not available.

TABLE 4: ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED
ST. DAVID COAL REFUSE PILE SITE SAMPLED ON
MARCH 20, 2007

Constituent	Units	Lysimeter Designation			
		1	2	3	4
pH		6.8	7.9	7.6	7.8
E.C.	mS/m	1000	270	160	250
Acidity*	mg/L	390	4.0	23	19
Alkalinity*	“	90	182	244	294
Total P	“	< 0.09	< 0.09	< 0.09	< 0.09
Cl ⁻	“	20.2	1.4	0.7	0.7
SO ₄ ⁼	“	3,114	1,838	713	1,879
NH ₃ -N	“	< 0.02	< 0.02	0.06	< 0.02
NO ₂ +NO ₃ -N	“	32.1	1.02	0.47	2.28
Al	“	0.09	0.02	0.05	< 0.007
Cd	“	NRR	0.0332	< 0.0004	0.0143
Cr	“	0.0161	0.0028	0.0023	0.0022
Cu	“	0.016	0.012	0.014	0.007
Fe	“	0.116	0.084	0.234	0.064
Mn	“	NRR	0.070	0.009	0.002
Ni	“	NRR	0.182	0.009	0.014
Pb	“	< 0.002	< 0.002	< 0.002	< 0.002
Zn	“	NRR	2.51	0.185	1.57

TABLE 4 (Continued): ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON MARCH 20, 2007

Constituent	Units	Lysimeter Designation			
		5	6	7	8
pH		7.6	7.8	7.2	
E.C.	mS/m	230	250	230	
Acidity*	mg/L	14	12	11	
Alkalinity*	“	178	202	92	
Total P	“	< 0.09	< 0.09	< 0.09	
					L
					Y
Cl ⁻	“	1.4	1.1	1.6	S
SO ₄ ⁼	“	1,496	1,550	1,505	I
NH ₃ -N	“	< 0.02	< 0.02	< 0.02	M
NO ₂ +NO ₃ -N	“	4.08	0.91	14.1	E
Al	“	0.03	0.01	0.03	T
					E
					R
Cd	“	0.0254	0.0070	0.0743	
Cr	“	0.0029	0.0025	0.0050	D
Cu	“	0.010	0.007	0.026	R
Fe	“	0.158	0.144	0.060	Y
Mn	“	0.003	0.003	0.080	
Ni	“	0.037	0.013	0.102	
Pb	“	< 0.002	< 0.002	< 0.002	
Zn	“	2.23	1.19	2.49	

TABLE 4 (Continued): ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON MARCH 20, 2007

Constituent	Units	Lysimeter Designation			
		9	10	A	B
pH				5.6	7.4
E.C.	mS/m			270	380
Acidity*	mg/L			33	18
Alkalinity*	"			14	258
Total P	"			< 0.09	< 0.09
		L	L		
		Y	Y		
Cl ⁻	"	S	S	12.9	24.3
SO ₄ ⁼	"	I	I	1,875	1,986
NH ₃ -N	"	M	M	1.08	< 0.02
NO ₂ +NO ₃ -N	"	E	E	0.94	2.04
Al	"	T	T	0.22	0.03
		E	E		
		R	R		
Cd	"			< 0.0004	< 0.0004
Cr	"	D	D	0.0042	0.0025
Cu	"	R	R	0.009	0.013
Fe	"	Y	Y	5.64	0.049
Mn	"			2.36	0.008
Ni	"			0.026	0.013
Pb	"			< 0.002	< 0.002
Zn	"			1.01	0.086

TABLE 4 (Continued): ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON MARCH 20, 2007

Constituent	Units	Lysimeter Designation			
		C	D	E	F
pH			2.3	7.7	7.8
E.C.	mS/m		710	360	78
Acidity*	mg/L		710	48	9
Alkalinity*	"		< 2	241	231
Total P	"		0.7	< 0.09	< 0.09
		L			
		Y			
Cl ⁻	"	S	<0.3	6.6	0.9
SO ₄ ⁼	"	I	7,377	2,218	188
NH ₃ -N	"	M	2.17	< 0.02	0.03
NO ₂ +NO ₃ -N	"	E	2.69	69.7	1.10
Al	"	T	172	0.15	0.08
		E			
		R			
Cd	"		1.44	0.306	< 0.0004
Cr	"	D	1.10	0.004	0.003
Cu	"	R	0.942	0.069	0.014
Fe	"	Y	1,557	0.346	0.127
Mn	"		19.7	4.18	0.048
Ni	"		1.74	0.72	0.004
Pb	"		< 0.002	< 0.002	< 0.002
Zn	"		106	NRR	0.064

TABLE 4 (Continued): ANALYSIS OF WATER FROM LYSIMETERS ON THE
RECLAIMED ST. DAVID COAL REFUSE PILE SITE SAMPLED ON
MARCH 20, 2007

Constituent	Units	Lysimeter Designation		
		G	H	I
pH		7.8	6.8	7.1
E.C.	mS/m	78	110	340
Acidity*	mg/L	9	34	47
Alkalinity*	"	231	163	237
Total P	"	< 0.09	< 0.09	<0.09
Cl ⁻	"	0.9	1.0	15.3
SO ₄ ⁼	"	188	439	2,437
NH ₃ -N	"	0.03	0.10	1.33
NO ₂ +NO ₃ -N	"	1.10	1.88	2.50
Al	"	0.083	0.183	<0.007
Cd	"	< 0.0004	0.0008	<0.0010
Cr	"	0.0027	0.0027	<0.0046
Cu	"	0.014	0.010	<0.007
Fe	"	0.127	0.195	13.1
Mn	"	0.048	0.020	6.25
Ni	"	0.004	0.007	<0.130
Pb	"	< 0.002	< 0.002	<0.002
Zn	"	0.064	0.200	2.21

*As calcium carbonate.

