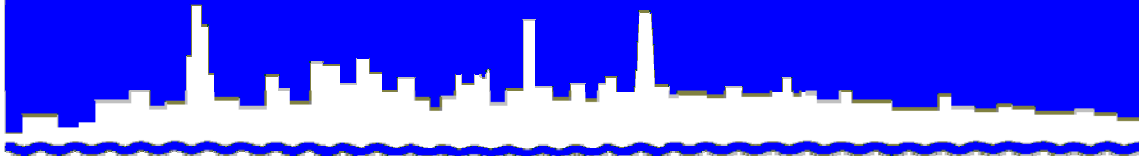


Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***RESEARCH AND DEVELOPMENT
DEPARTMENT***

REPORT NO. 06-72

MONTHLY REPORT OF THE FULTON COUNTY

ENVIRONMENTAL PROTECTION SYSTEM

SEPTEMBER 2006

DECEMBER 2006

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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

December 7, 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:

Attached for your information and use is the September 2006 monthly report of the Fulton County Environmental Protection System.

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
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**ENVIRONMENTAL PROTECTION SYSTEM
REPORT FOR FULTON COUNTY, ILLINOIS
SEPTEMBER 2006**

**Research and Development Department
G. Tian
A. Cox**

December 2006

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FOREWORD

The data and information in this report fulfill the frequency of monitoring and the reporting requirements for the Land Application of Biosolids at the Fulton County Land Reclamation Project as specified in the Illinois Environmental Protection Agency Permit No. 2005-SC-5073 for September 2006.

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ACKNOWLEDGMENT

Thanks are due to the staff of the Analytical Laboratories Division for assistance in conducting analyses and Ms. Sabina Yarn for typing this report.

DISCLAIMER

Mention of proprietary equipment and chemicals in this report does not constitute endorsement by the Metropolitan Water Reclamation District of Greater Chicago.

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FULTON COUNTY
DEWATERED BIOSOLIDS REPORT
September 2006

DEWATERED BIOSOLIDS REPORT

No dewatered biosolids were applied to fields during the month of September 2006. In addition, no supernatant was available for application to fields during this month. The last supernatant application was made in 1995, and the last biosolids application was made in 2004.

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FULTON COUNTY
WATER ANALYSIS REPORT
September 2006

WATER ANALYSIS REPORT

Water monitoring in September 2006 was conducted at the runoff basins. A site plan of farm field and runoff basin locations is attached in Figure 1. During the month, discharges from runoff basins totaled 3.10 million gallons. Analytical data of water samples are presented in Table 1. A log of runoff basin discharge information is presented in Table 2.

