

**ENHANCING THE USE OF COALS  
BY GAS REBURNING - SORBENT INJECTION**

Environmental Monitoring Report  
City Water, Light and Power's Lakeside Station Unit 7  
Long Term Testing Period  
October 4, 1993 - June 3, 1994

Prepared for:  
U.S. Department of Energy  
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## 1.0 INTRODUCTION

Energy and Environmental Research Corporation (EER) has completed demonstrations of Gas Reburning-Sorbent Injection (GR-SI) at two field sites. The discussions which follow pertain to measurements taken from the demonstration at City Water, Light and Power's (CWLP) Lakeside Station Unit 7 in Springfield, Illinois, which was performed under a Clean Coal Technology Program (Round 1) through the principal sponsorship of the U.S. Department of Energy. Cosponsors include the Gas Research Institute, the Illinois State Department of Energy and Natural Resources (ENR) and the host utility. Environmental monitoring was conducted for two purposes, to satisfy the requirements of operating permits granted by the Illinois Environmental Protection Agency (IEPA) and to verify environmental acceptability of the GR-SI process.

The GR-SI demonstration program at Lakeside Unit 7 was performed in three phases. Phase I - Design and Permitting, entailed characterization of the host boiler, then finalization of process and engineering design of the GR-SI system. Phase I was initiated in June 1987 and completed in March 1989. Phase II - Construction and Startup, was initiated upon completion of design tasks and was completed in February 1993. Phase III - Operation, Data Collection, Reporting and Disposition, was conducted from July 1993 to June 1994. In Phase III, the GR-SI system was evaluated initially through optimization tests, which are short-term tests in which specific operating parameters are varied to determine their impact on emissions and boiler performance. The optimization testing involved GR only tests, SI only tests, and GR-SI tests. Results from testing, carried out from July 28 to October 1, 1993, were presented in a separate report. Following Optimization Testing, long-term GR-SI operation was initiated to demonstrate the combined technology over an extended period with the unit under dispatch load control. Long-term testing was conducted from October 4, 1993 to June 3, 1994. The environmental monitoring data from this period are presented in this report.

Environmental monitoring in Phases I and II was limited to compliance monitoring as required by IEPA. Adherence to a particulate matter emissions limit of  $0.1 \text{ lb}/10^6 \text{ Btu}$  was determined by monitoring of opacity, with any opacity excursions greater than 30% required for reporting to IEPA. The National Pollutant Discharge Elimination System (NPDES) permit required monitoring of aqueous discharges to Lake Springfield and Sugar Creek. Limits on 30 day average and maximum daily concentrations of specific pollutants are specified by the NPDES permit and vary with the nature of the discharge. The common limits are for pH, total suspended solids and oil/grease. For some aqueous streams, limits of total iron, copper, residual chlorine, are also specified. GR-SI operation was thought potentially to impact outfalls 004 and 008, which are the ash pond discharge and the water runoff from the coal pile, respectively. Outfall 004 has a pH limit of 6 to 9, 30 day average limit of total suspended solids (15 mg/l) and oil/grease (15 mg/l), and daily maximum limit of total suspended solids (30 mg/l) and oil/grease (20 mg/l). Outfall 008 has the same limits for pH, total suspended solids and oil/grease, but additional limits of total iron for 30 day average (2 mg/l) and daily maximum (4 mg/l). Compliance with these limits was determined by weekly or bimonthly monitoring as specified by the NPDES permit.

In Phase III testing of the GR-SI system a wide range of additional measurements were taken by EER to verify that emissions control goals for the project were met and that other discharges were either unaffected or acceptable. Emissions were measured with a Continuous Emissions Monitoring System (CEMS), which extracted gas at the boiler exit. Gas samples were plumed, conditioned by moisture removal and then analyzed by instruments for  $\text{NO}_x$ ,  $\text{SO}_2$ ,  $\text{CO}$ ,  $\text{CO}_2$ ,  $\text{O}_2$ , and hydrocarbons (HC). The data were averaged and corrected to a standard  $\text{O}_2$  concentration. A wide range of process data from plant instrumentation was also recorded. These included opacity, particulate matter emissions and data presented in the Optimization Testing Environmental Monitoring Report.

## 2.0 GAS REBURNING-SORBENT INJECTION

GR-SI is an advanced pollution control technology designed to reduce emissions of  $\text{NO}_x$  and  $\text{SO}_2$  by 60% and 50%, respectively, in this application. It has been under development from pilot to full scale for the last two decades. In this program GR-SI has been demonstrated at two coal fired utility boilers in Illinois, with tangential and cyclone firing configuration. GR involves the injection of natural gas in the area above the coal burners to form a fuel rich region in which  $\text{NO}_x$  formed in the burner region is reduced by a variety of hydrocarbon fragments and free radicals to  $\text{N}_2$ . The quantity of natural gas used is typically in the 15 to 25% gas heat input range. Burnout (Overfire) air is injected higher up in the furnace to burn out the fuel. The flows of coal, burner air, natural gas, and overfire air produce three zones designated as Burner Zone, Reburning Zone, and Burnout Zone, each with its unique stoichiometry. Typical stoichiometries for this unit are 1.1, 0.9, and 1.18 for the three zones, respectively. The SI process involves injection of dry hydrated lime sorbent ( $\text{Ca}(\text{OH})_2$ ) into the upper furnace cavity for capture of  $\text{SO}_2$ . Micron-sized sorbent (mean diameter under 5 microns) is conveyed to the boiler and injected with air. In the upper furnace the sorbent first undergoes calcination to form a highly reactive Calcium Oxide ( $\text{CaO}$ ), which then undergoes sulfation to form Calcium Sulfate ( $\text{CaSO}_4$ ) and Calcium Sulfite ( $\text{CaSO}_3$ ). These solids are then collected with the fly ash by the particulate collection device, an Electrostatic Precipitator in the case of Lakeside Unit 7. The SI process is applied typically with a Ca (Sorbent) to S (Coal) molar ratio of 1.5 to 2.5.

Natural gas firing in GR has several environmental benefits in addition to  $\text{NO}_x$  control. These include reduction in  $\text{SO}_2$  at a level corresponding to the gas heat input, a modest reduction in  $\text{CO}_2$ , and acceptable  $\text{CO}$  emissions from judicious design of the overfire air system. Additional benefits include reductions in the quantity of bottom ash, bottom ash sluice water, and fly ash. The reduction in fly ash should result in lower stack opacity. The emissions of  $\text{N}_2\text{O}$ , which were not measured at this site, are unaffected by GR as demonstrated at another GR-SI demonstration at Illinois Power Company's Hennepin Station Unit 1. At this site,  $\text{N}_2\text{O}$  emissions under GR-SI reached a maximum of 4.3 ppm, and typically averaged from 0.5 to 3.2 ppm over the test periods.

The SI process reduces  $\text{SO}_2$  emissions by 30 to 50 percent, depending on boiler-specific factors, the sorbent type, and injection details. The major GR-SI waste product (fly ash/spent sorbent mixture) is conveyed pneumatically from the ESP hoppers to a special silo. A dustless unloader

is then used to convey the ash with water addition to trucks, which then carry it to a landfill for disposal.

### 3.0 DESCRIPTION OF HOST UNIT

City Water, Light and Power's Lakeside Station Unit 7 is a 33 MW<sub>e</sub> cyclone fired boiler. At its maximum continuous rating the unit produces 320,000 lb/hr steam, at a temperature of 910°F and pressure of 875 psig. It fires crushed high sulfur Illinois bituminous coal in 2 7-ft diameter cyclone furnaces. Flue gases flow through a refractory-lined primary furnace, a secondary furnace, secondary and primary superheaters, a two-drum steam generating bank, a regenerative air heater, an ESP, then to the stack. It operates in cycling service normally coming on line during the summer months. It is equipped with an F. L. Smidth ESP, which receives flue from both Units 7 and 8. The ESP has a Specific Collection Area (SCA) of 500 ft<sup>2</sup>/ 1000 ACFM under full load of both units. Typically, both bottom and fly ash are sluiced to an on site ash pond, but due to changes in the fly ash composition under GR-SI, this was discontinued during the course of this project. Under GR-SI operation, the bottom ash sluicing to the pond continued, but fly ash was collected dry in an ash silo and then trucked to a landfill.

### 4.0 RESULTS

#### 4.1 AIR EMISSIONS

Extensive air emissions measurements were made under three conditions: GR-SI, GR, and SI. The results of CEMS data averaged over the test periods are tabulated in Tables 1 through 3. Table 1 lists data from GR-SI operation, Table 2 shows GR-only data and Table 3 shows SI-only data. For comparison, the pre-project baseline emissions from the unit under full load (33 MW<sub>e</sub>), measured in 1988, are summarized below.

<u>Unit</u>	<u>NO<sub>x</sub></u>	<u>SO<sub>2</sub></u>	<u>Particulate Matter</u>
lb/10 <sup>6</sup> Btu	0.95	5.05	0.00733

Baseline testing conducted in Phase III (1993 - 1994) indicated that the NO<sub>x</sub> emissions vary with electric load according to the equation: NO<sub>x</sub> = 0.522 + 0.0134\*(load). This equation may be used over the normal boiler load range of 19 to 34 MW<sub>e</sub>. In Phase III, baseline SO<sub>2</sub> emissions were found to be 5.9 lb/10<sup>6</sup> Btu.

GR-SI testing was conducted intermittently from 10/5/93 to 6/2/94. The total duration of GR-SI operation was 200.3 hours, with average gas heat input of 22% and Ca/S molar ratio of 1.79. The average emissions for all GR-SI tests were:

<u>Species</u>	<u>NO<sub>x</sub></u>	<u>NO<sub>x</sub></u>	<u>SO<sub>2</sub></u>	<u>SO<sub>2</sub></u>	<u>CO<sub>2</sub></u>	<u>CO</u>
Unit	ppm	lb/10 <sup>6</sup> Btu	ppm	lb/10 <sup>6</sup> Btu	%	ppm
	248	0.331	1312	2.441	14.2	184

TABLE 1. GRSI LONG-TERM TESTING EMISSIONS SUMMARY.

