ENHANCING THE USE OF COALS BY GAS REBURNING-SORBENT INJECTION

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Environmental Monitoring Report
Quarterly Report No. 9
For the Period
July 1 - September 30, 1992

Prepared for
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Gas Research Institute
State of Illinois Department of
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1.0 INTRODUCTION

Clean Coal Technology implies the use of coal in an environmentally acceptable manner. Coal combustion results in the emission of two types of acid rain precursors: oxides of sulfur (SO_x) and oxides of nitrogen (NO_x). This Clean Coal Technology project will demonstrate a combination of two developed technologies to reduce both NO_x and SO_x emissions: gas reburning and calcium based dry sorbent injection. The demonstrations will be conducted on two pre-NSPS utility boilers representative of the U.S. boilers which contribute significantly to the inventory of acid rain precursor emissions: tangentially and cyclone fired units. Because of cost growth and lack of available funding, no further work has been done after Phase I at site B; the wall fired unit.

Gas reburning is a combustion modification technique that consists of firing 80-85 percent of the fuel (corresponding to the total heat release) in the lower furnace. Reduction of NO_x to molecular nitrogen (N_2) is accomplished via the downstream injection of the remaining fuel requirement in the form of natural gas (which also reduces the total SO_x emissions). In a third stage, burnout air is injected at lower temperatures in the upper furnace to complete the combustion process without generating significant additional NO_x.

Dry sorbent injection consists of injecting calcium based sorbents (such as limestone, dolomite, or hydrated lime) into the combustion products. For sulfation of the sorbent to $CaSO_4$, an injection temperature of about 1230°C is optimum, but calcium-sulfur reactions can also take place at lower temperatures. Thus, the sorbent may be injected at different locations, such as with the burnout air, at the exit from the superheater, or into the ducting downstream of the air heater with H_2O added for humidification. The calcium sulfate or sulfite products are collected together with unreacted sorbent fly ash by the electrostatic precipitator. The specific goal of this project is to demonstrate NO_x and SO_x emission reductions of 60 percent and 50 percent, respectively, on two coal fired utility boilers having the design characteristics mentioned above.

At the inception of the project, Host Site Agreements were signed by EER and three utility companies in the State of Illinois: Site A, Illinois Power Company [Hennepin Unit 1, 71 MW (net) tangentially fired boiler in Hennepin]; Site B, Central Illinois Light Company [Edwards Unit 1, 117 MW (net) front wall fired boiler in Bartonville; and Site C, City Water Light and Power [Lakeside Unit 7, 33 MW (net) cyclone fired boiler in Springfield].

Funding for this project is provided by the Department of Energy (DOE), the Gas Research Institute (GRI), and the State of Illinois Department of Energy and Natural Resources (ENR)--the other funding participants. GRI and ENR are responsible for funding approximately one-third and one-sixth, respectively, of the total project costs.

To achieve the objectives of the project, it is conducted in the following three phases at each site:

Phase I: Design and Permitting
Phase II: Construction and Startup
Phase III: Operation, Data Collection, Reporting and Disposition

Phase I work has been completed for all three sites. Because of cost growth and lack of available funding, no further work has been done after Phase I at Site B; the wall fired unit. At Site A, Phase II has been completed and Phase III long-term tests are currently underway. Site C is currently in Phase II of the program.

In accordance with the cooperative agreement, EER has prepared an Environmental Monitoring Plan to verify that no adverse environmental impacts would be associated with the project, to determine if projected emission control levels are being met, and to maintain a data base for future development of GR-SI technology. Tables 1 through 4 show the environmental monitoring to be conducted at Sites A and C, (Hennepin and Lakeside) during Phases I, II and III of the project.

The following section provides a description of the monitoring which has been conducted during the previous quarter at the host sites. A discussion of the monitoring results is presented in Section 3. Section 4 provides a status report of permits obtained for the project at each facility, and Section 5 discusses any proposed changes in the original monitoring plan based on available information.

TABLE 1. HENNEPIN PROJECT MONITORING IN PHASES I AND II

MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
		COMPLIANCE	
WATER			
Flow Rate	single reading estimate	once/wk	existing ash pond discharge
pH	grab sample	once/wk	existing ash pond discharge
Total Suspended Solids	24 hr composite	once/wk	existing ash pond discharge
Oil and Grease	grab sample	twice/mo	existing ash pond discharge
GASEOUS EMISSIONS			
Coal Composition	24 hr composite	daily	coal hopper
sulfur, ash, Btu, moisture			
Coal Flow	24 hr composite	daily	coal feed belt
		SUPPLEMENTAL	
WATER			
General Use Water Quality Standards	composite	once	Illinois River - 100 ft upstream and downstream of ash pond discharge
GASEOUS EMISSIONS			
NOx	continuous	(1)	economizer inlet
CO	continuous	(1)	economizer inlet
O2	continuous	(1)	economizer inlet
SO2	continuous	(1)	economizer inlet
WORKER HEALTH			
Hearing		once (2)	TBD
Pulmonary Function		once (2)	TBD
TSP		once (2)	TBD

1. Two-week period in Phase I.
2. Must occur prior to initiation of Phase III.

TABLE 2. HENNEPIN PROJECT MONITORING IN PHASE III-page 1 of 3

MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
	COMPLIANCE		
WATER			
Flow Rate	24 hr total	daily	ash pond discharge
pH	grab sample	once/wk	ash pond discharge
Total Suspended Solids	24 hr composite	once/wk	ash pond discharge
Oil and Grease	grab sample	once/mo	ash pond discharge
Groundwater (pH, TDS, S, B, Mn, Ca, Chloride, Nitrate, Nitrite, Sulfite, Sulfate)	grab sample	(1)	groundwater monitoring wells
GASEOUS EMISSIONS			
Coal Composition (sulfur, ash, Btu, moisture)	24 hr composite	daily	coal hopper
Coal Flow	24 hr composite	daily	coal feed belt
	SUPPLEMENTAL		
WATER			
Ill. River General Use Water Quality Standards (35 Ill. Adm. Code 302)	grab sample	once (4)	Illinois River - 100 ft upstream and downstream of ash pond discharge
Sluice water analyses(2)	grab sample	monthly (3)	ash sluice line to existing ash pond
GASEOUS EMISSIONS			
NOx	extractive probe/ chemiluminescent	(8) continuous	stack breeching
SOx	extractive probe/ NDUV	(8) continuous	stack breeching
CO	extractive probe/ NDIR	(8) continuous	stack breeching
CO2	extractive probe/ NDIR	(8) continuous	stack breeching
O2	extractive probe/ paramagnetic	(8) continuous	stack breeching
HC	extractive probe/ FID	(8) continuous	stack breeching

TABLE 2. HENNEPIN PROJECT MONITORING IN PHASE III
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MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
GASEOUS EMISSIONS			
Particulate Loading	Method 17	(4)	ESP inlet
	Method 5	(4)	ESP outlet
Particle Size Distribution	cascade impactors	(4)	ESP inlet and outlet
Resistivity	cyclonic flow probe	(4)	ESP inlet
N2O	extractive	(5)	stack breeching
SOLID BY-PRODUCTS			
Ash (6)	composite of	(7)	bottom ash hopper, economizer, and ESP hoppers #1 and #2
WORKER HEALTH			
Hearing	N/A	once/yr	TBD
Pulmonary Function	N/A	once/yr	TBD
TSP	N/A	once/yr	TBD
AIR			
Noise	single reading	once (4)	near equipment installation
Ambient Dust	single reading-Hi-Volume Sampler	once (4)	upwind and downwind of sorbent silo

TABLE 2. FOOTNOTES- HENNEPIN PROJECT MONITORING IN PHASE III

1. Monitoring will occur once prior to GR-SI operation, quarterly until the program is completed, and quarterly through closure and post-closure periods.
2. Water will be analyzed for arsenic, barium, boron, cadmium, chromium, iron, lead, mercury, oil and grease, pH, selenium, silver, sulfates, TDS, TSS, zinc, and flow rate.
3. Sampling will be conducted once prior to Phase III, then monthly for the first six months of long-term testing.
4. Measurements will be taken once prior to Phase III, then once during long term testing.
5. Samples will be collected once prior to Phase III, and once during long-term testing. Additional testing will then be done if the N2O concentration is greater than 5 ppm.
6. Ash will be monitored for mineral analysis, free CaO, total organic carbon, sulfate, COD, phenol, cyanide, nitrate, chloride sulfide, specific gravity, fineness, pozzolanic activity, soundness, PAH and pH. Paint filter and TCLP tests will also be conducted.
7. Sampling will be conducted once prior to Phase III. During long-term testing sampling and analysis will be conducted monthly for the first 3 months.
8. Sampling will occur once prior to Phase III, and CEM data will be reported during long-term testing.

TABLE 3. LAKESIDE PROJECT MONITORING IN PHASES I AND II

MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
	COMPLIANCE		
WATER			
Flow Rate	single reading estimate	once/wk	ash pond discharge
pH	grab sample	twice/wk	ash pond discharge
Total Suspended Solids	24 hr composite	twice/wk	ash pond discharge
Oil and Grease	grab sample	twice/mo	ash pond discharge
Flow Rate	single reading estimate	once/wk	outfall 008
pH	grab sample	once/wk	outfall 008
Total Suspended Solids	8 hr composite	once/wk	outfall 008
Oil and Grease	grab sample	once/wk	outfall 008
Iron	8 hr composite	once/wk	outfall 008
GASEOUS EMISSIONS			
Opacity	in-situ optical	continuous	stack
	SUPPLEMENTAL		
GASEOUS EMISSIONS			
NOx	extractive probe/ chemiluminescent	continuous (2)	air heater inlet
CO	extractive probe/ NDIR	continuous (2)	air heater inlet
O2	extractive probe/ paramagnetic	continuous (2)	air heater inlet
SO2	extractive probe/ NDUV	continuous (2)	air heater inlet
CO2	extractive probe/ NDIR	continuous (2)	air heater inlet
HC	extractive probe/ FID	continuous (2)	air heater inlet
Particulate Loading	Method 17	see note 2	ESP inlet
	Method 5	see note 2	ESP outlet
Particle Size Distribution	cascade impactors	see note 2	ESP inlet and outlet
Resistivity	cyclonic flow probe	see note 2	ESP inlet
N2O	extractive	see note 2	air heater inlet

TABLE 3. LAKESIDE PROJECT MONITORING IN PHASES I AND II
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MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
		SUPPLEMENTAL	
WATER			
pH, sulfates	grab sample	once	sluice line discharge
pH, sulfates	grab sample	once	sluice water intake (Lake Springfield)
SOLID BY-PRODUCTS			
Ash (1)	grab sample	(2)	Ash Hoppers
WORKER HEALTH			
Hearing	NA	once (3)	TBD
Pulmonary Function	N/A	once (3)	TBD
TSP	N/A	once (3)	TBD
AIR			
Noise	single reading	once (3)	near equipment installation
Ambient Dust	single reading	once (3)	near coal pile

1. Ash will be monitored for the following parameters: mineral analysis, TCLP, total organic carbon, cyanide chloride, sulfide, specific gravity, fineness, PAH, and pH.
2. Measurements will be taken once during Phase I.
3. Must occur prior to initiation of Phase III.