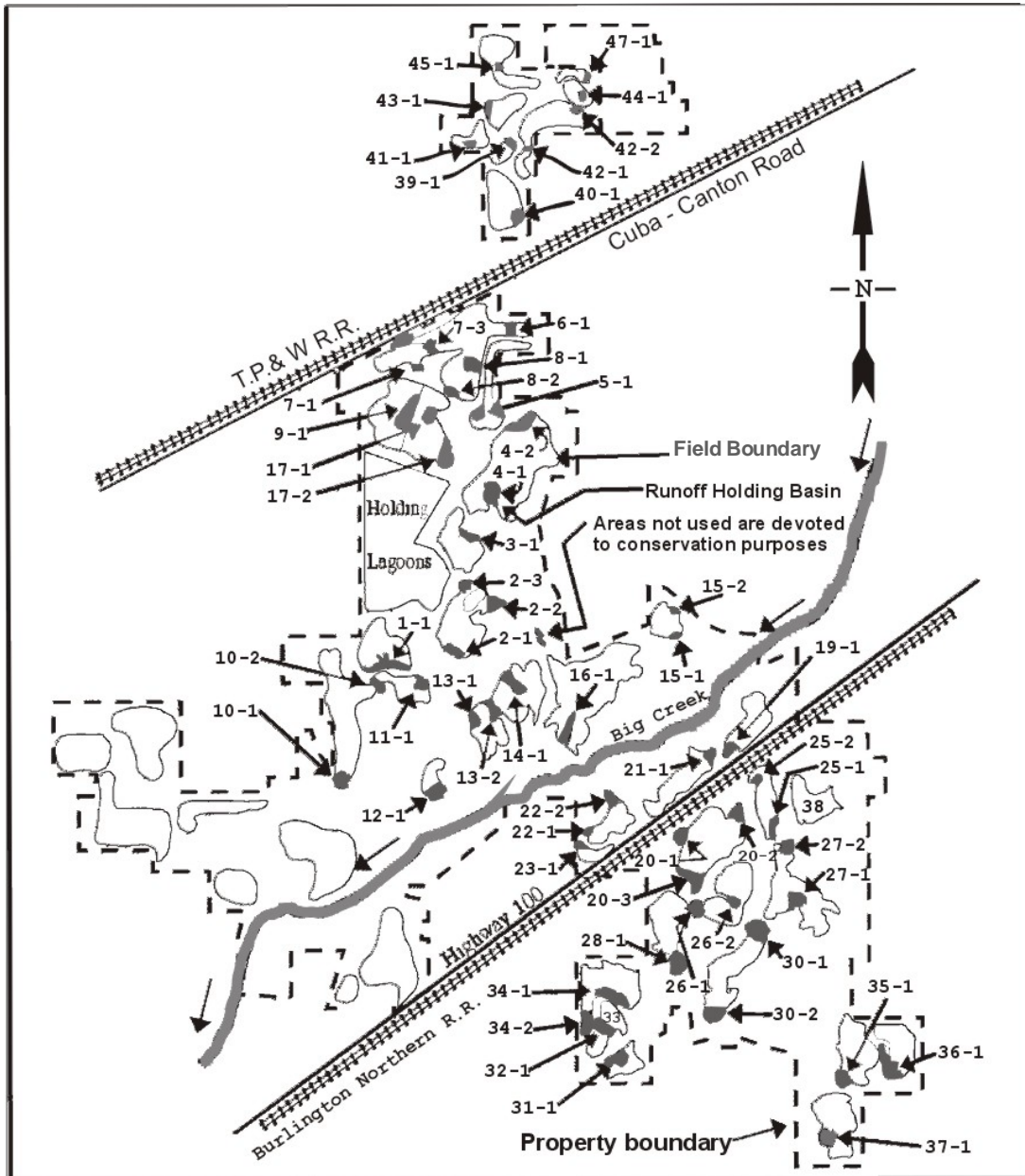
The surface water sites (streams, reservoirs, and SP sites) were not sampled during the month. A site plan of water monitoring locations is attached in Figure 2.

The wells were sampled during the month. Analytical data of water samples are presented in Table 3.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 1

FARM FIELDS AND RUNOFF BASINS AT THE LAND RECLAMATION PROJECT AT FULTON COUNTY, ILLINOIS



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 1

FULTON COUNTY LAND RECLAMATION PROJECT
FIELD RUNOFF BASIN DISCHARGE DATA SEPTEMBER 2006

Basin No.	Sample Date	pH	TSS (mg/L)	BOD ₅ (mg/L)	F. coli. per 100 ml	Discharge Date	Discharge Amount (MG)
3-1	9/19	7.9	2.0	6	30	9/21	3.10