Test I. D.	Test Date	Gross Power (MW)	Gas Heat (% totl)	Ca/S Molar Ratio	CEMS O2 (% dry)	Plant O2 (% wet)	COc (ppm @ 3% O2)	CO2c (% @ 3% O2)	NOxc (ppm @ 3% O2)	NOx (lb/MBtu)	SO2c (ppm @ 3% O2)	SO2 (lb/MBtu)
GRSI-1B	5-Oct-93	33	22.2	1.63	4.42	3.41	49	14.2	304	0.403	1350	2.510
GRSI-1C	5-Oct-93	33	22.3	1.68	4.76	3.63	35	14.2	327	0.435	1358	2.527
GRSI-1A	5-Oct-93	33	22.0	1.77	3.52	2.56	187	14.3	280	0.372	1440	2.676
GRSI-13A	6-Oct-93	23	26.2	1.90	4.02	2.71	352	14.1	171	0.227	1425	2.636
GRSI-13B	6-Oct-93	24	20.4	1.90	3.78	2.52	194	14.4	210	0.280	1474	2.742
GRSI-13D	6-Oct-93	24	14.9	1.91	3.43	2.46	66	14.6	273	0.365	1470	2.774
GRSI-11A2	6-Oct-93	24	26.2	1.97	3.78	2.75	117	14.2	220	0.293	1269	2.367
GRSI-13C	6-Oct-93	24	17.5	2.00	3.64	2.44	177	14.5	228	0.304	1400	2.625
GRSI-3C	7-Oct-93	33	18.6	1.75	3.36	2.47	173	14.4	283	0.377	1388	2.592
GRSI-3B	7-Oct-93	33	20.7	1.75	3.37	2.48	141	14.3	267	0.356	1280	2.382
GRSI-3D	7-Oct-93	34	14.2	1.87	3.40	2.60	52	14.6	366	0.492	1530	2.877
GRSI-3A	7-Oct-93	33	25.6	1.90	3.37	2.40	346	14.0	238	0.315	1125	2.091
GRSI-15A	11-Oct-93	24	22.2	1.10	3.66	2.65	295	14.1	193	0.257	1640	3.047
GRSI-15B	11-Oct-93	24	22.2	1.80	3.34	2.41	446	14.1	179	0.238	1342	2.499
GRSI-12A	11-Oct-93	24	21.8	1.82	4.78	3.52	193	14.0	219	0.292	1618	3.011
GRSI-12B	11-Oct-93	24	22.2	1.90	4.43	3.28	68	14.1	256	0.341	1415	2.631
GRSI-15C	11-Oct-93	24	22.4	2.70	3.33	2.40	441	14.1	182	0.243	1231	2.301
GRSI-101B	2-Nov-93	32	23.4	1.49	4.05	3.13	108	14.3	289	0.384	1480	2.750
GRSI-101B	11-Nov-93	31	23.3	1.72	3.96	2.81	154	14.3	267	0.356	1391	2.584
GRSI-101C	11-Nov-93	31	23.0	1.74	4.01	2.79	158	14.2	298	0.396	1234	2.290
GRSI-101A	11-Nov-93	31	22.9	1.75	4.13	3.03	75	14.2	272	0.362	1332	2.472
GRSI-201B	12-Nov-93	23	23.3	2.06	4.05	2.90	252	14.2	200	0.265	1302	2.426
GRSI-202A	12-Nov-93	23	23.0	2.09	5.66	3.27	110	13.8	242	0.321	1030	1.916
GRSI-201A	12-Nov-93	23	23.1	2.12	4.77	3.01	256	14.1	195	0.259	1148	2.124
GRSI-202B	12-Nov-93	23	23.3	2.12	6.47	3.77	56	13.7	271	0.360	1184	2.198
GRSI-201C	12-Nov-93	23	23.2	2.14	3.75	2.57	256	14.2	212	0.281	1092	2.038
GRSI	15-Nov-93	26	22.2	1.67	5.72	3.51	56	14.1	259	0.343	1365	2.528
GRSI	16-Nov-93	23	22.2	1.97	5.16	3.42	83	14.0	233	0.310	1147	2.137
GRSI	17-Nov-93	23	22.1	1.74	4.66	3.41	66	14.3	244	0.325	1414	2.638
GRSI	16-Feb-94	29	21.5	1.33	4.65	3.74	85	14.2	302	0.402	1529	2.852
GRSI	18-Feb-94	27	20.0	1.38	4.93	3.28	99	14.2	277	0.369	1448	2.700
GRSI	28-Mar-94	30	21.7	1.21	4.89	3.57	83	14.3	312	0.414	1703	3.169
GRSI	29-Mar-94	28	22.4	1.69	4.49	3.32	150	14.2	282	0.375	1181	2.201
GRSI	30-Mar-94	31	22.2	1.78	4.65	3.32	129	14.2	286	0.380	1136	2.113
GRSI	31-Mar-94	32	22.6	1.66	4.33	3.31	199	14.2	252	0.337	1250	2.336
GRSI	4-Apr-94	30	23.3	1.79	4.23	3.13	284	14.1	214	0.285	1300	2.415
GRSI	6-Apr-94	31	21.8	1.57	4.01	3.05	140	14.3	245	0.327	1254	2.338
GRSI-20	7-Apr-94	20	22.5	2.10	5.67	4.11	85	13.9	209	0.279	1210	2.245
GRSI-25	7-Apr-94	25	22.8	1.56	5.43	3.65	157	14.2	212	0.282	1402	2.605
GRSI-30	7-Apr-94	31	22.8	1.63	4.52	2.98	181	14.2	251	0.334	1182	2.193
GRSI-25	7-Apr-94	25	22.9	1.94	4.94	3.26	238	14.2	210	0.281	1241	2.305
GRSI	8-Apr-94	25	22.8	1.97	4.68	3.34	239	14.2	215	0.285	1163	2.155
GRSI-23-24	13-May-94	24	21.8	1.86	4.20	3.16	143	14.1	208	0.277	1249	2.315
GRSI-19-28	13-May-94	28	19.5	1.65	3.77	2.59	203	14.1	243	0.325	1269	2.372
GRSI-22-28	13-May-94	28	21.8	1.77	4.35	3.20	206	13.9	270	0.364	1192	2.211
GRSI	14-May-94	31	21.7	1.72	4.21	2.97	164	14.0	241	0.321	1183	2.203
GRSI-23-30	15-May-94	30	22.0	1.73	4.22	3.14	164	14.0	269	0.359	998	1.855
GRSI-23-30	16-May-94	30	22.1	1.76	3.85	2.94	322	14.2	237	0.317	1184	2.272
GRSI-20-25	16-May-94	25	20.8	1.75	4.22	3.16	274	14.3	219	0.291	1252	2.331
GRSI-1	17-May-94	25	20.6	1.57	4.40	3.34	330	14.3	247	0.331	1217	2.222
GRSI-2	17-May-94	25	22.3	2.06	4.00	2.89	254	14.2	247	0.329	1300	2.400
GRSI-23-33	2-Jun-94	33	22.1	1.64	3.82	2.30	375	14.6	270	0.359	1487	2.766
GRSI-23-31	2-Jun-94	31	22.7	1.81	4.47	2.79	292	14.5	256	0.340	1308	2.429
Average GRSI		28	21.9	1.79	4.30	3.03	184	14.2	248	0.331	1312	2.441

Note: MBtu = Million Btu

TABLE 2. GR LONG-TERM TESTING EMISSIONS SUMMARY.