TABLE 4. LAKESIDE PROJECT MONITORING IN PHASE III
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MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
	COMPLIANCE		
WATER			
Flow Rate	single reading estimate	once/wk	ash pond discharge
pH	grab sample	twice/wk	ash pond discharge
Total Suspended Solids	24 hr composite	twice/wk	ash pond discharge
Oil and Grease	grab sample	twice/mo	ash pond discharge
Flow Rate	single reading estimate	once/wk	outfall 008
pH	grab sample	once/wk	outfall 008
Total Suspended Solids	8 hr composite	once/wk	outfall 008
Oil and Grease	grab sample	once/wk	outfall 008
Iron	8 hr composite	once/wk	outfall 008
GASEOUS EMISSIONS			
Opacity	in-situ optical	continuous	stack
	SUPPLEMENTAL		
WATER			
pH, sulfate	grab sample	see note 1	sluice line discharge
pH, sulfate	grab sample	see note 1	sluice water intake (Lake Springfield)
GASEOUS EMISSIONS			
NOx	extractive probe/ chemiluminescent	continuous	air heater inlet
SOx	extractive probe/ NDUV	continuous	air heater inlet
CO	extractive probe/ NDIR	continuous	air heater inlet
CO2	extractive probe/ NDIR	continuous	air heater inlet
O2	extractive probe/ paramagnetic	continuous	air heater inlet
HC	extractive probe/ FID	continuous	air heater inlet
Particulate Loading	Method 17	see note 1	ESP inlet
	Method 5	see note 1	ESP outlet

TABLE 4. LAKESIDE PROJECT MONITORING IN PHASE III, continued

MEASUREMENT	SAMPLE TYPE	FREQUENCY	LOCATION
GASEOUS EMISSIONS			
Particle Size Distribution	cascade impactors	see note 1	ESP inlet and outlet
Resistivity	cyclonic flow probe	see note 1	ESP inlet
N2O	extractive	see note 2	air heater inlet
SOLID BY-PRODUCTS			
Ash	grab sample	see note 3	ESP hopper
WORKER HEALTH			
Hearing	N/A	once/yr	TBD
Pulmonary Function	N/A	once/yr	TBD
AIR			
Noise	single reading	once (1)	near equipment installation
Ambient Dust	single reading	once (1)	near coal pile

1. Measurements taken once during Phase III long-term testing.
2. N2O measurements taken once during long-term testing. Additional testing will then be done if the N2O concentration is greater than 5 ppm.
3. Ash sampling will be conducted monthly for the first three months of the long-term testing period.

2.0 ENVIRONMENTAL MONITORING

Both compliance and supplemental monitoring was conducted at the Hennepin site during the previous quarter. At the Lakeside site, only compliance monitoring was conducted during the previous quarter. The monitoring results from Hennepin and Lakeside are presented in the following sections.

2.1 Compliance Monitoring

Compliance monitoring is that monitoring required by Federal, State or local authorities.

2.1.1 Hennepin

The compliance monitoring conducted at Hennepin during the quarter which directly influences this project includes NPDES permit monitoring and coal quality reporting. Illinois Power submits NPDES Discharge Monitoring Reports to the Illinois EPA, on a monthly basis. Coal quality reports are submitted to Illinois EPA on a quarterly basis. Copies of the discharge monitoring and coal quality reports for July, August, and September are included in Appendix A of this report.

2.1.2 Lakeside

The compliance monitoring conducted at Lakeside during the quarter which directly influences this project includes NPDES permit monitoring and gaseous emissions opacity reports. Copies of the NPDES and excess opacity reports for July, August, and September are included in Appendix B of this report.

2.2 Supplemental Monitoring

2.2.1 Hennepin

The supplemental monitoring data reported during this quarter consisted of particulate loading at the electrostatic precipitator (ESP) inlet and outlet, particle size distribution at the ESP inlet and outlet, and continuous emission monitor daily averages for SO_2, NO_x, CO_2, CO, O_2, and HC. In addition, sluice water sampling and analyses were conducted in July.

Particulate Loading

From August 26 through September 3, 1992, twelve particulate loading measurements were taken at both the ESP inlet and outlet, using EPA Reference Method 17 at the inlet and Method 5 at the outlet. Baseline measurements were taken at full load (70 MW), while measurements with Gas Reburning were taken at full and reduced load (60 MW), and with Gas Reburning/Sorbent Injection at full load, and two reduced load levels (45 MW and 60 MW). The data from these tests is summarized below in Table 5. Figure 1 relates the ESP inlet and outlet loadings to the test conditions as outlined.

Particle Size Distribution

Between August 26 and September 3, 1992, twelve particle size distribution measurements were taken at the ESP inlet and eleven at the outlet, using cascade impactors. As with the particulate loading tests, baseline measurements were taken at full load, with Gas Reburning measurements taken at full and reduced load (60 MW), and Gas Reburning/Sorbent Injection measurements taken at full load and two reduced load levels (45 MW and 60 MW). The data from these tests is summarized below in Table 6.

TABLE 5. HENNEPIN AUGUST/SEPTEMBER 1992 PARTICULATE LOADING DATA

Date	Test Condition	Total Heat Input (MMBTU/Hr)	Ca/S Molar Ratio	Estimated Particulate Loading (Lb/Hr)	ESP Inlet (1.)			ESP Outlet				ESP Collection Efficiency (%)
					Particulate Loading (Lb/Hr)	Particulate Concentration (Gr/DSCF)	Flue Gas Temperature (°F)	Particulate Loading (Lb/Hr)	Particulate Concentration (Gr/DSCF)	Particulate Emissions (Lb/MMBtu)	Flue Gas Temperature (°F)	
Aug. 26	45 MW GR-SI	489	1.66	6,588	[illegible]	4.855	256.3	10.66	0.011	0.022	265.1	99.81
Aug. 26	45 MW GR-SI	489	1.66	6,588	082	4.753	256.3	2.75	0.003	0.006	274.7	99.95
Aug. 27	60 MW GR-SI	645	1.64	8,640	604	7.235	270.4	12.53	0.009	0.019	276.2	99.85
Aug. 27	60 MW GR-SI	645	1.64	8,640	7,810	6.390	262.4	10.89	0.008	0.017	272.0	99.86
Aug. 28	60 MW GR	645	0.00	3,362	7,475	6.268	319.1	10.652	0.008	0.016	315.9	99.86
Aug. 31	70 MW Base	747	0.00	4,766	7,562	5.149	318.4	21.28	0.014	0.028	317.1	99.72
Aug. 31	70 MW Base	747	0.00	4,766	6,286	4.312	321.1	26.22	0.016	0.035	321.6	99.58
Sept. 1	70 MW GR	743	0.00	3,858	5,120	3.760	318.4	19.8	0.013	0.027	318.6	99.61
Sept. 1	70 MW GR	743	0.00	3,858	4,685	3.302	323.1	24.2	0.015	0.033	323.6	99.48
Sept. 2	70 MW GR-SI	752	1.71	10,283	8,183	5.711	264.2	18.62	0.012	0.025	279.4	99.77
Sept. 2	70 MW GR-SI	752	1.71	10,283	8,966	6.339	266.1	15.58	0.010	0.021	287.4	99.83
Sept. 3	70 MW GR-SI	750	****		8,346	5.759	273.4	18.08	0.011	0.024	285.3	99.78
Averages		679	1.67	6,512	6,997	5.319	288.3	15.94	0.011	0.023	294.7	99.76

**** Missing data.

1. ESP inlet loading is 70% coal ash plus 100% sorbent, with coal ash representing approximately 10% of the total flow.

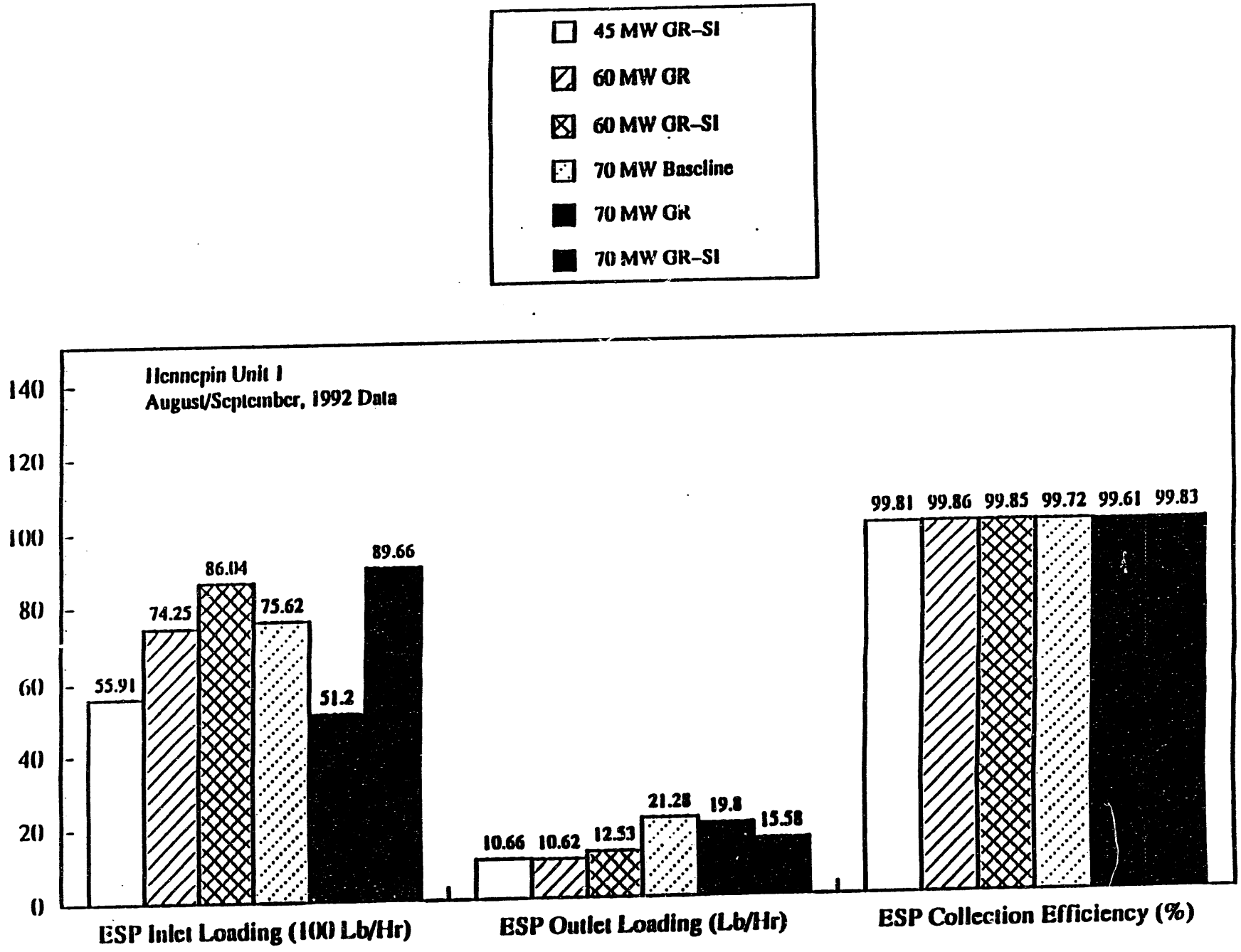

Figure 1. ESP particulate loading and collection efficiency as a function of test condition.