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 2

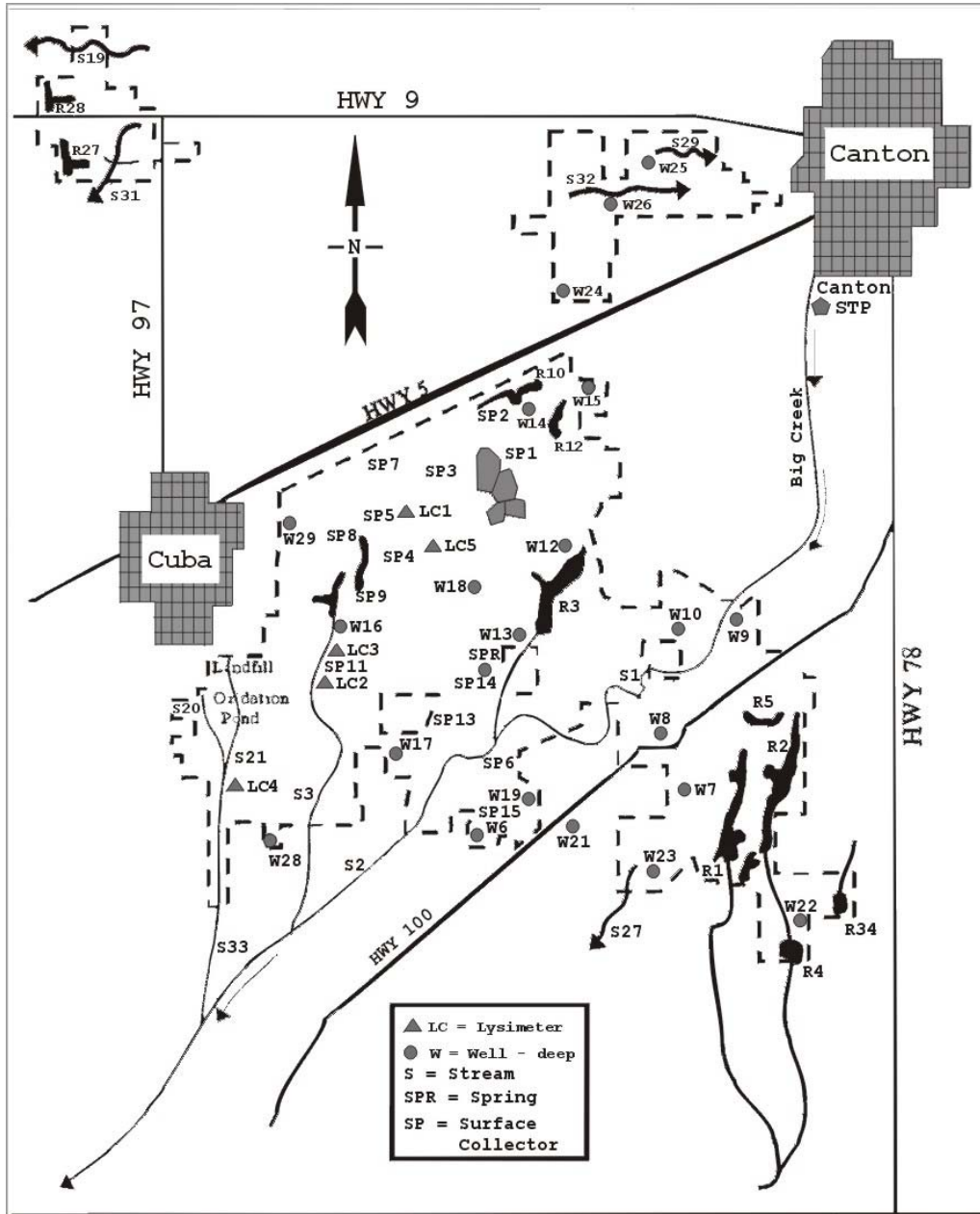
FIELD RUNOFF BASIN LOG AT THE FULTON COUNTY LAND RECLAMATION PROJECT FOR SEPTEMBER 2006

Basin No.	Date Opened	Time Opened	Date Closed	Time Closed	Opening Stage (feet)	Closing Stage (feet)	Time Open (Hours)	Volume Released (MG)	Release Type	Reason Closed	R & D Dept. OK	R & D Dept. Sample
3 - 1	09/21/06	13:20	09/29/06	10:55	4.00	0.00	189.58	3.10	Normal	Empty	Yes	Yes