Test I. D.	Test Date	Gross Power (MW)	Gas Heat (% totl)	Ca/S Molar Ratio	CEMS O2 (% dry)	Plant O2 (% wet)	COe (ppm @ 3% O2)	CO2c (% @ 3% O2)	NOXe (ppm @ 3% O2)	NOx (lb/MBtu)	SO2c (ppm @ 3% O2)	SO2 (lb/MBtu)
GR 113B	26-Oct-93	24	24.6	0.00	4.53	3.49	198	14.2	235	0.312	2333	4.330
GR 113A	26-Oct-93	25	24.6	0.00	4.50	3.38	454	14.3	210	0.279	2310	4.287
GR113C	26-Oct-93	25	25.0	0.00	4.16	3.25	221	14.2	232	0.308	2293	4.254
GR 111A	26-Oct-93	25	26.0	0.00	3.76	2.70	520	14.2	200	0.265	2272	4.210
GR 111B	26-Oct-93	25	20.1	0.00	3.53	2.67	418	14.5	224	0.298	2407	4.489
GR 101B	27-Oct-93	34	24.7	0.00	4.28	3.32	136	14.4	333	0.441	2397	4.449
GR 101C	27-Oct-93	34	24.9	0.00	4.21	3.39	46	14.4	333	0.442	2372	4.400
GR 101D	27-Oct-93	34	24.9	0.00	4.28	3.37	27	14.4	334	0.443	2332	4.327
GR 101A	27-Oct-93	34	24.7	0.00	4.52	3.30	283	14.3	292	0.387	2322	4.309
GR 104A	27-Oct-93	34	24.9	0.00	4.36	3.34	29	14.3	325	0.431	2298	4.262
GR 104B	27-Oct-93	34	24.9	0.00	4.38	3.34	42	14.3	335	0.444	2294	4.256
GR 104C	27-Oct-93	34	24.9	0.00	4.39	3.35	51	14.2	349	0.462	2301	4.268
GR 102A	28-Oct-93	33	23.7	0.00	4.31	3.33	74	14.3	341	0.453	2415	4.487
GR 102B	28-Oct-93	33	20.1	0.00	4.01	3.14	45	14.4	355	0.473	2485	4.633
GR 102C	28-Oct-93	33	15.1	0.00	3.81	3.06	18	14.6	405	0.544	2628	4.928
GR 103B	28-Oct-93	33	25.7	0.00	4.87	3.84	25	14.0	343	0.454	2368	4.388
GR 103A	28-Oct-93	33	25.6	0.00	3.71	2.73	323	14.1	289	0.384	2365	4.383
GR 112A2	29-Oct-93	24	21.4	0.00	3.81	2.99	383	14.5	234	0.311	2471	4.601
GR 112A	29-Oct-93	24	24.1	0.00	4.09	3.15	297	14.3	232	0.308	2399	4.454
GR 112B	29-Oct-93	24	20.4	0.00	3.89	3.05	175	14.5	250	0.334	2489	4.640
GR 112C	29-Oct-93	24	14.9	0.00	3.80	3.05	58	14.8	310	0.415	2637	4.946
GR-106B	10-Nov-93	32	25.0	0.00	3.78	2.53	520	14.3	242	0.320	2371	4.399
GR-107C	10-Nov-93	32	25.1	0.00	3.79	2.48	521	14.3	284	0.376	2351	4.359
GR-107B	10-Nov-93	32	25.1	0.00	3.71	2.55	518	14.2	255	0.338	2345	4.350
GR-106C	10-Nov-93	32	25.3	0.00	4.32	3.08	537	14.3	249	0.330	2340	4.339
GR-106B	10-Nov-93	32	25.0	0.00	3.78	2.53	520	14.3	242	0.320	2371	4.399
GR-107C	10-Nov-93	32	25.1	0.00	3.79	2.48	521	14.3	284	0.376	2351	4.359
GR-107B	10-Nov-93	32	25.1	0.00	3.71	2.55	518	14.2	255	0.338	2345	4.350
GR-106C	10-Nov-93	32	25.3	0.00	4.32	3.08	537	14.3	249	0.330	2340	4.339
GR	15-Nov-93	26	23.0	0.00	5.10	3.45	195	14.3	222	0.295	2414	4.489
GR	16-Nov-93	23	22.0	0.00	4.35	3.26	250	14.3	230	0.306	2337	4.366
GR 114 A	17-Nov-93	23	23.0	0.00	4.94	3.86	50	14.4	226	0.301	2350	4.368
GR 114 C	17-Nov-93	23	23.1	0.00	4.90	3.70	46	14.3	246	0.327	2377	4.418
GR	17-Nov-93	23	22.4	0.78	4.60	3.64	68	14.4	242	0.321	2190	4.086
GR	23-Nov-93	23	22.2	0.00	4.13	3.36	223	14.3	228	0.304	2432	4.526
GR	16-Feb-94	26	21.4	0.00	4.51	3.45	228	14.3	307	0.412	2440	4.548
GR	17-Feb-94	26	22.2	0.00	5.14	3.84	83	14.1	285	0.380	2360	4.389
GR	18-Feb-94	28	21.2	0.00	4.51	3.55	108	14.3	281	0.377	2418	4.508
GR	28-Mar-94	30	22.2	0.00	4.13	3.22	134	14.5	273	0.364	2462	4.582
GR	29-Mar-94	28	20.9	0.01	4.20	3.45	189	14.5	314	0.419	2500	4.658
GR	6-Apr-94	31	20.1	0.00	4.14	3.29	116	14.4	284	0.385	2513	4.698
GR-25-25	8-Apr-94	25	23.8	0.00	5.06	3.55	163	14.2	188	0.249	1882	3.478
GR-25-25	8-Apr-94	25	23.1	0.00	4.45	3.44	300	13.9	209	0.278	2405	4.469
GR-25-30	8-Apr-94	29	14.3	0.00	4.95	3.87	190	14.7	384	0.518	2690	5.063
GR-23-25	9-Apr-94	20	22.1	0.00	6.41	5.05	38	14.1	247	0.328	2422	4.510
GR-23-23	9-Apr-94	24	23.1	0.00	5.26	4.11	57	14.2	225	0.299	2394	4.451
GR-23-29	9-Apr-94	29	23.4	0.00	4.76	3.80	142	14.1	225	0.299	2342	4.350
GR-23-30	11-Apr-94	30	23.0	0.00	4.29	3.51	100	14.2	231	0.308	2332	4.335
GR-23-26	11-Apr-94	26	23.7	0.00	5.21	4.12	23	14.1	219	0.292	2372	4.407
GR-23-25	12-Apr-94	26	23.6	0.00	4.93	4.02	57	14.0	217	0.288	2332	4.332
GR-23-30	12-Apr-94	30	21.4	0.00	4.43	3.54	116	14.2	287	0.383	2435	4.535

Note: MBtu = Million Btu

TABLE 2. GR LONG-TERM TESTING EMISSIONS SUMMARY. (CONTINUED)

Test I. D.	Test Date	Gross Power (MW)	Gas Heat (% totl)	Ca/S Molar Ratio	CEMS O2 (% dry)	Plant O2 (% wet)	COc (ppm @ 3% O2)	CO2c (% @ 3% O2)	NOxc (ppm @ 3% O2)	NOx (lb/MBtu)	SO2c (ppm @ 3% O2)	SO2 (lb/MBtu)
GR-23-25	14-Apr-94	25	23.8	0.00	4.59	3.59	61	14.1	223	0.297	2298	4.267
GR-23-30	14-Apr-94	30	23.5	0.00	4.63	3.71	66	14.2	255	0.338	2344	4.355
GR-15-30	14-Apr-94	30	15.6	0.00	3.60	2.91	80	14.5	278	0.373	2499	4.684
GR-20-30	14-Apr-94	30	20.2	0.00	3.69	3.04	113	14.3	256	0.342	2237	4.171
GR-25-25	14-Apr-94	25	24.9	0.00	4.11	3.32	135	13.9	206	0.273	2094	3.886
GR-20-25	15-Apr-94	25	19.2	0.00	3.96	3.07	106	14.4	209	0.279	2329	4.347
GR-15-25	15-Apr-94	25	14.8	0.00	3.95	3.18	42	14.5	256	0.344	2370	4.446
GR-23-25	15-Apr-94	25	24.3	0.00	4.21	3.23	152	14.1	201	0.267	2188	4.062
GR-23-30	15-Apr-94	31	23.1	0.00	4.25	3.52	62	14.2	256	0.340	2260	4.202
GR-30Mw	16-Apr-94	32	23.1	0.00	4.46	3.59	61	14.1	278	0.370	2244	4.172
GR-25Mw	16-Apr-94	25	24.3	0.00	4.62	3.80	31	13.8	236	0.313	2173	4.035
GR-15-20	16-Apr-94	20	16.2	0.00	4.83	3.75	35	14.4	284	0.379	2309	4.326
GR-20-20	16-Apr-94	19	19.7	0.00	5.10	4.00	31	14.2	259	0.345	2237	4.174
GR-23-20	17-Apr-94	20	23.3	0.00	4.72	3.65	59	13.8	233	0.309	2076	3.856
GR-23-20	18-Apr-94	21	23.3	0.00	4.41	3.28	104	13.8	209	0.277	2146	3.988
GR-23-32	18-Apr-94	32	23.8	0.00	3.87	3.31	126	13.8	249	0.332	1969	3.658
GR-23-25	18-Apr-94	25	24.5	0.00	3.97	3.04	177	13.8	170	0.225	2074	3.848
GR-24-25	19-Apr-94	26	24.7	0.00	4.04	3.12	117	13.5	166	0.221	1960	3.636
GR-23-24	20-Apr-94	25	23.4	0.00	4.52	3.59	28	14.1	233	0.309	2390	4.443
GR-23-30	21-Apr-94	30	23.6	0.00	4.41	3.64	136	14.1	266	0.353	2238	4.158
GR	17-May-94	25	22.5	0.01	4.09	3.07	258	14.3	220	0.292	1885	3.465
GR	18-May-94	25	22.7	0.00	4.60	3.63	112	14.3	230	0.307	2464	4.582
Average GR		28	22.7	0.01	4.35	3.35	178	14.2	260	0.346	2331	4.336

TABLE 3. SI LONG-TERM TESTING EMISSIONS SUMMARY.

Test I. D.	Test Date	Gross Power (MW)	Gas Heat (% totl)	Ca/S Molar Ratio	CEMS O2 (% dry)	Plant O2 (% wet)	COc (ppm @ 3% O2)	CO2c (% @ 3% O2)	NOxc (ppm @ 3% O2)	NOx (lb/MBtu)	SO2c (ppm @ 3% O2)	SO2 (lb/MBtu)
SI-30	2-Nov-93	23	0.0	1.72	5.52	4.23	11	15.2	652	0.889	1858	3.547
SI-28	2-Nov-93	23	0.0	1.74	5.07	4.04	8	15.2	619	0.843	1976	3.762
SI-27	2-Nov-93	23	0.0	1.75	4.96	4.04	10	15.2	624	0.851	2057	3.923
SI-29	2-Nov-93	23	0.0	1.77	5.25	4.10	7	15.3	649	0.885	1907	3.644
SI-23	3-Nov-93	23	0.0	1.14	5.32	4.25	7	15.2	689	0.940	2171	4.133
SI-18	3-Nov-93	19	0.0	1.56	6.26	4.79	12	14.9	613	0.835	2114	4.030
SI-16	3-Nov-93	19	0.0	1.64	5.56	4.51	11	15.1	622	0.848	2173	4.139
SI-17	3-Nov-93	19	0.0	1.71	5.84	4.59	13	15.1	633	0.863	2106	4.016
SI-24	3-Nov-93	23	0.0	2.24	5.21	4.17	11	15.1	664	0.903	1622	3.108
SI-23-25	2-Jun-94	25	0.0	1.67	5.13	3.77	39	15.3	661	0.901	2112	4.034
SI-25	3-Jun-94	26	0.0	1.79	5.18	3.71	39	15.2	640	0.872	1858	3.541
SI-31	3-Jun-94	31	0.0	1.58	4.44	3.12	27	15.3	678	0.924	1841	3.428
Average SI		23	0.0	1.69	5.31	4.11	16	15.2	645	0.879	1983	3.775

Note: MBtu = Million Btu

All concentrations in ppm and percent (%) have been corrected to 3% O<sub>2</sub>. These data show a reduction in NO<sub>x</sub> of 63% from the baseline. A 59% reduction in SO<sub>2</sub> was due primarily to sorbent capture but also to fuel replacement. CO emissions were on average in the upper range of the acceptable level, 184 ppm.