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 26, 45 MW GR-SI Run 1				
I	1.4805	71.4	28.6	7.2
II	0.3127	15.1	13.6	3.3
III	0.1822	8.8	4.8	2.3
IV	0.0616	3.0	1.8	1.0
V	0.0206	1.0	0.3	0.6
Filter	0.0169	0.8	—	—
Total	2.0744	Sample Flow (ACFM): 0.82		

August 26, 45 MW GR-SI, Run 2				
I	0.2088	31.7	68.3	7.4
II	0.1355	20.6	47.7	3.5
III	0.1826	27.7	20.0	2.4
IV	0.0755	11.6	3.6	1.1
V	0.0456	6.9	1.6	0.6
Filter	0.0108	1.6	—	—
Total	0.6588	Sample Flow (ACFM): 0.80		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 26, 45 MW GR-SI Run 1				
1	0.0028	5.6	94.4	19.00
2	0.0033	6.7	87.7	8.00
3	0.0031	6.3	81.5	3.00
4	0.0034	6.9	74.6	1.50
5	0.0030	6.0	68.5	0.80
6	0.0033	6.7	61.9	0.39
7	0.0027	5.4	56.5	0.18
8	0.0280	56.5	—	—
Total	0.0496	Gas Temperature (F): 265.1		
		Sample Flowrate (ACFM): 0.93		

August 26, 45 MW GR-SI Run 2				
1	0.0009	2.2	97.8	20.50
2	0.0015	3.7	94.1	8.50
3	0.0021	5.2	88.9	3.50
4	0.0025	6.2	82.7	1.80
5	0.0022	5.4	77.3	0.88
6	0.0020	4.9	72.3	0.43
7	0.0020	4.9	67.4	0.20
8	0.0273	67.4	—	—
Total	0.0405	Gas Temperature (°F): 274.6		
		Sample Flowrate (ACFM): 1.40		

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION (CONTINUED)

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 27, 60 MW GR-SI, Run 1				
I	1.8155	63.7	36.3	6.7
II	0.7126	25.0	11.4	3.0
III	0.2188	7.7	3.7	2.0
IV	0.0635	2.2	1.5	0.9
V	0.0348	1.2	0.2	0.6
Filter	0.0070	0.2	——	——
Total	2.8522	Sample Flow (ACFM): 0.92		

August 27, 60 MW GR-SI, Run 2				
I	2.0730	64.8	35.2	6.7
II	0.7750	24.2	11.0	3.0
III	0.2153	6.7	4.3	2.0
IV	0.0923	2.9	1.4	0.9
V	0.0353	1.1	0.3	0.5
Filter	0.0104	0.3	——	——
Total	3.2013	Sample Flow (ACFM): 0.93		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 27, 60 MW GR-SI, Run 1				
1	0.0021	3.2	96.8	18.00
2	0.0024	3.7	93.1	8.20
3	0.0048	7.4	85.8	3.10
4	0.0109	16.7	69.1	1.50
5	0.0090	13.8	55.3	0.80
6	0.0039	6.0	49.3	0.40
7	0.0047	7.2	42.1	0.20
8	0.0275	42.1	——	——
Total	0.0653	Gas Temperature (°F): 276.2		
		Sample Flowrate (ACFM): 1.74		

August 27, 60 MW GR-SI, Run 2				
1	0.0029	2.0	98.0	17.50
2	0.0037	2.6	95.4	7.80
3	0.0070	4.9	90.6	3.00
4	0.0181	12.6	78.0	1.50
5	0.0129	8.9	69.1	0.77
6	0.0043	3.0	66.1	0.37
7	0.0037	2.6	63.5	0.16
8	0.0916	63.5	——	——
Total	0.1442	Gas Temperature (°F): 272		
		Sample Flowrate (ACFM): 1.76		

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION (CONTINUED)

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 28, 60 MW, GR				
I	0.5929	57.4	42.6	9.4
II	0.2480	24.0	18.6	4.8
III	0.1283	12.4	6.2	3.4
IV	0.0326	3.2	3.0	1.6
V	0.0237	2.3	0.7	1.0
Filter	0.0074	0.7	——	——
Total	1.0329	Sample Flow (ACFM): 0.59		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 28, 60 MW, GR				
1	0.0027	5.4	94.6	19.00
2	0.0037	7.4	87.2	8.00
3	0.0082	16.4	70.7	3.00
4	0.0122	24.4	46.3	1.50
5	0.0068	13.6	32.7	0.80
6	0.0033	6.6	26.1	0.39
7	0.0027	5.4	20.6	0.18
8	0.0103	20.6	——	——
Total	0.0499	Gas Temperature (°F): 315.9		
		Sample Flowrate (ACFM): 1.77		

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION (CONTINUED)

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 31, 70 MW Baseline, Run 1				
I	1.2521	79.1	20.9	7.8
II	0.1864	11.8	9.1	3.7
III	0.1085	6.9	2.3	2.6
IV	0.0201	1.3	1.0	1.2
V	0.0074	0.5	0.5	0.7
Filter	0.0066	0.5	—	—
Total	1.5891	Sample Flow (ACFM): 0.83		
August 31, 70 MW Baseline, Run 2				
I	0.8341	66.8	33.2	8.1
II	0.2348	18.8	14.4	3.9
III	0.1188	9.5	4.9	2.8
IV	0.0353	2.8	2.1	1.3
V	0.0263	2.1	0.0	0.7
Filter	0.0000	0.0	—	—
Total	1.2493	Sample Flow (ACFM): 0.77		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
August 31, 70 MW Baseline, Run 1				
1	0.0068	11.0	89.0	23.00
2	0.0080	12.9	76.1	9.70
3	0.0109	17.6	58.5	3.70
4	0.0125	20.2	38.4	1.70
5	0.0089	14.4	24.0	0.96
6	0.0040	6.5	17.6	0.49
7	0.0015	2.4	15.2	0.24
8	0.0094	15.2	—	—
Total	0.0620	Gas Temperature (°F): 317		
		Sample Flowrate (ACFM): 1.25		

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION (CONTINUED)

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
September 1, 70 MW GR, Run 1				
I	0.6391	76.1	23.9	6.9
II	0.1019	12.1	11.8	3.1
III	0.0610	7.3	4.5	2.2
IV	0.0165	2.0	2.5	0.9
V	0.0147	1.8	0.8	0.5
Filter	0.0066	0.8	—	—
Total	0.8398	Sample Flow (ACFM): 1.01		
September 1, 70 MW GR, Run 2				
I	0.6324	73.4	26.6	7.5
II	0.1150	13.4	13.2	3.5
III	0.0723	8.4	4.8	2.4
IV	0.0158	1.8	3.0	1.1
V	0.1730	2.0	1.0	0.7
Filter	0.0082	1.0	—	—
Total	0.8610	Sample Flow (ACFM): 0.77		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
September 1, 70 MW GR, Run 1				
1	0.0067	10.2	89.8	20.00
2	0.0076	11.6	78.3	8.70
3	0.0108	16.4	61.9	3.40
4	0.0092	14.0	47.9	1.70
5	0.0071	10.8	37.1	0.85
6	0.0136	20.7	16.4	0.43
7	0.0024	3.6	12.8	0.19
8	0.0084	12.8	—	—
Total	0.0658	Gas Temperature (°F): 318		
		Sample Flowrate (ACFM):1.58		
September 1, 70 MW GR, Run 2				
1	0.0095	13.0	87.0	19.00
2	0.0108	14.8	72.1	8.50
3	0.0132	18.1	54.0	3.20
4	0.0084	11.5	42.4	1.80
5	0.0114	15.7	26.8	0.81
6	0.0065	8.9	17.9	0.40
7	0.0040	5.5	12.4	0.18
8	0.0090	12.4	—	—
Total	0.0728	Gas Temperature (°F): 323.5		
		Sample Flowrate (ACFM): 1.55		

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION (CONTINUED)

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
September 2, 70 MW GR-SI, Run 1				
I	1.4365	64.8	35.2	6.1
II	0.5318	24.0	11.3	2.6
III	0.1699	7.7	3.6	1.8
IV	0.3810	1.7	1.9	0.8
V	0.0304	1.4	0.5	1.4
Filter	0.0114	0.5	——	——
Total	2.2181	Sample Flow (ACFM):1.09		
September 2, 70 MW GR-SI, Run 2				
I	2.4666	73.0	27.0	6.1
II	0.6633	19.6	7.3	2.6
III	1.6870	5.0	2.3	1.8
IV	0.0508	1.5	0.8	0.8
V	0.0265	0.8	0.0	0.5
Filter	0.0016	0.0	——	——
Total	3.3775	Sample Flow (ACFM): 1.08		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
September 2, 70 MW GR-SI, Run 1				
1	0.0025	7.4	92.6	20.00
2	0.0016	4.7	87.9	8.70
3	0.0033	9.7	78.2	3.40
4	0.0101	29.7	48.5	1.70
5	0.0091	26.8	21.8	0.85
6	0.0027	7.9	13.8	0.43
7	0.0017	5.0	8.8	0.19
8	0.0030	8.8	——	——
Total	0.0340	Gas Temperature (°F): 279.4		
		Sample Flowrate (ACFM): 1.50		
September 2, 70 MW GR-SI, Run 2				
1	0.0027	1.4	98.6	18.00
2	0.0030	1.6	97.0	8.10
3	0.0049	2.6	94.4	3.10
4	0.0136	7.1	87.3	1.60
5	0.0119	6.2	81.1	0.80
6	0.0043	2.3	78.8	0.40
7	0.0027	1.4	77.4	0.16
8	0.1476	77.4	——	——
Total	0.1907	Gas Temperature (°F): 287.3		

TABLE 6. ESP INLET AND OUTLET PARTICLE SIZE DISTRIBUTION (CONTINUED)

ESP Inlet

Cyclone NO.	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
September 3, 70 MW GR-SI, Run 1				
I	1.3931	61.1	38.9	6.4
II	0.5586	24.5	14.5	2.8
III	0.1035	4.5	9.9	1.9
IV	0.1769	7.8	2.2	0.8
V	0.0496	2.2	0.0	0.5
Filter	0.0000	0.0	——	——
Total	2.2817	Sample Flow (ACFM): 1.04		

ESP Outlet

Stage No	Net Weight (g)	Percent Total (%)	Cumulative <d50 (%)	d50 (microns)
September 3, 70 MW GR-SI, Run 1				
1	0.0036	6.2	93.8	20.00
2	0.0045	7.8	86.0	8.70
3	0.0066	11.4	74.6	3.40
4	0.0140	24.2	50.3	1.70
5	0.0102	17.6	32.7	0.85
6	0.0043	7.4	25.3	0.43
7	0.0026	4.5	20.8	0.19
8	0.0120	20.8	——	——
Total	0.0578	Gas Temperature (°F): 285.2		
		Sample Flowrate (ACFM): 1.49		

Gaseous Emissions

Emissions of SO_2, NO_x, CO_2, CO, O_2, and HC were monitored continuously at the stack breeching between July 22 and September 30, 1992. Measurements were taken under the following conditions: baseline with OFA on, gas reburning only, and gas reburning with sorbent injection. Daily averages were collected and the averages under each of the test conditions over the entire period are summarized below in Table 7.