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 2

WATER MONITORING LOCATIONS AT THE LAND RECLAMATION PROJECT AT FULTON COUNTY, ILLINOIS



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 3

FULTON COUNTY LAND RECLMATION PROJECT WELL DATA SEPTEMBER 2006

Well Number	Sample Date	NH ₃ -N	NO ₂ -N	NO ₃ -N	Cd	Cu	Hg
W 6	9/19	0.54	0.000	0.097	0.0000	0.000	0.00
W 7	9/19	1.49	0.000	0.373	0.0000	0.041	0.00
W 8	9/19	1.05	0.000	0.258	0.0000	0.000	0.00
W 9	9/19	1.07	0.000	0.365	0.0000	0.000	0.00
W10	9/19	0.73	0.000	0.134	0.0000	0.000	0.00
W12	9/19	0.33	0.000	0.451	0.0000	0.000	0.00
W14	9/19	0.57	4.00	0.344	0.0000	0.000	0.00
W15	9/19	0.60	0.000	0.116	0.0000	0.005	0.00
W16	9/19	0.02	0.000	0.170	0.0000	0.000	0.00
W17	9/19	0.00	0.000	5.09	0.0000	0.000	0.00
W18	9/19	1.26	0.000	0.225	0.0000	0.003	0.00
W19	9/19	0.93	0.000	0.215	0.0000	0.000	0.00
W21	9/19	1.49	0.000	0.036	0.0000	0.000	0.00
W22	9/19	8.95	0.000	0.224	0.0000	0.000	0.00
W23	9/19	0.02	0.000	0.091	0.0000	0.000	0.00
W24	9/19	0.65	0.000	0.427	0.0000	0.023	0.00
W25	9/19	0.02	0.000	0.088	0.0000	0.000	0.00
W26	9/19	1.77	0.000	0.303	0.0000	0.000	0.00
W28	9/19	0.26	0.000	0.156	0.0000	0.000	0.00
W29	8/15	1.68	0.420	0.061	0.0000	0.000	0.00
MDL*		0.02	0.150	0.004	0.0004	0.003	0.05

*MDL = Method detection limit of laboratory; values less than these are reported as zeros.

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FULTON COUNTY
CLIMATOLOGICAL OBSERVATIONS
September 2006

CLIMATOLOGICAL OBSERVATIONS

The daily climatological observations for September 2006 are summarized in Table 4.

The total precipitation recorded for the month was 2.73 inches.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 4

RECORD OF CLIMATOLOGICAL OBSERVATIONS FOR SEPTEMBER 2006,
 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	26.4	17.3	21.3	0.00		1.9	7.2	NE
2	30.8	17.2	23.1	0.00		1.3	6.3	NE
3	29.0	18.6	22.3	0.22		0.8	5.4	E
4	25.8	17.9	20.7	0.42		0.4	5.8	N
5	25.1	15.1	19.2	0.00		0.6	4.9	NE
6	30.3	15.7	22.3	0.00		0.3	4.5	NE
7	30.1	17.3	23.3	0.00		0.4	4.5	SW
8	31.6	17.5	23.8	0.00		0.8	4.9	SW
9	30.6	18.1	23.3	0.00		0.6	7.6	SW
10	28.2	18.9	22.4	0.22		2.7	7.6	NE
11	29.8	17.7	22.0	1.77		1.5	8.5	NE
12	18.8	13.6	16.3	0.00		2.9	10.3	W
13	23.0	13.4	16.4	0.01		2.0	7.2	NW
14	28.1	10.9	18.9	0.01		0.5	4.0	NE
15	27.3	12.6	19.8	0.00		2.2	8.0	E
16	29.4	15.4	22.0	0.00		3.8	10.3	E
17	26.6	15.2	20.4	0.04		3.1	11.6	SE
18	24.0	10.2	16.5	0.00		3.5	15.2	W
19	14.3	6.1	10.8	0.00		3.3	13.4	W
20	20.7	3.5	11.1	0.00		1.0	4.9	W
21	22.9	8.8	14.8	0.02		3.9	11.2	E
22	28.9	14.2	19.4	0.00		4.0	13.4	SE
23	25.8	14.6	18.4	0.01		1.9	9.8	SE
24	21.8	9.8	14.9	0.00		2.6	9.4	W
25	25.2	7.4	15.4	0.00		2.5	14.3	SW
26	27.2	8.6	17.3	0.00		1.4	8.5	S
27	21.4	8.9	15.8	0.00		2.4	9.8	W
28	18.1	6.4	11.0	0.00		1.8	8.5	NW
29	16.6	5.4	11.0	0.01		2.4	11.2	NW
30	24.8	8.4	15.7	0.00		2.3	9.8	SW
Sum				2.73	0.0	Observer: Josh DeWees Station: R&D Lab		
Avg	25.4	12.8	18.3					
Extreme	31.6	3.5		1.77	0.0			

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FULTON COUNTY
RECLAMATION OF COAL REFUSE PILES WITH BIOSOLIDS
September 2006