GR-only operation was conducted for 229.4 hours, with average gas heat input of 23% and O<sub>2</sub> of 4.4%. The average emissions measured under this condition were:

<u>Species</u>	<u>NO<sub>x</sub></u>	<u>NO<sub>x</sub></u>	<u>SO<sub>2</sub></u>	<u>SO<sub>2</sub></u>	<u>CO<sub>2</sub></u>	<u>CO</u>
Unit	ppm	lb/10 <sup>6</sup> Btu	ppm	lb/10 <sup>6</sup> Btu	%	ppm
	260	0.346	2331	4.336	14.2	178

Under GR-only operation, NO<sub>x</sub> emissions were reduced by 61% from the baseline. The SO<sub>2</sub> level was reduced by 27% due to fuel replacement. Under GR-only operation CO emissions averaged 178 ppm.

SI-only testing was conducted on a few days during this period, for a total duration of 21.6 hours. The average Ca/S molar ratio was 1.69. Average emissions measured under this condition were:

<u>Species</u>	<u>NO<sub>x</sub></u>	<u>NO<sub>x</sub></u>	<u>SO<sub>2</sub></u>	<u>SO<sub>2</sub></u>	<u>CO<sub>2</sub></u>	<u>CO</u>
Unit	ppm	lb/10 <sup>6</sup> Btu	ppm	lb/10 <sup>6</sup> Btu	%	ppm
	645	0.879	1983	3.775	15.2	16

The SO<sub>2</sub> level reflects a reduction of 36%. NO<sub>x</sub> levels were below the baseline levels stated previously due to air staging during SI-only operation. Under this condition CO emissions were maintained at very low levels.

Emissions of hydrocarbons (HC) were not measured during long-term testing due to operational difficulties of the Beckman 402 instrument. Hydrocarbon emissions data under GR only operation were presented in the Optimization Testing Environmental Monitoring Report.

The flue gas opacity at the ESP outlet was logged by the Boiler Performance Monitoring System (BPMS) along with other operating/performance parameters. Since under sorbent injection the particulate loading into the ESP increases, there was potential for an increase in opacity. The opacity, averaged for the three test conditions, increased only marginally when sorbent was injected. The average, maximum, and minimum opacity for each condition were as follows:

Baseline Average Opacity (%)	5.8
Baseline Maximum Opacity (%)	10.4
Baseline Minimum Opacity (%)	2.0



GR Average Opacity (%)	5.1
GR Maximum Opacity (%)	9.0
GR Minimum Opacity (%)	2.1
SI Average Opacity (%)	5.9
SI Maximum Opacity (%)	7.7
SI Minimum Opacity (%)	4.1
GR-SI Average Opacity (%)	5.2
GR-SI Maximum Opacity (%)	7.5
GR-SI Minimum Opacity (%)	3.0

The ESP had sufficient capacity to collect the added particulate matter, maintaining low emissions. The Excess Opacity Reports, found in Appendix A, indicate that opacity exceeded 30% only during start-up of Units 7 or 8.

#### 4.2 PARTICULATE LOADING

On June 2, 1994 three particulate sampling runs were performed while the unit was under GR-SI operation. The sampling was according to U.S. EPA Method 5 which is used to measure total particulate loading. The results of these measurements are listed in Table 4. The average grain loading was 0.0080 gr/dscf, with a range of 0.0059 to 0.010 gr/dscf. The average hourly emissions were 8.76 lb/hr, with a range of 6.23 to 10.58 lb/hr. These correspond to an average emissions rate of 0.016 lb/10<sup>6</sup> Btu (range 0.012 to 0.019 lb/10<sup>6</sup> Btu) which is far below the compliance limit of 0.10 lb/10<sup>6</sup> Btu. The average flue gas flow from the unit was 219,356 acfm, which corresponds to a stack gas velocity of 20.7 ft/s.

#### 4.3 AQUEOUS DISCHARGE

Monitoring of aqueous discharge conducted by CWLP personnel, according to NPDES permit requirements, show that limits were met. On rare occasion when a limit was exceeded, successive measurements were below the stated limit. The Discharge Monitoring Reports are found in Appendix B.

### 5.0 CONCLUSIONS

Application of GR, SI, and GR-SI to CWLP's Lakeside Unit 7 resulted in significant reductions in emissions without deleterious effects on the environment. Under GR-SI, NO<sub>x</sub> emissions were reduced on average by 63%, while under GR-only operation the reduction was 61%. SO<sub>2</sub> emissions were reduced by 59% under GR-SI and by 36% under SI-only operation. Emissions of CO were increased during GR operation, averaging 184 ppm under GR-SI and 178 ppm under GR-only, compared to 16 ppm under SI-only operation. Opacity was not affected by GR-SI; the 30% limit was exceeded during start-up of Units 7 or 8. Particulate emissions during GR-SI operation averaged 0.016 lb/10<sup>6</sup> Btu, which is far below the 0.10 lb/10<sup>6</sup> limit. Monitoring of

TABLE 4. STACK PARTICULATE MATTER EMISSIONS.  
(UNDER GR-SI OPERATION)

Test Run Number	1	2	3	Avg.
Test Date	6/2/94	6/2/94	6/2/94	6/2/94
Sampling Period	1045 - 1155	1311 - 1418	1446 - 1553	1045 - 1553
Particulate Concentration:				
@ Flue Conditions, grains/acf	0.0048	0.0058	0.0034	0.0047
@ Flue Conditions, grains/dscf	0.0081	0.0100	0.0059	0.0080
Emissions Rate:				
lb/hr	9.47	10.58	6.23	8.76
lb/MBtu (F = 9,780)	0.016	0.019	0.012	0.016
Stack Gas Flow Rate:				
@ Flue Conditions, acfm	231,172	212,144	214,753	219,356
@ Standard Conditions, dscfm	136,174	123,393	123,553	127,707
Stack Gas Temperature, Deg F	324	327	331	327
Stack Gas Moisture, % by Volume	10.73	11.58	12.06	11.46
% CO <sub>2</sub> by Volume, dry basis	12.00	12.60	12.20	12.27
% O <sub>2</sub> by Volume, dry basis	5.80	5.28	6.00	5.69
% Excess Air	36.48	32.20	38.47	35.72

Note: MBtu = Million Btu

aqueous discharge streams indicates that limits were generally met, but when occasionally exceeded, the following measurement was in the acceptable range.

**APPENDIX A**

**EXCESS OPACITY REPORTS**

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: October 1993

Date	Start-End	Component	Cause	Corrective Action Taken
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N O N E

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: October 1993

Boiler Hours  
Unit #7 - 319  
Unit #8 - 0

Date	Start	Opacity (%)	Cause	Corrective Action Taken	
10-4	00:00	60.0	Startup #7		
	:06	58.0	"		
	:12	50.0	"		
	:18	41.0	"		
	:24	45.0	"		
	:30	45.0	"		
	:36	32.0	"		
	01:36	80.0	"		
	:42	72.0	"		
	:48	61.0	"		
	:54	69.0	"		
	02:00	56.0	"		
	:06	75.0	"		
	:12	59.0	"		
	:18	69.0	"		
	:24	65.0	"		
	:30	64.0	"		
	:36	66.0	"		
	:42	47.0	"		
	:48	61.0	"		
	:54	56.0	"		
	03:00	39.0	"		
	04:00	31.0	"		
	:06	58.0	"		
	:18	42.0	"		
	:24	47.0	"		
	:30	31.0	"		
	:36	55.0	"		
	:42	50.0	"		
	:54	43.0	"		
	05:00	48.0	"		
	:12	45.0	"		
	:18	46.0	"		
	:30	47.0	"		
	10-10	21:06	59.0	Startup #7	
		:12	46.0	"	
:18		36.0	"		
10-11	00:30	72.0	Startup #7		
	:36	61.0	"		
	:42	51.0	"		
	:48	64.0	"		
	:54	57.0	"		
	01:00	47.0	"		
	:06	45.0	"		
	:12	44.0	"		
	:18	45.0	"		
	:24	45.0	"		
	:30	43.0	"		
	:36	40.0	"		
	:42	49.0	"		
	:54	73.0	"		

Date	Start	Opacity (%)	Cause	Corrective Action Taken
10-13	18:54	41.0	Startup #7	
	19:00	71.0	"	
	:06	66.0	"	
	:12	43.0	"	
	:18	48.0	"	
	:24	63.0	"	
	:30	34.0	"	
	:42	53.0	"	
	23:54	53.0	"	
10-14	00:00	48.0	"	
	:06	39.0	"	
	:12	32.0	"	
	04:18	35.0	"	
	:30	46.0	"	
	:36	38.0	"	
	:42	45.0	"	
	:48	36.0	"	
10-15	01:12	35.0	"	
	:42	37.0	"	
	:54	66.0	"	
	03:30	68.0	"	
	:36	50.0	"	
	04:54	31.0	"	
	05:00	33.0	"	
	07:48	37.0	"	
	:54	36.0	"	
	08:06	38.0	"	
	:18	45.0	"	
	:24	40.0	"	
	:30	42.0	"	
	:36	39.0	"	
	:42	61.0	"	
:48	67.0	"		
10-25	00:06	39.0	Startup #7	
	:12	31.0	"	
	02:06	42.0	"	
	:12	58.0	"	
	:18	50.0	"	
	:24	47.0	"	
	:30	49.0	"	
	:36	48.0	"	
	:42	66.0	"	
	:48	43.0	"	
	:54	44.0	"	
	03:00	45.0	"	
	:06	43.0	"	
	:12	31.0	"	
	:18	32.0	"	
	:24	44.0	"	