Sluice Water Analysis

Baseline sluice water analyses were conducted from July 20 through July 23, 1992 prior to the start-up of gas reburning or sorbent injection . Because the GR/SI system had not been operated since the end of April, a "clean baseline" without residual sorbent was sampled. The sampling system allowed samples to be taken on a 24-hour per day basis directly from the ash sluice line. Composites of these samples were then analyzed for the constituents outlined below. The results of these analyses are summarized in Table 8.

2.2.2 Lakeside

No supplemental monitoring was conducted at Lakeside during this quarter.

TABLE 7. HENNEPIN CONTINUOUS EMISSION MONITORING DATA

Process	CEMS O_2 % dry	CO ppm	CO_2 %	NO_x ppm	NO_x lb/mBtu	SO_2 ppm	SO_2 lb/mBtu	HC ppm	Duration in Hours
Baseline (OFA on)	5.92	25	15.5	310	0.424	2,763	5.267	2.6	44.48
Gas Reburn	5.71	7	14.6	172	0.230	2,300	4.296	2.5	17.91
Gas Reburn-Sorbent Injection	5.89	42	14.5	176	0.235	1,340	2.500	2.3	218.55

TABLE 8. HENNEPIN SLUICE WATER ANALYSIS

24 Hour Composite Samples Sampling Period		From: 8:30 7/20 To: 8:30 7/21			From: 8:30 7/22 To: 8:30 7/23		
Parameter	Units	Method	MDL	Result	Method	MDL	Result
Arsenic [As] (total)	mg/l	SW6010	0.1	ND	SW6010	0.2	ND
Barium [Ba] (total)	mg/l	SW6010	0.003	0.022	SW6010	0.1	4.2
Cadmium [Cd] (total)	mg/l	SW6010	0.007	ND	SW6010	0.1	ND
Chromium [Cr] (total)	mg/l	SW6010	0.025	ND	SW6010	0.2	1.6
Lead [Pb] (total)	mg/l	SW6010	0.085	ND	SW6010	0.2	ND
Selenium [Se] (total)	mg/l	SW6010	0.2	ND	SW6010	0.5	ND
Silver [Ag] (total)	mg/l	SW6010	0.01	ND	SW6010	0.2	ND
Iron [Fe] (total)	mg/l	SW6010	0.017	0.18	SW6010	0.34	1100
Manganese [Mn] (total)	mg/l	SW6010	0.003	ND	SW6010	0.1	3.2
Mercury [Hg] (total)	mg/l	SW7470	0.0005	ND	SW7470	0.001	ND
Boron [B] (total)	mg/l	SW6010	0.25	8.56	SW6010	0.5	ND
Calcium Oxide	mg/l	SW6010	0.3	110	SW6010	0.5	1800
Copper [Cu] (total	mg/l	SW6010	0.012	ND	EPA200.7	0.2	0.87
Nickel [Ni] (total)	mg/l	SW6010	0.034	ND	EPA200.7	0.2	1.25
Zinc [Zn] (total)	mg/l	SW6010	0.004	ND	EPA200.7	0.2	6.46
Total Dissolved Solids (Filt. Residue)	mg/l	EPA160.1	5	620	EPA160.1	5	1100
Total Suspended Solids (Non-Filt. Residue)	mg/l	EPA160.2	5	5600	EPA160.2	5	20000
Sulfate	mg/l	EPA375.4	5	230	EPA375.4	5	390
Oil and Grease (gravimetric)	mg/l	EPA413.1	2	ND	EPA413.1	2	ND
pH (lab)	SU	SW9040	—	9.21	—	—	—

MDL: Method Detection Limit
ND: Not detected at a concentration greater than or equal to the MDL

3.0 DATA DISCUSSION

3.1 Compliance Monitoring

3.1.1 Hennepin

The discharge monitoring reports for July through September (Appendix A) indicated that no effluents were discharged from the ash pond to the Illinois River. The coal analysis reports show that the average pounds of SO_2 per MBTU for this quarter was 5.32. The GR-SI demonstration program substantially reduced the SO_2 emissions during the process operational hours.

3.1.2 Lakeside

The discharge monitoring reports for the ash pond outfall structure and the coal pile runoff during the months of July through September (Appendix B) indicate that the ash pond outfall did not exceed the NPDES permit limitations. The coal pile runoff did not produce a discharge stream during this quarter.

The gaseous emissions opacity reports for July through September (Appendix B) indicate that the opacity limit of 30% was exceeded during each of the three months. July exceedances were due to startup, shutdown, changing precipitator fields, O2 swings, or unknown causes. Excess opacity readings in August were attributed to startup, shutdown, switching precipitator fields, or unknown causes. September excess opacity measurements were due entirely to unit startup.

3.2 Supplemental Monitoring

3.2.1 Hennepin

Particulate loading and particle size distribution data provide an indication of ESP performance under the various test conditions. The data reported demonstrate the ESP particulate collection efficiency ranged from 99.48 to 99.95 percent. Higher ESP particulate collection efficiencies were noted for reduced load GR-SI tests and full load GR-SI tests, with lower efficiencies for full load baseline and Gas Reburning Tests, indicating that flue gas humidification continues to effectively enhance ESP operation. All emissions were well within the 0.10 lbs/mmBtu limit, with a maximum of 0.035 lbs/mmBtu. Flue gas temperature in the ESP appears to have a significant impact on particulate emissions, expressed in lbs/mmBtu. This relationship is demonstrated in Figures 2 and 3.

Particle size distribution data was summarized above in Table 6. Under baseline conditions operating at full load, the test data show that 25% of the ESP inlet flyash was under 10 microns with approximately 80% of the ESP outlet flyash under 10 microns. With GR-SI operating and at full load, the test data show that approximately 50% of the ESP inlet particulate matter was under 10 microns with approximately 90% of the ESP outlet particulate matter was under 10 microns.

The results of the sluice water analysis show that, for the majority of the sampling parameters, concentrations were well below the method detection limit (MDL). Those parameters for which concentrations exceeded the MDL included: Barium, Chromium, Iron, Manganese, Boron, Calcium Oxide, Copper, Nickel, Zinc, Total Dissolved Solids, Total Suspended Solids, and Sulfate.

Continuous emission monitoring daily averages were taken under the following process conditions: baseline with OFA on, gas reburning, and gas reburning with sorbent injection. These averages show that there was a reduction in NO_x from baseline with overfire air on, when implementing gas reburning with sorbent injection. In addition, there was reduction of 52% in SO_2 from baseline with OFA on, when implementing gas reburning with sorbent injection.

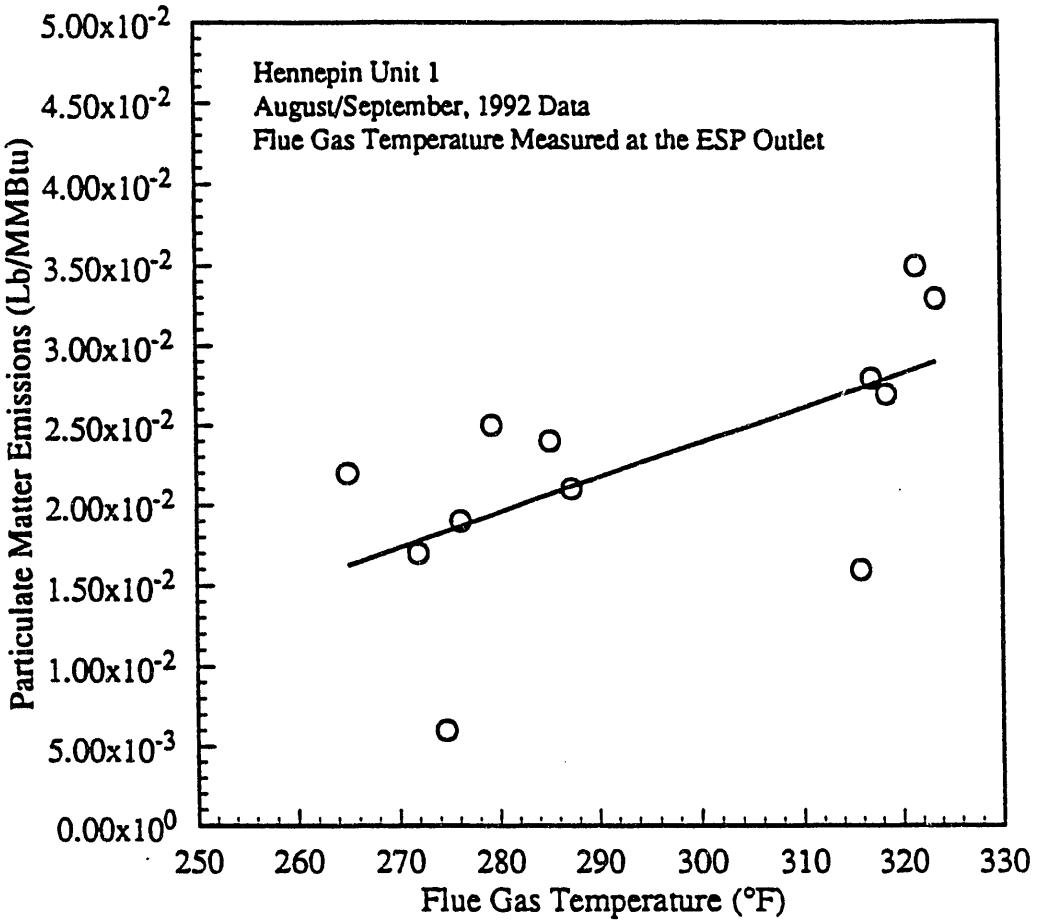

Figure 2. Particulate matter emissions as a function of ESP gas temperature.