NRR = No Reportable Result.

TABLE 5: FULTON COUNTY LAND RECLAMATION PROJECT ST. DAVID COAL
REFUSE PILE SITE DRAINAGE TILE WATER ANALYSIS FOR
MARCH 2007

Constituent	Units	Tile Drain		
		D1 3/20	D2 3/20	D3 3/20
pH		N O	N O	7.0
Total Suspended Solids	mg/L	F L O	F L O	87.0
Total Fe	mg/L	W	W	46.2

TABLE 6: ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED MORGAN MINE COAL REFUSE PILE SITE SAMPLED ON MARCH 20, 2007

Constituent	Units	Lysimeter Designation		
		1	2	3
pH			7.7	NRR
E.C.	mS/m		270	400
Acidity*	mg/L		9	170
Alkalinity*	"		152	<2
Total P	"		0.10	0.17
		L		
		Y		
Cl ⁻	"	S	18.5	32.7
SO ₄ ⁼	"	I	1,512	2,213
NH ₃ -N	"	M	<0.02	1.73
NO ₂ +NO ₃ -N	"	E	55.4	51.4
Al	"	T	0.22	15.6
		E		
		R		
Cd	"		<0.0004	0.161
Cr	"	D	0.008	0.016
Cu	"	R	0.034	0.410
Fe	"	Y	0.907	3.64
Mn	"		0.261	2.15
Ni	"		0.017	0.948
Pb	"		<0.002	<0.002
Zn	"		0.110	NRR

*As calcium carbonate.

NRR = No reportable result.

TABLE 7: ANALYSIS OF WATER FROM LYSIMETERS ON THE
RECLAIMED UNITED ELECTRIC COAL REFUSE PILE SITE SAMPLED ON
MARCH 20, 2007

Constituent	Units	Lysimeter Designation				
		1	2	3	4	5
pH			7.4	7.2	7.5	7.5
E.C.	mS/m		110	230	390	310
Acidity*	mg/L		13	13	44	18
Alkalinity*	"		202	170	406	206
Total P	"		<0.09	<0.09	<0.09	<0.09
		L				
		Y				
Cl ⁻	"	S	1.1	24.5	36.1	24.0
SO ₄ ⁼	"	I	324	1,365	2,021	1,992
NH ₃ -N	"	M	1.10	24.5	36.1	24.0
NO ₂ +NO ₃ -N	"	E	18.5	17.5	40.5	3.24
Al	"	T	0.051	0.017	<0.007	0.056
		E				
		R				
Cd	"		0.0019	0.0243	<0.0004	<0.0004
Cr	"	D	0.0024	0.0043	0.0030	0.0036
Cu	"	R	0.0019	0.0243	<0.0004	<0.0004
Fe	"	Y	0.099	0.036	0.034	0.058
Mn	"		0.012	0.249	0.045	0.360
Ni	"		0.010	0.175	0.024	0.036
Pb	"		<0.002	<0.002	<0.002	<0.002
Zn	"		0.010	0.175	0.024	0.036

TABLE 7 (Continued): ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED UNITED ELECTRIC COAL REFUSE PILE SITE SAMPLED ON MARCH 20, 2007

Constituent	Units	Lysimeter Designation					
		6	7	8	9	10	
pH		5.3	7.5	7.2	7.5		
E.C.	mS/m	180	240	580	490		
Acidity*	mg/L	38	19	100	58		
Alkalinity*	"	10	192	768	552		
Total P	"	<0.09	<0.09	<0.09	<0.09		
							L
							Y
Cl ⁻	"	8.0	0.6	77.2	85.0		S
SO ₄ ⁼	"	1,113	1,361	3,052	2,787		I
NH ₃ -N	"	0.17	0.05	11.3	0.03		M
NO ₂ +NO ₃ -N	"	4.85	17.9	0.99	0.54		E
Al	"	1.02	0.008	0.020	0.008		T
							E
							R
Cd	"	0.0117	<0.0004	<0.0004	<0.0004		
Cr	"	0.0041	0.0031	0.0038	0.0024		D
Cu	"	0.041	0.044	0.005	0.009		R
Fe	"	0.520	0.063	2.35	0.047		Y
Mn	"	0.190	0.097	8.82	1.17		
Ni	"	0.082	0.025	0.043	0.020		
Pb	"	<0.002	<0.002	<0.002	<0.002		
Zn	"	0.812	0.045	0.092	0.081		

*As calcium carbonate.