Date	Start	Opacity (%)	Cause	Corrective Action Taken
10-25	04:12	35.0	Startup #7	
	05:06	32.0	"	
	:12	36.0	"	
	09:24	58.0	"	
	:30	51.0	"	
	:36	75.0	"	
	:42	70.0	"	
	:48	66.0	"	
	:54	52.0	"	
	10:00	32.0	"	
	:12	36.0	"	
	:54	39.0	"	
	11:00	58.0	"	
	:06	50.0	"	
	:12	59.0	"	
	:18	60.0	"	
	:24	45.0	"	
	:30	56.0	"	
	:36	57.0	"	
	:42	39.0	"	
	:48	52.0	"	
	:54	61.0	"	
	12:00	50.0	"	
	:06	35.0	"	
	:12	57.0	"	
	:18	43.0	"	



CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: November 1993

Date	Start-End	Component	Cause	Corrective Action Taken
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N O N E

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: November 1993

Boiler Hours

Unit #7 - 397

Unit #8 - 92

Date	Start	Opacity (%)	Cause	Corrective Action Taken
11-2	00:30	51.0	#7 Startup	
	:36	73.0	"	
	:42	73.0	"	
	:48	55.0	"	
	01:00	38.0	"	
	:06	59.0	"	
	:18	58.0	"	
	:24	55.0	"	
	:36	63.0	"	
	:42	35.0	"	
	02:18	61.0	"	
	:24	49.0	"	
	:42	42.0	"	
	04:54	63.0	"	
	05:00	32.0	"	
	:06	40.0	"	
	:12	49.0	"	
	:30	35.0	"	
	:42	54.0	"	
	:48	52.0	"	
	:54	38.0	"	
	06:18	31.0	"	
	:24	42.0	"	
	:30	82.0	"	
	:36	58.0	"	
11-5	14:18	76.0	Test-Fired #8	
	:24	51.0	"	
11-7	09:54	61.0	Startup #8	
	10:00	52.0	"	
	:06	51.0	"	
	:12	61.0	"	
	:18	61.0	"	
	:24	61.0	"	
	:30	59.0	"	
	:42	58.0	"	
	:48	59.0	"	
	:54	59.0	"	
	11:00	59.0	"	
	:06	59.0	"	
	:12	59.0	"	
	:18	60.0	"	
	:24	59.0	"	
	:30	58.0	"	
	:36	57.0	"	
	:42	55.0	"	
	:48	52.0	"	
	:54	50.0	"	
	12:00	56.0	"	
	:06	72.0	"	
	:12	47.0	"	

Date	Start	Opacity (%)	Cause	Corrective Action Taken
11-7	12:18	67.0	Startup #8	
	:24	81.0	"	
	:30	70.0	"	
	:336	69.0	"	
	:42	71.0	"	
	:48	70.0	"	
	:54	78.0	"	
	13:00	64.0	"	
	:06	65.0	"	
	:12	68.0	"	
	:18	57.0	"	
	:24	72.0	"	
	:30	78.0	"	
	:36	70.0	"	
	:42	52.0	"	
	:48	40.0	"	
	14:00	34.0	"	
	15:00	53.0	"	
	:06	45.0	"	
	:36	82.0	"	
	:42	72.0	"	
	:48	39.0	"	
	:54	35.0	"	
	16:00	46.0	"	
:06	38.0	"		
:18	78.0	"		
:24	53.0	"		
:30	37.0	"		
:36	59.0	"		
11-9	21:36	55.0	Startup #7	
	:42	46.0	"	
	:48	35.0	"	
	23:12	35.0	"	
	:18	35.0	"	
	:36	39.0	"	
	:42	56.0	"	
	:48	43.0	"	
:54	35.0	"		
11-10	00:00	63.0	Startup #7	
	:06	37.0	"	
	:12	31.0	"	
	:18	45.0	"	
	:24	51.0	"	
	:30	33.0	"	
	:36	68.0	"	
	:42	50.0	"	
	:48	33.0	"	
	:54	50.0	"	
	01:00	66.0	"	
	:06	70.0	"	
:12	55.0	"		
:18	39.0	"		

Date	Start	Opacity (%)	Cause	Corrective Action Taken
11-10	02:00	60.0	Startup #7	
	:06	66.0	"	
	:12	62.0	"	
	:18	46.0	"	
	:24	31.0	"	
	03:54	44.0	"	
	04:00	46.0	"	
	:54	42.0	"	
	05:12	46.0	"	
	:24	35.0	"	
	:36	51.0	"	
	:42	48.0	"	
	:48	31.0	"	
	:54	47.0	"	
	06:12	38.0	"	
11-14	23:06	75.0	Startup #7	
	:12	64.0	"	
	:19	48.0	"	
	:24	40.0	"	
	:30	35.0	"	
	:36	32.0	"	
11-15	02:06	55.0	Startup #7	
	:12	63.0	"	
	:18	46.0	"	
	:48	35.0	"	
	:54	38.0	"	
	03:54	33.0	"	
	05:36	42.0	"	
11-22	00:48	36.0	Startup #7	
	:54	32.0	"	
	01:00	32.0	"	
	:18	31.0	"	
	:24	33.0	"	
	:30	34.0	"	
	:36	33.0	"	
	:42	65.0	"	
	:48	75.0	"	
	:54	74.0	"	
	02:00	62.0	"	
	:06	63.0	"	
	:12	68.0	"	
	:18	60.0	"	
	:24	53.0	"	
	:30	54.0	"	
	:36	47.0	"	
:42	46.0	"		
:54	48.0	"		

Date	Start	Opacity (%)	Cause	Corrective Action Taken
11-23	01:18	56.0	Startup #7	
	:24	64.0	"	
	:30	65.0	"	
	:42	54.0	"	
	:48	49.0	"	
	:54	33.0	"	
	02:18	58.0	"	
	:54	33.0	"	
	03:30	37.0	"	
	:36	46.0	"	
	04:24	47.0	"	
	:30	45.0	"	
	:36	41.0	"	
	:54	33.0	"	
	05:06	54.0	"	
	:12	54.0	"	
	:18	52.0	"	
:30	49.0	"		
11-24	19:42	32.0	"	
	:48	41.0	"	
	:54	37.0	"	
	20:00	34.0	"	
	:06	44.0	"	
:12	36.0	"		
11-29	00:54	75.0	Startup #8	
	01:00	48.0	"	
	:06	38.0	"	
	:12	80.0	"	
	:18	80.0	"	
	:24	81.0	"	
	:30	81.0	"	
	:36	81.0	"	
	:42	81.0	"	
	:48	81.0	"	
	:54	81.0	"	
	02:00	81.0	"	
	:06	81.0	"	
	:12	82.0	"	
	:18	82.0	"	
	:24	82.0	"	
	:30	79.0	"	
	:36	77.0	"	
	:42	82.0	"	
	:48	73.0	"	
	:54	65.0	"	
03:00	74.0	"		
:06	69.0	"		

Date	Start	Opacity (%)	Cause	Corrective Action Taken
11-29	03:12	44.0	Startup #8	
	:18	45.0	"	
	:30	61.0	"	
	:36	57.0	"	
	:42	38.0	"	
	:48	44.0	"	
	:54	50.0	"	
	04:00	37.0	"	
	:06	42.0	"	
	:12	54.0	"	
	:30	57.0	"	
	:36	40.0	"	
	:54	40.0	"	
	05:00	63.0	"	
	:30	39.0	"	
	:36	39.0	"	
	:54	31.0	"	
	06:00	71.0	"	
	:12	43.0	"	
	:18	31.0	"	
	:24	38.0	"	
	:36	35.0	"	
	:42	39.0	"	
	:48	34.0	"	

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: December 1993

Date	Start-End	Component	Cause	Corrective Action Taken
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N O N E

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: December 1993

Boiler Hours

Unit #7 - 0

Unit #8 - 0

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Date	Start	Opacity (%)	Cause	Corrective Action Taken
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N O N E



CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: January 1994

Date	Start-End	Component	Cause	Corrective Action Taken
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N O N E

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: January 1994

Boiler Hours

Unit #7 -

Unit #8 -

Date	Start	Opacity (%)	Cause	Corrective Action Taken	
1/17	04:06	74.0	Startup #8		
	:12	77.0	"		
	:18	78.0	"		
	:24	77.0	"		
	:30	77.0	"		
	:36	78.0	"		
	:42	79.0	"		
	:48	80.0	"		
	:54	81.0	"		
	05:00	82.0	"		
	:06	79.0	"		
	:12	82.0	"		
	:18	81.0	"		
	:24	79.0	"		
	:30	76.0	Startup #7 & #8		
	:36	68.0	"		
	:42	66.0	"		
	:48	65.0	"		
	:54	62.0	"		
	06:00	61.0	"		
	:06	70.0	"		
	:12	71.0	"		
	:18	62.0	"		
	:24	63.0	"		
	:30	67.0	"		
	:36	58.0	"		
	:42	43.0	"		
	:48	39.0	"		
	:54	35.0	"		
	07:00	33.0	"		
	:06	32.0	"		
	:12	31.0	"		
	:30	34.0	"		
	:36	42.0	"		
	1/31	02:42	59.0	Startup #7	
		:48	62.0	"	
:54		62.0	"		
03:00		62.0	"		
:06		62.0	"		
:12		62.0	"		
:18		63.0	"		
:24		64.0	"		
:30		65.0	"		
:36		65.0	"		
:42		65.0	"		
:48		79.0	"		
:54		65.0	"		

Date	Start	Opacity (%)	Cause	Corrective Action Taken
1/31	04:00	63.0	Startup #7	
	:06	60.0	"	
	:12	58.0	"	
	:18	58.0	"	
	:24	59.0	"	
	:30	51.0	"	
	:36	38.0	"	
	05:48	58.0	"	
	:54	50.0	"	
	06:00	54.0	"	
	:06	44.0	"	
	09:00	31.0	"	
	:06	50.0	"	
	:12	41.0	"	
	:36	35.0	"	
	10:54	36.0	"	
	11:00	32.0	"	
	16:06	35.0	Startup #8	
	:12	31.0	"	
	:18	32.0	"	
	:24	37.0	"	
	:30	53.0	"	
	:36	59.0	"	
	:42	59.0	"	
	:48	41.0	"	
	19:00	34.0	"	
	:06	63.0	"	
	:42	46.0	"	
	20:12	32.0	"	
	:30	60.0	"	
	:36	72.0	"	
	:42	79.0	"	
	:48	75.0	"	
	:54	69.0	"	