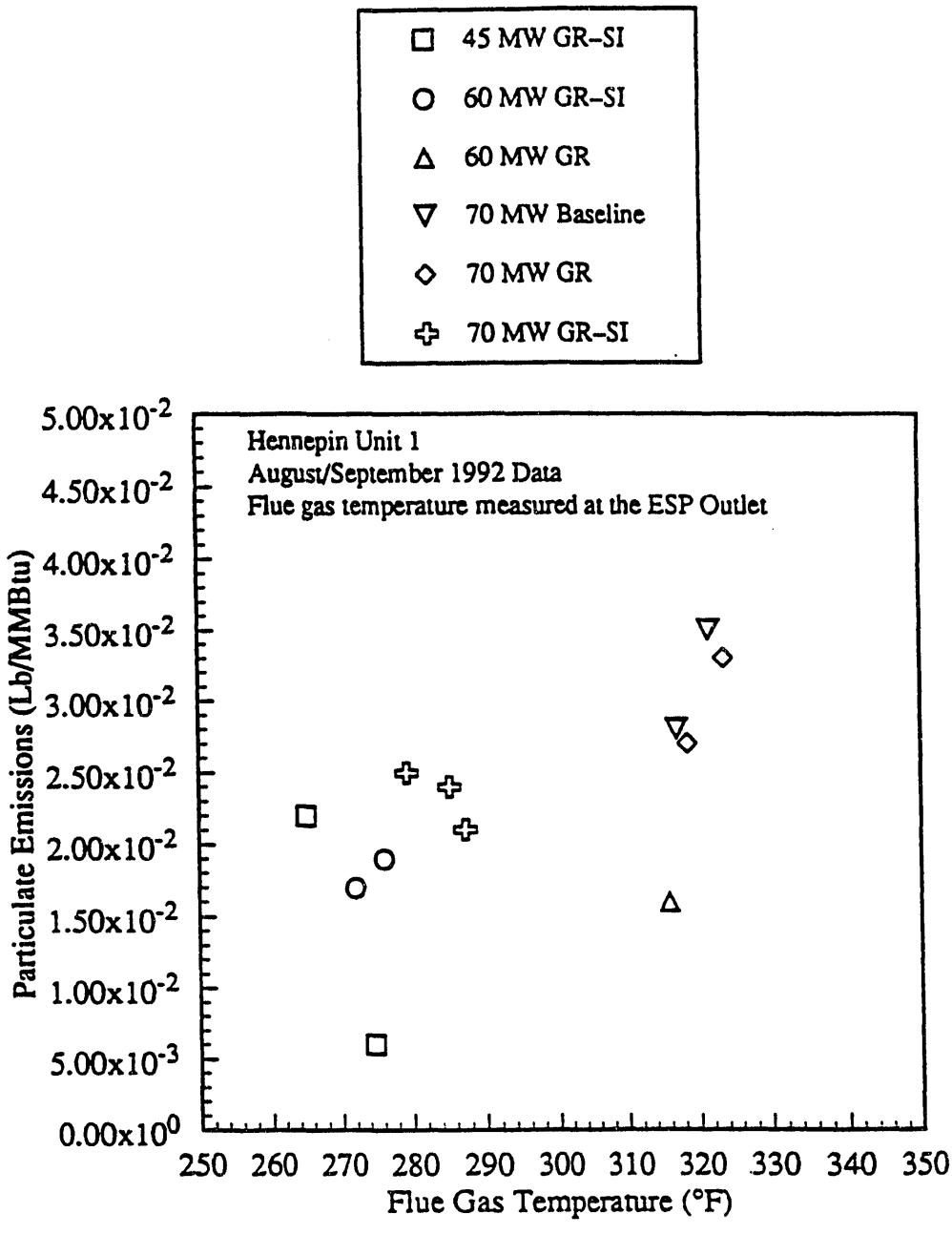

Figure 3. Particulate matter emissions as a function of ESP gas temperature and test condition.

3.2.2 Lakeside

No supplemental monitoring was conducted at Lakeside during this quarter.

4.0 PERMIT STATUS

Permits have been obtained for construction and operation of the GR-SI system at Hennepin. At Lakeside, construction is in progress, and operating permits have not been obtained yet. The following sections describe the permits obtained at each host site.

4.1 Hennepin

IP applied for a construction permit for the GR-SI project at Hennepin on July 7, 1989, and Illinois Environmental Protection Agency granted that permit on October 18, 1989. A modification to the construction permit for operation of the GR-SI demonstration for a period of 270 days was requested. This permit was granted June 21, 1990. A permit also was required to install the pH adjustment system for the GR-SI ash transport water to the existing ash pond. This permit was granted on July 25, 1990. Lastly, negotiations between Illinois Power, the Illinois EPA, and the U.S. EPA resulted in the issuance of a draft reissued NPDES permit, which should be finalized in the near future.

4.2 Lakeside

On January 8, 1990, CWLP submitted a PSD permit application for the GR-SI demonstration at Lakeside Unit 7. On July 5, 1990, CWLP granted the Illinois Environmental Protection Agency a waiver from its statutory deadline to review the permit application (180 days) for a period of 120 days. Permit approval was received November 16, 1990. EER is in the process of applying for a Special Waste Permit through the Christian County Landfill for the future disposal of the Lakeside fly ash waste stream. A pre-permit for the disposal of special waste at the Christian County Landfill was obtained on March 18, 1992.

5.0 MODIFICATIONS TO MONITORING PLAN

5.1 Hennepin

There are no recommended modifications to the proposed monitoring plan as outlined in Table 1 and 2.

5.2 Lakeside

There are no recommended modifications to the proposed monitoring plan as outlined in Table 3 and 4.

APPENDIX A

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT

PERMITTEE NAME: ILLINOIS POWER COMPANY

ADDRESS: 500 South 27th Street
Decatur, IL 62525

PHONE: (217) 424-6833

Hennepin Power Plant
Ash Lagoon 1 & 3 Discharge

COMMENTS

* No discharge, July, 1992.

IL STATE	PERMIT NUMBER	DISCHARGE NUMBER	SIC	LATITUDE	LONGITUDE
IL	IL0001554	005			

REPORTING PERIOD FROM 92 07 01 (YEAR MO DAY) TO 92 07 31 (YEAR MO DAY)

30-Day Daily

PARAMETER		QUANTITY MINIMUM	QUANTITY AVERAGE	QUANTITY MAXIMUM	QUANTITY UNITS	NO. EX.	CONCENTRATION MINIMUM	CONCENTRATION AVERAGE	CONCENTRATION MAXIMUM	CONCENTRATION UNITS	NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
50050 Flow *	REPORTED				MGD							1/week	est.
	PERMIT CONDITION												
00400 pH	REPORTED											1/week	Grab
	PERMIT CONDITION						6.0		9.0				
00530 TSS	REPORTED											1/week	24 hour composite
	PERMIT CONDITION							15.0	30.0	mg/l			
00556 Oil & Grease	REPORTED											2/month	Grab
	PERMIT CONDITION							15.0	20.0	mg/l			
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER	TITLE OF THE OFFICER	DATE (YEAR MO DAY)
Connell W.	Vice-President	

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate

E. F. Connell

SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

PAGE 5 OF 6

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1042. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $10,000.00 per day of violation or a fine up to $20,000.00 per day of violation and imprison-

WPC 345 11/79

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT

PERMITTEE NAME: ILLINOIS POWER COMPANY

ADDRESS: 500 South 27th Street
Decatur, IL 62525

PHONE: (217) 424-6833

Hennepin Power Plant
Ash Lagoon 1 & 3 Discharge

COMMENTS

* No discharge August, 1992.

STATE	PERMIT NUMBER	DISCHARGE NUMBER	SIC	LATITUDE	LONGITUDE
IL	IL0001554	005			

REPORTING PERIOD FROM: 92 08 01 (YEAR MO DAY) TO: 92 08 92 (YEAR MO DAY)

30-Day Daily

PARAMETER		QUANTITY MINIMUM	QUANTITY AVERAGE	QUANTITY MAXIMUM	QUANTITY UNITS	NO. EX.	CONCENTRATION MINIMUM	CONCENTRATION AVERAGE	CONCENTRATION MAXIMUM	CONCENTRATION UNITS	NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
50050 Flow *	REPORTED				MGD							1/week	est.
	PERMIT CONDITION												
00400 pH	REPORTED												
	PERMIT CONDITION						6.0		9.0			1/week	Grab
00530 TSS	REPORTED												
	PERMIT CONDITION							15.0	30.0	mg/l		1/week	24 hour composite
00556 Oil & Grease	REPORTED												
	PERMIT CONDITION							15.0	20.0	mg/l		2/month	Grab
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER	TITLE OF THE OFFICER	DATE
Connell W.	Vice-President	YEAR MO DAY

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate

SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

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IL 532 0097
WPC 542 11/79

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT

PERMITTEE NAME: ILLINOIS POWER COMPANY

ADDRESS: 500 South 27th Street
Decatur, IL 62525

PHONE: (217) 424-6833

Hennepin Power Plant
Ash Lagoon 1 & 3 Discharge

COMMENTS

* No discharge September, 1992.

SI	PERMIT NUMBER	DIS	SIC	LATITUDE	LONGITUDE
IL	IL0001554	005			

REPORTING PERIOD FROM: YEAR 92 MO 09 DAY 01 TO: YEAR 92 MO 09 DAY 30

30-Day Daily

PARAMETER		QUANTITY MINIMUM	QUANTITY AVERAGE	QUANTITY MAXIMUM	QUANTITY UNITS	NO. EX.	CONCENTRATION MINIMUM	CONCENTRATION AVERAGE	CONCENTRATION MAXIMUM	CONCENTRATION UNITS	NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
50050 * Flow	REPORTED				MGD								
	PERMIT CONDITION											1/week	est.
00400 pH	REPORTED												
	PERMIT CONDITION						6.0		9.0			1/week	Grab
00530 TSS	REPORTED												
	PERMIT CONDITION							15.0	30.0	mg/l		1/week	24 hour composite
00556 Oil & Grease	REPORTED												
	PERMIT CONDITION							15.0	20.0	mg/l		2/month	Grab
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER: Connell W.

TITLE OF THE OFFICER: Vice-President

TITLE

DATE: YEAR MO DAY

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate

SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1042. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $10,000.00 per day of violation or a fine up to $25,000.00 per day of violation and imprison-

ILLINOIS POWER COMPANY
HENNEPIN POWER STATION
COAL ANALYSIS REPORT FOR THE PERIOD 070192 TO 073192
FOR THE VENDOR : COAL TO BUNKERS
(COMPLETED SAMPLES)

SAMPLE DATE	TONS TO BUNKERS	% MOISTURE (AR)	% ASH (AR)	% SULFUR (AR)	BTU/LB (AR)	BTU/LB (DRY)	BTU/LB (M.A.F.)	UNIT COAL BTU/LB	POUNDS SO2 PER MBTU	ABOVE 5.8 LBS SO2
07/01/92	2,669.00	12.30	10.91	3.06	10,828	12,346	14,100	14,380	5.51	
07/02/92	2,567.00	12.48	10.47	2.93	10,918	12,475	14,170	14,438	5.23	
07/03/92	1,748.00	12.50	10.29	2.93	10,965	12,532	14,201	14,468	5.21	
07/04/92	1,545.00	13.76	10.07	2.96	10,783	12,503	14,156	14,423	5.35	
07/05/92	1,380.00	14.03	10.16	2.93	10,766	12,523	14,202	14,471	5.31	
07/06/92	2,003.00	13.26	10.21	2.95	10,829	12,485	14,152	14,417	5.31	
07/07/92	2,389.00	15.05	16.96	2.95	9,590	11,289	14,105	14,524	6.00	
07/08/92	1,862.00	16.90	10.12	2.79	10,270	12,359	14,073	14,342	5.30	
07/09/92	1,895.00	15.67	9.64	2.87	10,604	12,574	14,197	14,460	5.28	
07/10/92	2,350.00	15.28	9.75	2.94	10,563	12,469	14,090	14,353	5.43	
07/11/92	1,514.00	15.79	9.98	2.75	10,507	12,477	14,155	14,418	5.10	
07/12/92	1,659.00	13.57	10.10	2.95	10,776	12,468	14,118	14,382	5.34	
07/13/92	2,088.00	17.01	10.45	2.78	10,308	12,420	14,208	14,491	5.26	
07/14/92	2,297.00	16.82	10.62	2.82	10,272	12,349	14,156	14,440	5.35	
07/15/92	1,849.00	15.83	10.71	2.90	10,451	12,416	14,227	14,514	5.41	
07/16/92	1,695.00	12.90	9.74	3.01	10,974	12,600	14,186	14,446	5.35	
07/17/92	1,328.00	12.37	9.69	3.14	11,110	12,678	14,254	14,520	5.51	
07/18/92	1,294.00	14.09	10.35	2.99	10,740	12,502	14,215	14,490	5.43	
07/19/92	1,600.00	12.73	10.53	3.01	10,914	12,506	14,222	14,497	5.38	
07/20/92	1,596.00	12.84	10.46	2.97	10,933	12,544	14,254	14,529	5.30	
07/23/92	1,720.00	12.68	10.66	2.92	10,905	12,489	14,225	14,500	5.22	
07/24/92	2,529.00	14.63	10.81	2.89	10,568	12,378	14,174	14,457	5.32	
07/26/92	1,643.00	13.74	10.13	2.79	10,793	12,513	14,178	14,439	5.04	
07/27/92	1,741.00	11.88	10.32	2.98	11,051	12,541	14,204	14,471	5.26	
07/28/92	1,618.00	12.91	10.15	3.04	10,969	12,595	14,256	14,528	5.40	
07/29/92	1,769.00	11.84	10.68	2.88	10,986	12,460	14,179	14,448	5.11	
07/30/92	1,640.00	17.46	13.19	2.55	9,829	11,908	14,172	14,503	5.06	
07/31/92	1,601.00	13.49	10.77	2.80	10,697	12,365	14,123	14,395	5.10	