RECLAMATION OF COAL REFUSE PILES WITH BIOSOLIDS

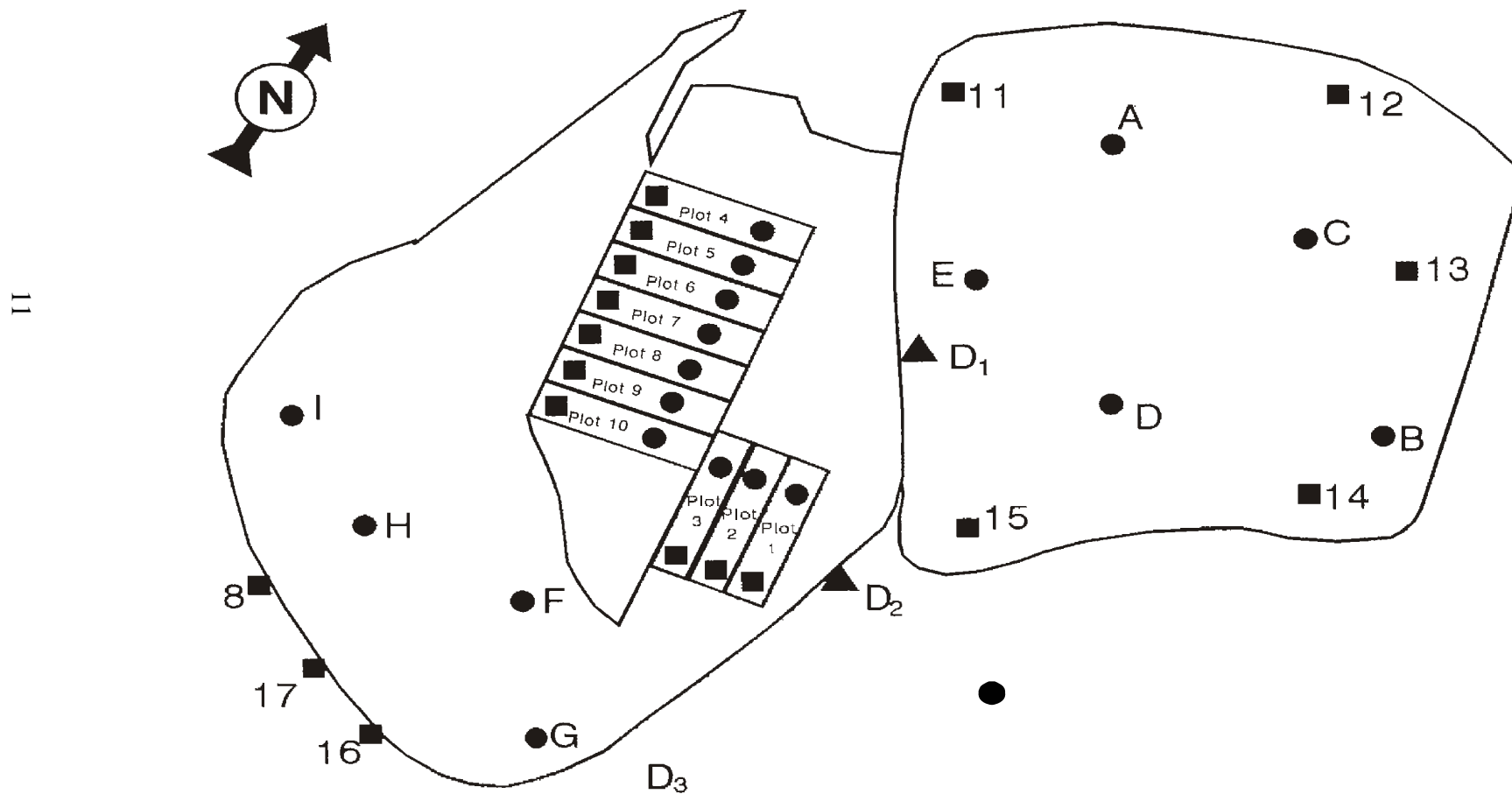
Lysimeters and drainage tiles at the St. David coal refuse pile reclamation site were sampled during the month. Locations for all lysimeters and drainage tile sampling sites are shown in Figure 3. The analytical data for lysimeter samples are presented in Table 5. There was no flow in the tile drains D1 and D2 at the time of sampling in September. The analytical results for drainage tile samples are reported in Table 6.