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: February 1994

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Date	Start-End	Component	Cause	Corrective Action Taken
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N O N E

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: February 1994

Boiler Hours

Unit #7 -

Unit #8 -

Date	Start	Opacity (%)	Cause	Corrective Action Taken
2/10	23:48	37.0	Startup #7 & #8	
	:54	55.0	"	
2/11	00:00	47.0	Startup #7 & #8	
	:06	51.0	"	
	:12	51.0	"	
	:18	50.0	"	
	:24	48.0	"	
	:30	47.0	"	
	:36	46.0	"	
	:42	45.0	"	
	:48	44.0	"	
	:54	43.0	"	
	01:00	41.0	"	
	:06	39.0	"	
	:12	36.0	"	
	:18	33.0	"	
	:24	31.0	"	
	02:06	47.0	"	
	:12	73.0	"	
	:18	65.0	"	
	:24	60.0	"	
	:30	55.0	"	
	:36	45.0	"	
	:42	52.0	"	
	:48	63.0	"	
	:54	68.0	"	
	03:00	61.0	"	
	:06	62.0	"	
	:12	33.0	"	
	:36	42.0	"	
	:42	45.0	"	
	04:00	35.0	"	
:18	35.0	"		
:24	51.0	"		
:30	41.0	"		
:48	31.0	"		
05:12	51.0	"		
:30	35.0	"		
:42	41.0	"		
2/15	14:18	58.0	Startup #7	
	:24	38.0	"	
	17:18	48.0	"	
	:24	41.0	"	
	:36	41.0	"	
	18:06	35.0	"	
	:12	38.0	"	
:24	33.0	"		
:30	41.0	"		

Date	Start	Opacity (%)	Cause	Corrective Action Taken
2/23	00:06	43.0	Startup #7 & #8	
	:18	51.0	"	
	:24	42.0	"	
	:30	43.0	"	
	:42	46.0	"	
	:48	49.0	"	
	:54	51.0	"	
	01:00	51.0	"	
	:06	51.0	"	
	:12	51.0	"	
	:18	50.0	"	
	:24	48.0	"	
	:30	46.0	"	
	:36	43.0	"	
	:42	40.0	"	
	:48	38.0	"	
	:54	37.0	"	
	02:00	34.0	"	
	:06	32.0	"	
	03:00	44.0	"	
	:06	57.0	"	
	:12	32.0	"	
	:24	32.0	"	
	:30	70.0	"	
	:36	46.0	"	
	:42	69.0	"	
	:48	38.0	"	
	:54	53.0	"	
	04:06	34.0	"	
	:12	50.0	"	
	:18	35.0	"	
	:24	52.0	"	
	:30	32.0	"	
	:42	48.0	"	
	05:00	55.0	"	
	:42	52.0	"	
	:48	52.0	"	
	:54	45.0	"	
	06:00	45.0	"	
	:06	49.0	"	
	:12	59.0	"	
	:18	57.0	"	
	:24	56.0	"	
	:30	54.0	"	
	:36	42.0	"	
	:48	57.0	"	
	:54	54.0	"	
	07:00	32.0	"	
	:06	40.0	"	
	:12	64.0	"	
	:18	51.0	"	
	:24	37.0	"	
	:30	45.0	"	
	:36	60.0	"	
	:42	43.0	"	

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: March 1994

Date	Start-End	Component	Cause	Corrective Action Taken
3/8	21:00	IO Malfunction	Lightning hitting	Replaced IO Malf.
3/11	14:30	Board	Lakeside stack	Board

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: March 1994

Boiler Hours

Unit #7 -

Unit #8 -

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Date	Start	Opacity (%)	Cause	Corrective Action Taken
3-25	10:48	32.0	#7&#8 Startup	
	:54	45.0	"	
	11:00	65.0	"	
	:06	68.0	"	
	:12	68.0	"	
	:18	65.0	"	
	:24	61.0	"	
	:30	57.0	"	
	:36	54.0	"	
	:42	51.0	"	
	:48	48.0	"	
	:54	46.0	"	
	12:00	43.0	"	
	:05	42.0	"	
	:12	41.0	"	
	:18	41.0	"	
	:24	41.0	"	
	:30	42.0	"	
	:36	40.0	"	
	:42	43.0	"	
	:48	32.0	"	
	13:30	40.0	"	
	:36	36.0	"	
	:42	31.0	"	
	:48	45.0	"	
	:54	34.0	"	
	14:00	33.0	"	
	15:24	33.0	"	
	16:18	35.0	"	
	:30	40.0	"	
	17:00	36.0	"	
	:05	39.0	"	



CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: April 1994

Date	Start-End	Component	Cause	Corrective Action Taken
4/11	08:18-	IO Malfunction	Lightning hitting	Replaced IO
4/19	12:00	Board	Lakeside Stack	Malfunction Board

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: April 1994

Boiler Hours

Unit #7 - 548

Unit #8 - 556

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Date	Start	Opacity (%)	Cause	Corrective Action Taken
4-28	01:18	50.0	Startup	
	:24	38.0	"	
	:42	50.0	"	
	:48	36.0	"	
	02:00	30.0	"	

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CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: May 1994

Date	Start-End	Component	Cause	Corrective Action Taken
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N O N E

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Opacity Limit: 30%

Month/Year: May 1994

Boiler Hours  
Unit #7 - 284  
Unit #8 - 86

Date	Start	Opacity (%)	Cause	Corrective Action Taken
5-10	09:18	34.0	Startup #7	
	:24	87.0	"	
	:30	87.0	"	
	:36	86.0	"	
	:42	85.0	"	
	:48	84.0	"	
	:54	84.0	"	
	10:00	84.0	"	
	:06	84.0	"	
	:12	84.0	"	
	:18	84.0	"	
	:24	84.0	"	
	:30	82.0	"	
	:36	80.0	"	
	:42	78.0	"	
	:48	78.0	"	
	11:00	78.0	"	
	:06	80.0	"	
	:12	80.0	"	
	:18	80.0	"	
	:24	80.0	"	
	:30	84.0	"	
	:36	74.0	"	
	:42	75.0	"	
	:48	80.0	"	
	:54	76.0	"	
	12:00	80.0	"	
	:06	70.0	"	
	:12	73.0	"	
	:18	54.0	"	
	:24	70.0	"	
	:30	70.0	"	
	:36	66.0	"	
	:42	54.0	"	
	:48	64.0	"	
	:54	64.0	"	
	13:00	58.0	"	
	:06	64.0	"	
	:12	60.0	"	
	:18	42.0	"	
	:24	65.0	"	
	:30	48.0	"	
	:36	56.0	"	
	:42	35.0	"	
	:48	54.0	"	
	:54	59.0	"	
	14:06	46.0	"	
	:12	34.0	"	
	:24	47.0	"	
	:36	43.0	"	

Excess Opacity Report  
 Lakeside - May 1994  
 Page -2-

Date	Start	Opacity (%)	Cause	Corrective Action Taken
5-10	17:36	46.0	Startup #7	
	:42	55.0	"	
	:48	64.0	"	
	:54	53.0	"	
	18:00	51.0	"	
	:06	51.0	"	
	:12	60.0	"	
	:18	53.0	"	
	:42	42.0	"	
	:48	45.0	"	
	:54	55.0	"	
	19:00	41.0	"	
	:06	39.0	"	
	:12	40.0	"	
	:18	49.0	"	
	:24	49.0	"	
	:30	41.0	"	
	:36	35.0	"	
	:48	64.0	"	
	:54	40.0	"	
	20:00	33.0	"	
	:06	41.0	"	
	:12	68.0	"	
	:18	72.0	"	
:24	70.0	"		
:30	76.0	"		
5-30	16:36	62.0	Startup #7 & #8	
	:42	60.0	"	
	:48	49.0	"	
	:54	40.0	"	
	17:00	34.0	"	
	:06	71.0	"	
	:12	56.0	"	
	:18	48.0	"	
	:24	40.0	"	
	:30	32.0	"	
	:42	30.0	"	
	:48	63.0	"	
	:54	72.0	"	
	18:00	71.0	"	
	:06	70.0	"	
	:12	69.0	"	
	:18	69.0	"	
	:24	69.0	"	
	:30	70.0	"	
	:36	71.0	"	
	:42	72.0	"	
	:48	73.0	"	
	:54	74.0	"	
	19:00	76.0	"	
:06	76.0	"		
:12	81.0	"		
:18	89.0	"		
:24	75.0	"		
:30	72.0	"		
:36	72.0	"		
:42	72.0	"		
:48	52.0	"		
:54	82.0	"		

Excess Opacity Report  
 Lakeside - May 1994  
 Page -3-

Date	Start	Opacity (%)	Cause	Corrective Action Taken
5-30	20:00	89.0	"	
	:06	76.0	"	
	:12	38.0	"	
	:18	59.0	"	
	:42	81.0	"	
	:48	75.0	"	
	:54	72.0	"	
	21:00	71.0	"	
	:06	65.0	"	
	:12	65.0	"	
	:18	70.0	"	
	:24	70.0	"	
	:30	59.0	"	
	:36	71.0	"	
	:42	50.0	"	
	:48	60.0	"	
	:54	52.0	"	
	22:00	38.0	"	
	:18	62.0	"	
	:24	50.0	"	
	:30	52.0	"	
	:36	50.0	"	
	:42	44.0	"	
	:48	63.0	"	
	23:00	44.0	"	
	:06	35.0	"	
	:12	35.0	"	
	:18	50.0	"	
	:24	50.0	"	
	:30	47.0	"	
	:36	49.0	"	
	:42	62.0	"	
	:48	36.0	"	

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

UNIT OPACITY CEM  
DOWNTIME REPORT

Unit: Lakeside

Month/Year: June 1994

Date	Start-End	Component	Cause	Corrective Action Taken
6/18	13:30-14:30	Recorder	Paper Jam	