WEIGHTED AVERAGES FOR THE PERIOD 070192 TO 073192

TOTAL TONS	MOISTURE (AR)	ASH (AR)	SULFUR (AR)	BTU/LB (AR)	BTU/LB (DRY)	BTU/LB (M.A.F.)	UNIT COAL BTU/LB	LBS. SO2 PER MBTU
51,589.00	14.12	10.72	2.91	10,652	12,401	14,172	14,452	5.33

... END OF REPORT RUN ON 08/05/92 AT 14.54.15

ILLINOIS POWER COMPANY
HENNEPIN POWER STATION
COAL ANALYSIS REPORT FOR THE PERIOD 080192 TO 083192
FOR THE VENDOR : COAL TO BUNKERS
(COMPLETED SAMPLES)

SAMPLE DATE	TONS TO BUNKERS	% MOISTURE (AR)	% ASH (AR)	% SULFUR (AR)	BTU/LB (AR)	BTU/LB (DRY)	BTU/LB (M.A.F.)	UNIT COAL BTU/LB	POUNDS SO2 PER MBTU	ABOVE 5.8 LBS SO2
08/02/92	1,617.00	13.72	11.07	2.84	10,721	12,425	14,253	14,538	5.17	
08/04/92	1,747.00	11.74	11.51	3.21	10,951	12,408	14,269	14,569	5.72	
08/05/92	1,770.00	12.22	10.97	3.03	10,872	12,385	14,154	14,436	5.43	
08/06/92	3,453.00	12.95	11.05	3.10	10,767	12,368	14,166	14,455	5.62	
08/07/92	1,578.00	11.92	10.76	3.01	10,972	12,457	14,190	14,467	5.35	
08/08/92	1,369.00	12.62	10.93	2.96	10,835	12,400	14,173	14,452	5.33	
08/09/92	2,339.00	11.98	10.54	2.83	10,994	12,490	14,189	14,455	5.02	
08/10/92	2,044.00	12.88	10.65	2.98	10,825	12,425	14,155	14,432	5.37	
08/11/92	1,924.00	12.30	10.28	2.93	10,982	12,523	14,186	14,450	5.20	
08/12/92	2,152.00	12.66	10.58	3.08	10,892	12,471	14,189	14,468	5.51	
08/13/92	1,766.00	12.72	10.65	3.04	10,910	12,500	14,237	14,517	5.43	
08/14/92	1,260.00	13.09	10.50	3.06	10,848	12,481	14,197	14,474	5.50	
08/15/92	1,168.00	13.66	10.82	2.91	10,745	12,445	14,227	14,509	5.28	
08/16/92	914.00	13.50	10.78	3.02	10,772	12,453	14,225	14,510	5.47	
08/17/92	1,472.00	14.09	10.74	2.99	10,689	12,442	14,220	14,504	5.45	
08/18/92	2,293.00	12.27	11.17	2.96	10,861	12,379	14,184	14,469	5.31	
08/19/92	1,739.00	22.64	9.51	2.61	9,619	12,435	14,178	14,452	5.29	
08/20/92	1,737.00	12.67	10.18	2.94	10,965	12,556	14,213	14,479	5.23	
08/21/92	1,602.00	13.61	10.40	2.87	10,761	12,457	14,162	14,430	5.20	
08/22/92	1,606.00	12.73	10.39	2.96	10,922	12,515	14,207	14,477	5.28	
08/23/92	2,576.00	12.54	10.22	2.96	10,949	12,520	14,176	14,442	5.28	
08/24/92	1,754.00	12.58	11.25	2.94	10,814	12,370	14,197	14,482	5.30	
08/25/92	2,128.00	13.04	10.29	2.89	10,861	12,490	14,167	14,431	5.19	
08/26/92	1,571.00	13.49	10.45	2.78	10,848	12,540	14,263	14,532	5.00	
08/27/92	1,605.00	15.15	9.97	2.78	10,663	12,566	14,239	14,505	5.08	
08/28/92	1,603.00	15.34	9.93	2.77	10,610	12,532	14,197	14,460	5.09	
08/29/92	1,771.00	12.02	12.02	2.84	10,807	12,284	14,229	14,523	5.12	
08/30/92	1,571.00	12.85	10.74	2.97	10,896	12,502	14,260	14,539	5.32	

WEIGHTED AVERAGES FOR THE PERIOD 080192 TO 083192

TOTAL TONS	MOISTURE (AR)	ASH (AR)	SULFUR (AR)	BTU/LB (AR)	BTU/LB (DRY)	BTU/LB (M.A.F.)	UNIT COAL BTU/LB	LBS. SO2 PER MBTU
50,129.00	13.24	10.66	2.94	10,806	12,455	14,200	14,477	5.31

... END OF REPORT RUN ON 09/08/92 AT 13.00.26

ILLINOIS POWER COMPANY
HENNEPIN POWER STATION
COAL ANALYSIS REPORT FOR THE PERIOD 090192 TO 093092
FOR THE VENDOR : COAL TO BUNKERS
(COMPLETED SAMPLES)

SAMPLE DATE	TONS TO BUNKERS	% MOISTURE (AR)	% ASH (AR)	% SULFUR (AR)	BTU/LB (AR)	BTU/LB (DRY)	BTU/LB (M.A.F.)	UNIT COAL BTU/LB	POUNDS SO2 PER MBTU	ABOVE 5.8 LBS SO2
09/01/92	1,734.00	12.89	10.58	3.06	10,848	12,453	14,175	14,452	5.50	
09/02/92	3,136.00	13.49	10.05	2.83	10,814	12,501	14,145	14,404	5.10	
09/03/92	2,176.00	14.06	10.14	2.91	10,733	12,489	14,160	14,427	5.29	
09/04/92	1,707.00	13.74	10.63	2.84	10,710	12,415	14,160	14,433	5.17	
09/05/92	1,282.00	13.73	10.76	2.96	10,707	12,411	14,180	14,460	5.39	
09/06/92	1,798.00	14.87	10.51	2.94	10,558	12,402	14,149	14,428	5.43	
09/07/92	883.00	13.97	10.39	2.93	10,800	12,553	14,278	14,554	5.29	
09/08/92	1,574.00	14.95	10.41	2.95	10,555	12,410	14,140	14,418	5.45	
09/09/92	1,838.00	15.04	10.32	2.81	10,549	12,416	14,132	14,402	5.19	
09/10/92	2,335.00	13.39	10.72	3.03	10,775	12,441	14,199	14,480	5.48	
09/11/92	1,587.00	13.76	10.69	3.02	10,706	12,413	14,171	14,452	5.50	
09/12/92	1,514.00	15.73	10.00	2.82	10,528	12,493	14,175	14,443	5.22	
09/13/92	1,633.00	15.64	10.06	2.79	10,530	12,482	14,173	14,439	5.17	
09/14/92	1,633.00	11.89	10.72	3.06	11,008	12,493	14,224	14,502	5.42	
09/15/92	2,098.00	14.87	9.87	2.81	10,694	12,562	14,209	14,472	5.12	
09/16/92	2,471.00	16.29	10.17	2.96	10,413	12,441	14,160	14,438	5.54	
09/17/92	1,519.00	15.11	9.75	2.83	10,611	12,501	14,123	14,381	5.20	
09/18/92	1,559.00	13.24	11.35	3.13	10,724	12,362	14,222	14,520	5.69	
09/19/92	1,594.00	15.14	9.53	2.88	10,680	12,586	14,179	14,437	5.26	
09/20/92	1,563.00	12.92	11.33	2.96	10,793	12,394	14,248	14,539	5.35	
09/21/92	2,648.00	15.05	9.91	2.85	10,641	12,526	14,181	14,446	5.23	
09/22/92	1,867.00	13.73	10.29	2.84	10,859	12,587	14,291	14,562	5.10	
09/23/92	472.00	14.10	11.75	3.00	10,566	12,300	14,249	14,555	5.54	
09/24/92	1,566.00	14.19	11.05	2.96	10,655	12,417	14,253	14,539	5.23	
09/25/92	3,330.00	12.64	10.95	2.97	10,908	12,486	14,275	14,559	5.31	
09/26/92	1,735.00	12.08	10.95	3.06	10,972	12,480	14,256	14,540	5.44	
09/27/92	1,993.00	13.55	10.39	2.80	10,812	12,507	14,214	14,482	5.05	
09/28/92	1,626.00	14.48	10.64	2.87	10,629	12,428	14,195	14,473	5.27	
09/29/92	1,577.00	12.66	10.97	3.06	10,883	12,460	14,249	14,537	5.48	
09/30/92	1,495.00	12.47	10.21	3.11	11,033	12,605	14,269	14,544	5.50	

WEIGHTED AVERAGES FOR THE PERIOD 090192 TO 093092

TOTAL TONS	MOISTURE (AR)	ASH (AR)	SULFUR (AR)	BTU/LB (AR)	BTU/LB (DRY)	BTU/LB (M.A.F.)	UNIT COAL BTU/LB	LBS. SO2 PER MBTU
53,943.00	13.98	10.45	2.93	10,729	12,473	14,198	14,473	5.32

... END OF REPORT RUN ON 10/06/92 AT 08.31.44

APPENDIX B

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power
ADDRESS: Seventh & Monroe
Springfield, IL 62757
PHONE: (217) 786-4038

COMMENTS

No discharge during this period.