Lysimeters at the Big Ten (Morgan Mine) and the United Electric coal refuse pile sites were also sampled during the month. The analytical data for the Morgan Mine and United Electric coal refuse pile sites are listed in Tables 7 and 8, respectively.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 3

ST. DAVID COAL REFUSE PILE RECLAMATION SITE



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL
REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation			
		1	2	3	4
pH		7.8	8.1	7.9	
E.C.	mS/m	330	310	270	
Acidity*	mg/L	9	4	8	
Alkalinity*	"	198	204	212	
Total P	"	0.06	0.06	0.06	
					L
					Y
Cl ⁻	"	17.7	1.1	0.9	S
SO ₄ ⁼	"	1,888	1,994	1,605	I
NH ₃ -N	"	0.02	<0.02	<0.02	M
NO ₂ +NO ₃ -N	"	41.15	1.68	1.37	E
Al	"	<0.07	<0.07	<0.07	T
					E
					R
Cd	"	0.0073	0.0105	<0.0004	
Cr	"	<0.004	<0.004	<0.004	D
Cu	"	0.009	0.011	0.007	R
Fe	"	0.097	0.137	0.122	Y
Mn	"	0.056	0.004	0.002	
Ni	"	0.062	0.050	0.007	
Pb	"	<0.002	<0.002	<0.002	
Zn	"	0.664	0.306	0.070	

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL
REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation			
		5	6	7	8
pH		7.7			
E.C.	mS/m	250			
Acidity*	mg/L	8			
Alkalinity*	"	169			
Total P	"	0.06			
			L	L	L
			Y	Y	Y
Cl ⁻	"	1.1	S	S	S
SO ₄ ⁼	"	1,441	I	I	I
NH ₃ -N	"	<0.02	M	M	M
NO ₂ +NO ₃ -N	"	3.73	E	E	E
Al	"	<0.07	T	T	T
			E	E	E
			R	R	R
Cd	"	0.0220			
Cr	"	<0.004	D	D	D
Cu	"	0.009	R	R	R
Fe	"	0.107	Y	Y	Y
Mn	"	0.004			
Ni	"	0.021			
Pb	"	<0.002			
Zn	"	1.15			

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL
REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation			
		9	10	A	B
pH				4.1	
E.C.	mS/m			200	
Acidity*	mg/L			28	
Alkalinity*	"			<1	
Total P	"			0.12	
		L	L		L
		Y	Y		Y
Cl ⁻	"	S	S	10.3	S
SO ₄ ⁼	"	I	I	1,107	I
NH ₃ -N	"	M	M	0.28	M
NO ₂ +NO ₃ -N	"	E	E	3.83	E
Al	"	T	T	0.40	T
		E	E		E
		R	R		R
Cd	"			0.0020	
Cr	"	D	D	0.007	D
Cu	"	R	R	0.009	R
Fe	"	Y	Y	7.87	Y
Mn	"			1.50	
Ni	"			0.021	
Pb	"			<0.002	
Zn	"			0.613	

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL
REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation			
		C	D	E	F
pH			2.1		
E.C.	mS/m		1,000		
Acidity*	mg/L		20,000		
Alkalinity*	"		<1		
Total P	"		0.07		
		L		L	L
		Y		Y	Y
Cl ⁻	"	S	<0.3	S	S
SO ₄ ⁼	"	I	19,297	I	I
NH ₃ -N	"	M	1.42	M	M
NO ₂ +NO ₃ -N	"	E	0.248	E	E
Al	"	T	332	T	T
		E		E	E
		R		R	R
Cd	"		2.34		
Cr	"	D	2.43	D	D
Cu	"	R	1.99	R	R
Fe	"	Y	3,715	Y	Y
Mn	"		28.6		
Ni	"		2.49		
Pb	"		<0.002		
Zn	"		156		

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 5 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED ST. DAVID COAL
REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation		
		G	H	I
pH				7.1
E.C.	mS/m			320
Acidity*	mg/L			26
Alkalinity*	"			193
Total P	"			23.2
		L	L	
		Y	Y	
Cl ⁻	"	S	S	11.7
SO ₄ ⁼	"	I	I	2,027
NH ₃ -N	"	M	M	0.28
NO ₂ +NO ₃ -N	"	E	E	2.80
Al	"	T	T	0.20
		E	E	
		R	R	
Cd	"			0.0042
Cr	"	D	D	0.007
Cu	"	R	R	0.008
Fe	"	Y	Y	5.48
Mn	"			7.31
Ni	"			0.101
Pb	"			<0.002
Zn	"			1.38