CITY WATER, LIGHT & POWER  
3100 Stevenson Drive

EXCESS OPACITY REPORT

Unit: Lakeside

Capacity Limit: 30%

Month/Year: June 1994

Boiler Hours  
Unit #7 - 360  
Unit #8 - 404

Rate	Start	Opacity (%)	Cause	Corrective Action Taken
5-2	14:00	33.0	Stack test probe in path	
	16:06	41.0	"	
	:12	32.0	"	
5-4	01:24	65.0	Shutdown #7	
	:30	52.0	"	
	02:18	40.0	"	
	:24	40.0	"	
-7	02:18	61.0	Startup #8	
	:48	41.0	"	
	:54	34.0	"	
	03:00	48.0	"	
	:06	57.0	"	
	:12	58.0	"	
	:18	60.0	"	
	:24	62.0	"	
	:30	64.0	"	
	:36	68.0	"	
	:42	70.0	"	
	:48	72.0	"	
	:54	73.0	"	
	04:00	73.0	"	
	:06	85.0	"	
	:12	69.0	"	
	:18	77.0	"	
	:24	43.0	"	
	:30	62.0	"	
	:36	65.0	"	
	:42	59.0	"	
	:48	39.0	"	
	:54	60.0	"	
	05:00	65.0	"	
	:06	64.0	"	
	:12	38.0	"	
	:24	48.0	"	
	:30	67.0	"	
:36	42.0	"		
:48	36.0	"		
:54	65.0	"		
05:05	53.0	"		
:12	57.0	"		
:18	62.0	"		
:24	53.0	"		
:30	64.0	"		
:36	42.0	"		
07:06	49.0	"		
:12	43.0	"		
:18	34.0	"		
:36	43.0	"		
:42	52.0	"		
:48	42.0	"		



Date	Start	Opacity (%)	Cause	Corrective Action Taken
5-7	03:00	61.0	Startup #3	
	:18	39.0	"	
	:24	72.0	"	
	:30	72.0	"	
	:36	72.0	"	
5-8	03:18	50.0	Shutdown #8	
	:24	33.0	"	
	09:18	53.0	"	
	:24	82.0	"	
	:30	77.0	"	
	:42	39.0	"	
5-25	07:30	44.0	Startup #7&8	
	:36	51.0	"	
	:42	58.0	"	
	:48	58.0	"	
	:54	52.0	"	
	08:00	60.0	"	
	:06	47.0	"	
	:12	58.0	"	
	:18	54.0	"	
	:24	48.0	"	
	:30	50.0	"	
	:36	42.0	"	
	:42	42.0	"	
	:48	33.0	"	
	:54	47.0	"	
	09:00	40.0	"	
	15:00	47.0	"	
	:06	48.0	"	
	:12	39.0	"	
	:18	51.0	"	
	:24	38.0	"	
	:30	37.0	"	
	:36	31.0	"	
	:42	45.0	"	
	:54	48.0	"	
	16:00	59.0	"	
	:06	49.0	"	
:12	44.0	"		
:30	62.0	"		
:36	42.0	"		
:42	53.0	"		
:48	31.0	"		
:54	58.0	"		
17:06	48.0	"		
21:42	38.0	"		
:48	43.0	"		
22:00	57.0	"		
:12	48.0	"		
:24	38.0	"		
5-26	04:36	55.0	Shutdown #7	
	:42	42.0	"	
	:48	42.0	"	
	:54	36.0	"	

Date	Start	Opacity (%)	Cause	Corrective Action Taken
5-26	05:00	50.0	Shutdown #7	
	:06	48.0	"	
	:12	56.0	"	
	:18	53.0	"	
	:24	45.0	"	
	:30	36.0	"	
	:36	60.0	"	
	:42	40.0	"	
	:48	38.0	"	
	:54	43.0	"	
	06:00	47.0	"	
	12:54	47.0	Startup #8	
	13:00	51.0	"	
	:06	50.0	"	
	:12	50.0	"	
	:18	39.0	"	
	:24	48.0	"	
	:30	38.0	"	
	:36	46.0	"	
	19:42	41.0	"	
	:48	37.0	"	
:54	51.0	"		
20:06	34.0	"		
:12	43.0	"		
:18	44.0	"		
5-27	02:30	78.0	Startup #8	
	:36	63.0	"	
	:42	47.0	"	
	:45	37.0	"	
	05:42	49.0	"	
	:48	53.0	"	
	:54	53.0	"	
	06:00	47.0	"	
	:06	33.0	"	
	:12	64.0	"	
	:18	31.0	"	
	07:36	35.0	"	
	:42	35.0	"	
	08:36	51.0	"	
	:42	56.0	"	
	:48	52.0	"	
	09:06	51.0	"	
	10:48	100.0	"	
:54	100.0	"		
11:00	56.0	"		
:18	59.0	"		

**APPENDIX B**

**WATER DISCHARGE MONITORING REPORTS**

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

COMMENTS

WASTE NAME  
City Water, Light & Power  
SEVENTH & MONROE  
Springfield, IL 62757  
217/786-4080

11-0007  
352-1179

11 0024767  
FURNACE NUMBER

004  
ENS

93 11 01  
YEAR MONTH DAY

10  
TO

93 11 01  
YEAR MONTH DAY

128-771 128-771 128-771  
LATITUDE LONGITUDE

PARAMETER	3 CONCENTRATION (MG/L)		4 CONCENTRATION (MG/L)		5 CONCENTRATION (MG/L)		FREQUENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM	AVERAGE	MINIMUM	AVERAGE	MINIMUM	MAXIMUM		
Flow	0.0	4.613					1/7	EST
pH			8.5	8.7	9.0	9.0	1/7	EST
Total Suspended Solids			6.0	7	11	30	2/7	GRAB
Oil and Grease			5	15	3	3	2/7	GRAB
Boron			1	2	15	20	2/30	GRAB
			3.48	4.14	4.79		2/30	GRAB
							2/30	GRAB
							2/30	GRAB
								COMP
								COMP
								COMP
								COMP

UNIT OF THE OFFICER: General Manager, Public Utilities

DATE: 9/14/01

UNIT OF THE OFFICER: D. Garcia

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.

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.

DISCHARGE MONITORING REPORT

11

**Facility Name:** City Water, Light & Power  
**Address:** Seventh & Monroe  
 Springfield, IL 62757  
**Phone:** (217) 766-4080

COMMENTS

11 0024767

**Facility Number:** 006  
 (129-21) (25-29) (24-29)

**Reporting Period From:** 9/3 11 01  
 (Year Mo Day)

**To:** 9/3 14 09  
 (Year Mo Day)

PARAMETER	REPORTED FROM	4 Used only (30-45)		QUANTITY (46-50)		16-21 (51-52)		CONCENTRATION (53-58)				FREQUENCY OF ANALYSIS	SAMPLE TYPE
		MINIMUM	AVERAGE	MAXIMUM	UNITS	MIN	MAX	UNITS	MINIMUM	AVERAGE	MAXIMUM		
Flow	REPORTED FROM CORRECTION	5.912	5.912	5.912	MGD							1/7	EST
pH	REPORTED FROM CORRECTION			8.3		8.6		8.8				2/7	EST
Total Suspended Solids	REPORTED FROM CORRECTION			6.0		9.0						2/7	GRAB
Oil and Grease	REPORTED FROM CORRECTION			2		18						2/7	GRAB
Boron	REPORTED FROM CORRECTION			1		30					mg/1	2/7	COMP
	REPORTED FROM CORRECTION			1		1						2/30	GRAB
	REPORTED FROM CORRECTION			15		20					mg/1	2/30	GRAB
	REPORTED FROM CORRECTION			4.37		5.23					mg/1	2/30	GRAB
	REPORTED FROM CORRECTION											2/30	GRAB
	REPORTED FROM CORRECTION												COMP
	REPORTED FROM CORRECTION												COMP
	REPORTED FROM CORRECTION												COMP
	REPORTED FROM CORRECTION												COMP

DATE OF REPORT: 9/3/14  
 REPORTED BY: A.  
 SIGNATURE OF PARTICIPATING EXECUTIVE OFFICER OR AUTHORIZED AGENT: D. Adams

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.

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111/172, Section 1062. 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.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS

DISCHARGE MONITORING REPORT

PERMITTEE NAME

City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 786-4080

COMMENTS

There was no discharge December 28, 1993 through January 3, 1994.

IL 0024767 PERMIT NUMBER  
 IL 004 DWS  
 93 12 01 YEAR MO DAY  
 94 01 01 YEAR MO DAY  
 SAC

PARAMETER	3 CONTINUED (300-603)			QUANTITY (64-833)			UNITS	CONCENTRATION (64-608)			UNIT	DATE OF ANALYSIS	SAMPLE TYPE
	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM		MINIMUM	AVERAGE	MAXIMUM			
Flow	REPORTED	0	5.226	5.912	MGD								EST
PH	PERMIT CONDITION							7.6	8.3	8.4			EST
Total Suspended Solids	REPORTED							3	5	8			GRAB
Oil and Grease	PERMIT CONDITION							2	3	3			GRAB
Boron	REPORTED							6.1	6.2	6.3			GRAB
	PERMIT CONDITION												GRAB
	REPORTED												COMP
	PERMIT CONDITION												COMP
	REPORTED												COMP
	PERMIT CONDITION												COMP
	REPORTED												COMP
	PERMIT CONDITION												COMP
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 PRINCIPAL EXECUTIVE OFFICER DIRECTOR OF AUTHORIZATION

NATIONAL POLLUTANT DISCHARGE LIMITATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

PURIFIER NAME

City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 766-4080

COMMENTS

Unable to obtain a flow reading on January 18, 1994 due to a buildup of ice on discharge conduit.