ST: IL
PERMIT NUMBER: IL 0024767
DIS: 008
SIC:
LATITUDE:
LONGITUDE:

REPORTING PERIOD FROM: YEAR 92 MO 07 DAY 01 TO: YEAR 92 MO 08 DAY 01

PARAMETER		QUANTITY MINIMUM	QUANTITY AVERAGE	QUANTITY MAXIMUM	QUANTITY UNITS	QUANTITY NO EX	CONCENTRATION MINIMUM	CONCENTRATION AVERAGE	CONCENTRATION MAXIMUM	CONCENTRATION UNITS	CONCENTRATION NO EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
													EST
Flow	REPORTED				MGD							1/7	EST
	PERMIT CONDITION												GRAB
pH	REPORTED												GRAB
	PERMIT CONDITION						6.0		9.0			1/7	COMP
	REPORTED												COMP
Total Suspended Solids	PERMIT CONDITION							15	30	mg/1		1/7	COMP
	REPORTED												GRAB
Oil and Grease	PERMIT CONDITION							15	20	mg/1		1/7	GRAB
	REPORTED												COMP
Total Iron	PERMIT CONDITION							2.0	4.0	mg/1		1/7	COMP
	REPORTED												COMP
Dissolved Iron	PERMIT CONDITION								1	mg/1		1/7	COMP
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER: Frasco, Lynn A. (LAST, FIRST, MI)

TITLE OF THE OFFICER: General Manager, Public Utilities (TITLE)

DATE: YEAR 92 MO 08 DAY 14

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

D. Farris
SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

IL 532-0092
WPC 242 11/79

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1042. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $10,000.00 per

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power
ADDRESS: Seventh & Monroe
Springfield, IL 62757
PHONE: (217) 786-4038

COMMENTS

(2-3) ST	(4-16) PERMIT NUMBER	(17-19) DIS	SIC	LATITUDE	LONGITUDE
IL	IL 0024767	004			

REPORTING PERIOD FROM (20-21) YEAR 92 (22-23) MO 07 (24-25) DAY 01 TO (26-27) YEAR 92 (28-29) MO 08 (30-31) DAY 01

(32-37) PARAMETER		QUANTITY 3 card only (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	CONCENTRATION 4 card only (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	(64-68) FREQUENCY OF ANALYSIS	(68-70) SAMPLE TYPE
Flow	REPORTED	5.194	6.195	6.629	MGD							1/7	EST
	PERMIT CONDITION											1/7	EST
pH	REPORTED						7.9	8.1	8.3			2/7	GRAB
	PERMIT CONDITION						6.0		9.0			2/7	GRAB
Total Suspended Solids	REPORTED						6	14	24			2/7	COMP
	PERMIT CONDITION							15	30	mg/1		2/7	COMP
Oil and Grease	REPORTED						1	2	3			2/30	GRAB
	PERMIT CONDITION							15	20	mg/1		2/30	GRAB
Boron	REPORTED						6.3	7.2	8.2			2/30	GRAB
	PERMIT CONDITION									mg/1		2/30	GRAB
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER	TITLE OF THE OFFICER	DATE	
Frasco, Lynn A.	General Manager, Public Utilities	92 08 14	I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.
LAST FIRST MI	TITLE	YEAR MO DAY	D. Farris SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

IL 532-0092
WPC 242 11/79

CITY WATER, LIGHT & POWER
3100 Stevenson Drive

UNIT OPACITY CEM
DOWNTIME REPORT

Unit: Lakeside

Month/Year: July 1992

Date	Start-End	Component	Cause	Corrective Action Taken
7/7	12:10-13:30	Power Supply to opacity monitor	Blown Power Fuse	Replaced fuse and recalibrated
7/14 7/15	10:24 10:18	Transmissometer	Stuck in cal.	Recalibrated CEM
7/28 7/29	00:18 15:00	Power supply to opacity monitor	Bad power supply cable	Work was done to replace faulty power supply cable

CITY WATER, LIGHT & POWER
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: July 1992

Boiler Hours
Unit #7 - 108
Unit #8 - 165

Date	Start	Opacity (%)	Cause	Corrective Action Taken
7-1	06:00	64.0	Startup 7	
	:06	58.0	"	
	:12	65.0	"	
	:18	60.0	"	
	:24	50.0	"	
	:36	49.0	"	
	:42	55.0	"	
	:48	40.0	"	
	08:24	37.0	"	
	:30	42.0	"	
	;36	42.0	"	
	:48	42.0	"	
	09:12	60.0	"	
	:18	50.0	"	
	:30	38.0	"	
	:48	42.0	"	
	:54	56.0	"	
7-7	19:42	58.0	Startup 7	
	:48	53.0	"	
	:54	57.0	"	
	20:00	48.0	"	
	:06	37.0	"	
	:12	45.0	"	
	:48	52.0	"	
	;24	33.0	"	
	:30	59.0	"	
	:36	45.0	"	
	:42	45.0	"	
	:48	62.0	"	
	:54	59.0	"	
	21:00	42.0	"	
7-8	02:36	42.0	Startup 7	
	:42	59.0	"	
	:48	64.0	"	
	:54	61.0	"	
	03:00	55.0	"	
	:06	66.0	"	
	:12	32.0	"	

Date	Start	Opacity (%)	Cause	Corrective Action Taken
7-8	03:18	63.0	Startup 7	
	:24	59.0	"	
	09:42	34.0	"	
	:48	71.0	"	
	:54	71.0	"	
	10:00	59.0	"	
	:06	51.0	"	
	:24	59.0	"	
	:30	57.0	"	
	:42	52.0	"	
	11;06	62.0	"	
	:18	62.0	"	
	18:36	63.0	"	
	19:00	54.0	"	
	:06	64.0	"	
	:12	59.0	"	
	:18	54.0	"	
	:54	46.0	"	
7-9	03:06	64.0	Startup 7	
	:12	40.0	"	
	:18	63.0	"	
	:24	57.0	"	
	:30	49.0	"	
	:36	59.0	"	
	:42	51.0	"	
	:48	59.0	"	
	:54	62.0	"	
	04:00	41.0	"	
	10:06	55.0	"	
	:24	59.0	"	
	11:54	34.0	"	
	12:00	41.0	"	
	:30	45.0	"	
	:36	60.0	"	
	:54	59.0	"	
	13:00	59.0	"	
	:12	51.0	"	
7-10	19:54	33.0	Shutdown 7	
7-11	00:12	39.0	Startup 8	
	01:48	59.0	"	
	:54	50.0	"	
	02:00	39.0	"	
	:12	71.0	"	
	:24	66.0	"	

Date	Start	Opacity (%)	Cause	Corrective Action Taken
7-11	02:48	61.0	Startup 8	
	:54	60.0	"	
	03:00	39.0	"	
	:12	38.0	"	
	:36	43.0	"	
	:42	50.0	"	
	:48	32.0	"	
	:54	37.0	"	
	04:00	56.0	"	
	:06	35.0	"	
	10:36	55.0	"	
	:42	39.0	"	
	:54	60.0	"	
	11:00	32.0	"	
	:06	37.0	"	
	:12	55.0	"	
	:18	44.0	"	
	19:12	42.0	"	
	:18	62.0	"	
	:24	55.0	"	
	:42	43.0	"	
	:48	42.0	"	
7-12	01:30	36.0	Startup 8	
	:36	47.0	"	
	:42	52.0	"	
	:48	33.0	"	
	07:18	44.0	"	
	:24	58.0	"	
	:30	79.0	"	
	:36	71.0	"	
	:42	74.0	"	
	:48	76.0	"	
	:54	45.0	"	
	08:00	42.0	"	
	17:00	48.0	"	
	:06	57.0	"	
	:24	52.0	"	
	:30	63.0	"	
	:36	46.0	"	
	:42	43.0	"	
	:48	35.0	"	
	23:54	42.0	"	

Date	Start	Opacity (%)	Cause	Corrective Action Taken
7-13	00:00	54.0	Startup 8	
	:06	66.0	"	
	:12	65.0	"	
	:18	43.0	"	
	03:48	61.0	"	
	09:42	33.0	"	
	:48	38.0	"	
	:06	38.0	"	
	:30	42.0	"	
	:48	60.0	"	
	:54	39.0	"	
7-15	21:30	40.0	Startup 8	
	:42	48.0	"	
	:48	53.0	"	
	:54	32.0	"	
7-16	05:06	68.0	Startup 8	
	:12	57.0	"	
	:18	55.0	"	
	:24	47.0	"	
	:30	41.0	"	
	:36	40.0	"	
	:42	44.0	"	
7-16	12:00	43.0	Shutdown 8	
	13:48	32.0	"	

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power
ADDRESS: Seventh & Monroe
Springfield, IL 62757
PHONE: (217) 786-4038

COMMENTS: No discharge during this period.

(1-2) IL ST | (4-16) IL 0024767 PERMIT NUMBER | (17-19) 008 DIS | SIC | LATITUDE | LONGITUDE

REPORTING PERIOD FROM (20-21 YEAR) 92 (22-23 MO) 08 (24-25 DAY) 01 TO (26-27 YEAR) 92 (28-29 MO) 09 (30-31 DAY) 01

(32-37) PARAMETER		3 card only QUANTITY (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	4 card only CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	(64-68) FREQUENCY OF ANALYSIS	(68-70) SAMPLE TYPE
Flow	REPORTED				MGD								EST
	PERMIT CONDITION											1/7	EST
pH	REPORTED												GRAB
	PERMIT CONDITION						6.0		9.0			1/7	GRAB
Total Suspended Solids	REPORTED												COMP
	PERMIT CONDITION							15	30	mg/1		1/7	COMP
Oil and Grease	REPORTED												GRAB
	PERMIT CONDITION							15	20	mg/1		1/7	GRAB
Total Iron	REPORTED												COMP
	PERMIT CONDITION							2.0	4.0	mg/1		1/7	COMP
Dissolved Iron	REPORTED												COMP
	PERMIT CONDITION								1	mg/1		1/7	COMP
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER	TITLE OF THE OFFICER	DATE	
Frasco, Lynn A.	General Manager, Public Utilities	92 09 15	*I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.*
LAST FIRST MI	TITLE	YEAR MO DAY	SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

IL 532-0092
WPC 242 11/79

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1042. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $10,000.00 per day of violation or a fine up to $25,000.00 per day of violation and imprisonment up to one year. This form has been approved by the Forms Management

044-020

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power
ADDRESS: Seventh & Monroe
Springfield, IL 62757
PHONE: (217) 786-4038

COMMENTS

(2-3) IL ST | (4-16) PERMIT NUMBER: IL 0024767 | (17-19) DIS: 004 | SIC | LATITUDE | LONGITUDE

REPORTING PERIOD FROM (20-21) YEAR 92 (22-23) MO 08 (24-25) DAY 01 TO (26-27) YEAR 92 (28-29) MO 09 (30-31) DAY 01

(32-37) PARAMETER		3 card only (38-45) QUANTITY MINIMUM	QUANTITY AVERAGE (46-53)	QUANTITY MAXIMUM (54-61)	UNITS (62-63)	NO EX	4 card only (38-45) CONCENTRATION MINIMUM	CONCENTRATION AVERAGE (46-53)	CONCENTRATION MAXIMUM (54-61)	UNITS (62-63)	NO EX	(64-69) FREQUENCY OF ANALYSIS	(68-70) SAMPLE TYPE
Flow	REPORTED	5.194	6.091	6.629	MGD							1/7	EST
	PERMIT CONDITION											1/7	EST
pH	REPORTED						6.5	7.8	8.9			2/7	GRAB
	PERMIT CONDITION						6.0		9.0			2/7	GRAB
Total Suspended Solids	REPORTED						4	11	19			2/7	COMP
	PERMIT CONDITION							15	30	mg/l		2/7	COMP
Oil and Grease	REPORTED						1	2	2			2/30	GRAB
	PERMIT CONDITION							15	20	mg/l		2/30	GRAB
Boron	REPORTED						5.00	6.12	7.04			3/30	GRAB
	PERMIT CONDITION									mg/l		2/30	GRAB
	REPORTED												COMP
	PERMIT CONDITION												COMP
	REPORTED												COMP
	PERMIT CONDITION												COMP
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER: Frasco, Lynn A. (LAST, FIRST, MI)