*As calcium carbonate.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 6

ANALYSIS OF WATER FROM DRAINAGE TILES ON THE RECLAIMED ST. DAVID
COAL REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Tile Drain		
		D1	D2	D3
pH		N O	N O	6.9
Total Suspended Solids	mg/L	F L O	F L O	56.0
Total Fe	mg/L	W	W	36.4

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 7

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED MORGAN MINE
COAL REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation		
		1	2	3
pH		7.0	7.3	
E.C.	mS/m	320	340	
Acidity*	mg/L	54	40	
Alkalinity*	"	272	343	
Total P	"	0.08	0.10	
				L
				Y
Cl ⁻	"	26	31	S
SO ₄ ⁼	"	2,052	2,075	I
NH ₃ -N	"	1.09	0.76	M
NO ₂ +NO ₃ -N	"	0.709	4.55	E
Al	"	0.08	<0.07	T
				E
				R
Cd	"	0.0015	<0.0004	
Cr	"	0.005	<0.004	D
Cu	"	0.005	0.005	R
Fe	"	3.04	0.98	Y
Mn	"	5.12	1.25	
Ni	"	0.149	0.028	
Pb	"	<0.002	<0.002	
Zn	"	0.369	0.085	

*As calcium carbonate.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED UNITED
ELECTRIC COAL REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation				
		1	2	3	4	5
pH			7.0	7.4	7.4	7.4
E.C.	mS/m		350	300	380	320
Acidity*	mg/L		58	23	25	22
Alkalinity*	"		316	269	275	261
Total P	"		0.24	0.09	0.08	0.09
		L				
		Y				
Cl ⁻	"	S	11.5	23.0	32.1	23.8
SO ₄ ⁼	"	I	1,560	1,827	2,180	1,966
NH ₃ -N	"	M	0.07	0.03	<0.02	0.08
NO ₂ +NO ₃ -N	"	E	53.4	2.40	44.9	1.38
Al	"	T	<0.07	<0.07	<0.07	<0.07
		E				
		R				
Cd	"		0.0134	0.0365	0.0062	0.0045
Cr	"	D	<0.004	0.005	<0.004	0.004
Cu	"	R	0.043	0.085	0.049	0.023
Fe	"	Y	0.132	0.041	0.170	0.151
Mn	"		0.078	1.14	0.142	1.08
Ni	"		0.033	0.149	0.047	0.069
Pb	"		<0.002	<0.002	<0.002	<0.002
Zn	"		0.412	1.92	0.581	1.11

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

TABLE 8 (Continued)

ANALYSIS OF WATER FROM LYSIMETERS ON THE RECLAIMED UNITED
ELECTRIC COAL REFUSE PILE SITE SAMPLED ON SEPTEMBER 20, 2006

Constituent	Units	Lysimeter Designation				
		6	7	8	9	10
pH			7.2	7.3	7.4	
E.C.	mS/m		290	560	470	
Acidity*	mg/L		36	80	47	
Alkalinity*	"		322	712	470	
Total P	"		0.31	0.08	0.08	
		L				L
		Y				Y
Cl ⁻	"	S	11.5	93.7	86.9	S
SO ₄ ⁼	"	I	1,611	3,709	3,180	I
NH ₃ -N	"	M	0.06	11.2	<0.02	M
NO ₂ +NO ₃ -N	"	E	9.22	5.51	2.15	E
Al	"	T	0.15	<0.07	<0.07	T
		E				E
		R				R
Cd	"		<0.0004	<0.0004	<0.0004	
Cr	"	D	0.005	0.005	<0.004	D
Cu	"	R	0.033	0.004	0.010	R
Fe	"	Y	0.203	0.298	0.088	Y
Mn	"		1.019	6.90	1.40	
Ni	"		0.030	0.041	0.029	
Pb	"		<0.002	<0.002	<0.002	
Zn	"		0.060	0.028	0.167	

*As calcium carbonate.