TITLE OF THE OFFICER: General Manager, Public Utilities (TITLE)

DATE: 92 09 15 (YEAR MO DAY)

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

IL 532-0092
WPC 242 11/79

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1042. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $10,000.00 per day of violation or a fine up to $25,000.00 per day of violation and imprisonment up to one year. This form has been approved by the Forms Management

044-020

CITY WATER, LIGHT & POWER
3100 Stevenson Drive

UNIT OPACITY CEM
DOWNTIME REPORT

Unit: Lakeside

Month/Year: August 1992

Date	Start-End	Component	Cause	Corrective Action Taken
8/9 8/11	10:15 01:40	Opacity Monitor	Bad power supply cable	Maintenance was initiated to replace the power supply cable
8/12	13:10-20:30	Opacity Monitor	Bad power supply cable	Power supply cable was replaced. CEM was re-calibrated

CITY WATER, LIGHT & POWER
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: August 1992

Boiler Hours
Unit #7 - 148
Unit #8 - 209

Date	Start	Opacity (%)	Cause	Corrective Action Taken
8-23	20:06	38.0	Startup #7	
	:12	56.0	"	
	:18	55.0	"	
	:24	55.0	"	
	:30	55.0	"	
	:36	52.0	"	
	:42	70.0	"	
	:48	81.0	"	
	:54	80.0	"	
	21:00	80.0	"	
	:06	80.0	"	
	:12	80.0	"	
	:18	80.0	"	
	;24	79.0	"	
	:30	79.0	"	
	:36	78.0	"	
	:42	77.0	"	
	:48	74.0	"	
	:54	52.0	"	
	22:00	31.0	"	
8-24	00:18	50.0	Startup #8	
	:24	44.0	"	
	:30	52.0	"	
	:36	51.0	"	
	:42	39.0	"	
	:48	32.0	"	
	01:36	46.0	"	
	02:42	39.0	"	
	:48	58.0	"	
	:54	54.0	"	
	03:30	43.0	"	
	:36	48.0	"	
	:42	62.0	"	
	:48	51.0	"	
	:54	30.0	"	
	04:00	40.0	"	
	:30	57.0	"	
	:36	42.0	"	
	:48	44.0	"	

NATIONAL POLLUTANT DISCHARGE [illegible]

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power
ADDRESS: Seventh & Monroe
Springfield, IL 62757
PHONE: (217) 786-4038

COMMENTS: No Discharge during this period.

(2 3) IL ST | (4 16) IL 0024767 PERMIT NUMBER | (17 19) 008 DIS | SIC | LATITUDE | LONGITUDE

REPORTING PERIOD FROM (20-21) YEAR 92 (22-23) MO 09 (24-25) DAY 01 TO (26-27) YEAR 92 (28-29) MO 10 (30-31) DAY 01

(32-37) PARAMETER		QUANTITY 3 card only (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	CONCENTRATION 4 card only (38-45) MINIMUM	(46 53) AVERAGE	(54 61) MAXIMUM	(62 63) UNITS	NO EX	(64 68) FREQUENCY OF ANALYSIS	(68 70) SAMPLE TYPE
Flow	REPORTED				MGD								EST
	PERMIT CONDITION											1/7	EST
pH	REPORTED												GRAB
	PERMIT CONDITION						6.0		9.0			1/7	GRAB
Total Suspended Solids	REPORTED												COMP
	PERMIT CONDITION							15	30	mg/l		1/7	COMP
Oil and Grease	REPORTED												GRAB
	PERMIT CONDITION							15	20	mg/l		1/7	GRAB
Total Iron	REPORTED												COMP
	PERMIT CONDITION							2.0	4.0	mg/l		1/7	COMP
Dissolved Iron	REPORTED												COMP
	PERMIT CONDITION								1	mg/l		1/7	COMP
	REPORTED												
	PERMIT CONDITION												
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER: Frasco, Lynn A. (LAST FIRST MI)

TITLE OF THE OFFICER: General Manager, Public Utilities (TITLE)

DATE: YEAR 92 MO 10 DAY 15

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

D. Frasco
SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

IL 532-0092
WPC 242 11/79

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044-020

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power
ADDRESS: Seventh & Monroe
Springfield, IL 62757
PHONE: (217) 786-4038

COMMENTS

(2 3) IL ST | (4 16) IL 0024767 PERMIT NUMBER | (17 19) 004 DIS | SIC | LATITUDE | LONGITUDE

REPORTING PERIOD FROM (20-21) YEAR 92 (22-23) MO 09 (24-25) DAY 01 TO (26-27) YEAR 92 (28-29) MO 10 (30-31) DAY 01

(32-37) PARAMETER		3 card only QUANTITY (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	4 card only CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	(62-63) UNITS	NO EX	(64-68) FREQUENCY OF ANALYSIS	(68-70) SAMPLE TYPE
Flow	REPORTED	5.194	6.055	6.629	MGD							1/7	EST
	PERMIT CONDITION											1/7	EST
pH	REPORTED						7.0	8.0	8.5			2/7	GRAB
	PERMIT CONDITION						6.0		9.0			2/7	GRAB
Total Suspended Solids	REPORTED						4	11	17			2/7	COMP
	PERMIT CONDITION							15	30	mg/l		2/7	COMP
Oil and Grease	REPORTED						0.2	0.2	0.3			2/30	GRAB
	PERMIT CONDITION							15	20	mg/l		2/30	GRAB
Boron	REPORTED						7.2	8.5	9.7			2/30	GRAB
	PERMIT CONDITION									mg/l		2/30	GRAB
	REPORTED												COMP
	PERMIT CONDITION												COMP
	REPORTED												COMP
	PERMIT CONDITION												COMP
	REPORTED												
	PERMIT CONDITION												

NAME OF PRINCIPAL EXECUTIVE OFFICER: Frasco, Lynn A. (LAST, FIRST, MI)

TITLE OF THE OFFICER: General Manager, Public Utilities (TITLE)

DATE: 92 10 15 (YEAR MO DAY)

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete, and accurate.

D. Farris
SIGNATURE OF PRINCIPLE EXECUTIVE OFFICER OR AUTHORIZED AGENT

IL 532-0092
WPC 242 11/79

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044-020

CITY WATER, LIGHT & POWER
3100 Stevenson Drive

UNIT OPACITY CEM
DOWNTIME REPORT

Unit: Lakeside

Month/Year: September 1992

Date	Start-End	Component	Cause	Corrective Action Taken

N O N E

CITY WATER, LIGHT & POWER
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: September 1992

Boiler Hours
Unit #7 - 165
Unit #8 - 117

Date	Start	Opacity (%)	Cause	Corrective Action Taken
9-14	19:12	32.0	Startup #7	
	:18	31.0	"	
	20:06	32.0	"	
	:12	55.0	"	
	:18	67.0	"	
	:24	58.0	Startup #7&8	
	:30	67.0	"	
	:36	59.0	"	
	:42	55.0	"	
	:48	51.0	"	
	:54	48.0	"	
	21:00	45.0	"	
	:06	43.0	"	
	:12	41.0	"	
	:18	45.0	"	
	:24	67.0	"	
	:30	80.0	"	
	:36	69.0	"	
	:42	42.0	"	
	:48	35.0	"	
	:54	81.0	"	
	22:00	76.0	"	
	:06	81.0	"	
	:12	81.0	"	
	:18	54.0	"	
	:24	31.0	"	
	23:24	64.0	"	
	:30	53.0	"	
	:36	43.0	"	
	:42	58.0	"	
	:48	81.0	"	
	:54	74.0	"	
9-15	00:00	70.0	Startup #7&8	
	:06	80.0	"	
	:12	75.0	"	
	:18	77.0	"	
	:24	79.0	"	
	:30	67.0	"	
	:36	53.0	"	
	:42	42.0	"	

Excess Opacity Report
September 1992
Lakeside - Page -2-

Date	Start	Opacity (%)	Cause	Corrective Action Taken
9-15	00:48	73.0	Startup #7&8	
	:54	80.0	"	
	01:00	66.0	"	
	:06	50.0	"	
	:12	32.0	"	
	:18	56.0	"	
	:24	58.0	"	
	:30	50.0	"	
	:36	31.0	"	
	:48	68.0	"	
	:54	70.0	"	
	02:00	56.0	"	
	:06	52.0	"	
	:12	72.0	"	
	:18	67.0	"	
	:24	62.0	"	
	:30	77.0	"	
	:36	65.0	"	
	:42	47.0	"	
	:54	48.0	"	
	03:00	70.0	Startup #8	
	:06	65.0	"	
	:12	69.0	"	
	:18	70.0	"	
	:24	72.0	"	
	:30	81.0	"	
	:36	76.0	"	
	:42	72.0	"	
	:48	79.0	"	
	:54	77.0	"	
	04:00	78.0	"	
	:06	75.0	"	
	:12	75.0	"	
	:18	77.0	"	
	:24	77.0	"	
	:30	77.0	"	
	:36	76.0	"	
	:42	78.0	"	
	:48	78.0	"	
	:54	77.0	"	
	05:00	74.0	"	
	:06	42.0	"	
9-25	12:30	50.0	Startup #7&8	
	:36	75.0	"	
	:42	77.0	"	
	:48	77.0	"	
	:54	79.0	"	
	13:00	79.0	"	

Excess Opacity Report
September 1992
Lakeside - Page -3-

Date	Start	Opacity (%)	Cause	Corrective Action Taken
9-25	13:06	79.0	Startup #7&8	
	:12	79.0	"	
	:18	79.0	"	
	:24	79.0	"	
	:30	79.0	"	
	:36	77.0	"	
	:42	76.0	"	
	:48	74.0	"	
	:54	72.0	"	
	14:00	70.0	"	
	:06	79.0	"	
	:12	79.0	"	
	:18	79.0	"	
	:24	80.0	"	
	:30	72.0	"	
	:36	75.0	"	
	:42	70.0	"	
	:48	50.0	"	
	:54	62.0	"	
	15:00	38.0	"	
	:42	35.0	"	
	:48	59.0	"	
	16:00	40.0	"	
	:06	55.0	"	
	:18	40.0	"	
	:30	57.0	"	
	:36	34.0	"	
	:54	43.0	"	
	17:00	54.0	"	
	:06	35.0	"	
	:30	35.0	"	
	:36	35.0	"	
	:42	33.0	"	
	:48	52.0	"	
	:54	53.0	"	
	18:00	51.0	"	
	:06	32.0	"	
	:12	42.0	"	
	:18	39.0	"	
	:30	36.0	"	
	19:00	40.0	"	
	:06	40.0	"	
	:18	40.0	"	
	:36	44.0	"	
	:48	36.0	"	
	:54	35.0	"	

Excess Opacity Report
September 1992
Lakeside - Page -4-

Date	Start	Opacity (%)	Cause	Corrective Action Taken
9-25	20:00	34.0	Startup #7&8	
	:06	31.0	Startup #8	
	:12	50.0	"	
	:18	52.0	"	

END

DATE
FILMED
3/19/93