17 11 18 16 17 171 180 211 172 229 124 250 196 270 128 293 126 318

IL 51 PURIFIER NUMBER II IL 0024767 SIC 004

REPORTING PERIOD FROM 9/4 YEAR 01/01 TO 9/12 YEAR 01/01

FAHRENHEIT LONGITUDE

PARAMETER	3 cold water (30C-45C)			4 cold water (30C-45C)			CONCENTRATION (M.G./L.)			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE	
	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM				
Flow	5.194	5.194	5.194									3/30	EST
pH	REPORTED						7.9	8.1	8.5			1/7	EST
	PERMITS CONDITION						6.0		9.0			2/7	GRAB
Total Suspended Solids	REPORTED						4	12	26			2/7	GRAB
	PERMITS CONDITION							15	30			2/7	COMB
Oil and Grease	REPORTED						2	2	2			2/30	COMB
	PERMITS CONDITION							15	20			2/30	GRAB
BORON	REPORTED						6.0	6.3	6.5			2/30	GRAB
	PERMITS CONDITION											2/30	GRAB
	REPORTED												COMB
	PERMITS CONDITION												COMB
	REPORTED												COMB
	PERMITS CONDITION												COMB
TITLE OF THE OTHER General Manager, Public Utilities											DATE 9/4 0 21		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT
NAME OF PRINCIPAL EXECUTIVE OFFICER Frasco, Lynn A.											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.

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.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

PERMITTEE NAME  
City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
PHONE (217) 786-4080

COMMENTS

IL 0024767 PERMIT NUMBER  
 IL 004 DIS  
 940201 YEAR MO DAY  
 940301 YEAR MO DAY  
 IL 004 DIS  
 940301 YEAR MO DAY  
 940301 YEAR MO DAY  
 IL 004 DIS  
 940301 YEAR MO DAY

PARAMETER	QUANTITY (10481)				UNITS	CONCENTRATION (15481)			UNITS	AGENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM (13045)	AVERAGE (14053)	MAXIMUM (14481)	PERMITS (16283)		MINIMUM (13045)	AVERAGE (14053)	MAXIMUM (14481)			
Flow	5.194	5.733	5.912		MGD					1/7	EST
pH							8.3	8.4		1/7	EST
Total Suspended Solids						7	11	15		2/7	GRAB
Oil and Grease						2	3	4	mg/l	2/7	GRAB
Boron						4.6	4.7	4.9	mg/l	2/30	GRAB
							15	20	mg/l	2/30	GRAB
										2/30	GRAB
										2/30	GRAB
											COMP
											COMP
											COMP
											COMP

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.

NAME OF MUNICIPAL EXECUTIVE OFFICER II  
 Franco, Lynn A.  
 TITLE  
 General Manager,  
 Public Utilities  
 DATE  
 94 03 15  
 YEAR MO DAY

NAME OF MUNICIPAL EXECUTIVE OFFICER I  
 TITLE  
 DATE  
 YEAR MO DAY



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power  
ADDRESS: Seventh & Monroe  
Springfield, IL 62757  
PHONE: (217) 706-4080

PERMIT NUMBER: IL 0024767  
REPORTING PERIOD FROM 9/4/94 TO 9/4/94

14 161  
LATITUDE: 38-231 (28-29) (30-31)  
LONGITUDE: 94 04 01  
YEAR MO DAY

14 161  
SIC: 94 03 91  
YEAR MO DAY

PARAMETER	3 card only (38-45)			QUANTITY (44-53)			CONCENTRATION (44-53)			FREQUENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM		
Flow	5.194	5.912	6.629								EST
pH	REPORTED										EST
	PERMIT CONDITION										EST
Total Suspended Solids	REPORTED			8.1	8.3	8.8					GRAB
	PERMIT CONDITION			6.0		9.0					GRAB
Oil and Grease	REPORTED			8	15	28					COMP
	PERMIT CONDITION			1	15	30				mg/l	COMP
Boron	REPORTED			1	1	1					GRAB
	PERMIT CONDITION			15	15	20				mg/l	GRAB
	REPORTED				5.2	5.8					GRAB
	PERMIT CONDITION									mg/l	GRAB
	REPORTED										COMP
	PERMIT CONDITION										COMP
	REPORTED										COMP
	PERMIT CONDITION										COMP
NAME OF PRINCIPAL EXECUTIVE OFFICER: <u>Francisco, Lynn A.</u> MI TITLE: <u>General Manager, Public Utilities</u> DATE: <u>9/04/94</u> 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.											
NAME OF PRINCIPAL EXECUTIVE OFFICER: <u>D. Ferris</u> TITLE: <u>Principal Executive Officer</u>											

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

TITLE NAME  
City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 786-4080

COMMENTS

Refer to NON letter dated May 16, 1994 for TSS exceedances.

14 00  
10 99  
126-231 127-230 128-230  
126-231 128-231 129-231

IL 0024767  
PLUMBE NUMBER

004  
DIS

9 14 0 14 9 1  
YEAR MO DAY

TO

2 6 0 5 0 11  
YEAR MO DAY

LATITUDE LONGITUDE

PARAMETER	3-lead only (28-43)			4-lead only (28-48)			CONCENTRATION (32-41)			UNIT	FREQ. TX	PRIORITY OF ANALYSIS	SAMPLE TYPE
	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM				
Flow	REPORTED	0	3.463	5.194	MGD						3/30	EST	
Oil	PLUMBE CONDITION										1/7	EST	
	REPORTED						8.0	8.5	9.0		7/30	GRAB	
Total suspended Solids	PLUMBE CONDITION						6.0		9.0		2/7	GRAB	
	REPORTED						13	24	34	mg/l	7/30	COMP	
Oil and Grease	PLUMBE CONDITION						0.2	2	4		2/7	COMP	
	REPORTED							15	30	mg/l	2/30	GRAB	
BOD	PLUMBE CONDITION						1.8	2.0	2.2		2/30	GRAB	
	REPORTED							15	20		2/30	GRAB	
TSS	PLUMBE CONDITION										2/30	GRAB	
	REPORTED										2/30	COMP	
pH	PLUMBE CONDITION											COMP	
	REPORTED											COMP	
Temperature	PLUMBE CONDITION											COMP	
	REPORTED											COMP	

100% OF PRINCIPAL EXCLUSIVE INTEREST

NAME OF PRINCIPAL EXCLUSIVE INTEREST: Gasco, Lynn A.

TITLE OF THE OFFICIAL: General Manager, Public Utilities

DATE: 9 14 0 1 5 1 1 0

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 PRINCIPAL EXCLUSIVE INTEREST AUTHORIZED REPRESENTATIVE: D. Gasco

NATURAL POLLUTANT DISCHARGE CONCENTRATION TESTS COMMENTS

DISCHARGE MONITORING REPORT

PERMITEE NAME  
City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
PHONE (217) 786-4080

COMMENTS

Refer to NON letter dated June 13, 1994  
for pH exceedance.

11, 0024767 PERMIT NUMBER  
11, 004 INS. 004  
91 4 0 5 9 1 YEAR MO DAY  
124 251 132 223 124 751  
10  
LATITUDE 124 271 124 295 124 311  
LONGITUDE 9 4 0 6 0 1 1 YEAR MO DAY

REPORTING PERIOD FROM

132-217

PARAMETER	REPORTED PERMIT CONDITION	QUANTITY			UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		138-583 MINIMUM	144-833 AVERAGE	144-833 MAXIMUM		146-511 MINIMUM	146-511 AVERAGE	146-511 MAXIMUM			
Flow	REPORTED	5.194	5.374	5.912	MGD					1/7	EST
pH	REPORTED					7.7	8.5	9.3		1/7	EST
Total Suspended Solids	REPORTED					6	12	19		2/7	GRAB
	PERMIT CONDITION							9.0		2/7	GRAB
Oil and Grease	REPORTED					2	15	30		2/7	COMP
	PERMIT CONDITION									2/7	COMP
Boron	REPORTED					4.6	4.8	4.9		2/30	GRAB
	PERMIT CONDITION						2	2		2/30	GRAB
	REPORTED									2/30	GRAB
	PERMIT CONDITION									2/30	GRAB
	REPORTED										COMP
	PERMIT CONDITION										COMP
	REPORTED										COMP
	PERMIT CONDITION										COMP

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.

DATE 9 4 0 6 0 1 1  
YEAR MO DAY  
TITLE General Manager, Public Utilities

NAME OF PRINCIPAL EXECUTIVE OFFICER  
Francisco, Lynn A.  
MI 11, 337 0097  
WI-C 242 1779

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 Finance Administration.

NAME: SPRINGFIELD-GWP  
 ADDRESS: 27H AND MONROE STREETS  
 ENVIRONMENTAL AFFAIRS  
 SPRINGFIELD  
 SPRINGFIELD-GWP  
 SPRINGFIELD-GWP  
 SPRINGFIELD-GWP  
 GENERAL MANAGER PUBLIC UTILITIES

PERMIT NUMBER: 110024767  
 DISCHARGE NUMBER: 004 0

MONITORING PERIOD  
 YEAR: 94  
 MO: 06  
 DAY: 30  
 TO: 94  
 MO: 06  
 DAY: 30

QUANTITY OR LOADING (4 Card Only) (18-45)  
 QUANTITY OR CONCENTRATION (5 Card Only) (46-51)

FORM APPROVED: OMB No. 2040-0004  
 APPROVAL EXPIRES: 10-31-94

MAJOR (SUBR 05)  
 F - FINAL  
 ASH POND EFFLUENT

NOTE: (read instructions before completing this form)

PARAMETER (12-17)	AVERAGE (46-51)	MAXIMUM (54-61)	MINIMUM (48-45)	UNITS	AVERAGE (46-51)	MAXIMUM (54-61)	MINIMUM (48-45)	UNITS	NO. LA. (62-69)	NO. OF SAMPLES (69-70)	SAMPLE TYPE (69-70)
0400 1 0 0 EFFLUENT GROSS VALUE	*****	*****	7.4	( 12 )	*****	6.6	*****	( 12 )	0	0	W
0500 1 0 0 SOLIDS, TOTAL	*****	*****	MO MIN	MO MAX	*****	9.0	*****	MO MAX	0	0	W
0530 1 0 0 SOLIDS, SUSPENDED	*****	*****	*****	( 26 )	7.0	*****	*****	( 19 )	0	0	W
0550 1 0 0 EFFLUENT GROSS VALUE	*****	*****	*****	LBS/DY	*****	30.0	*****	DAILY MAX	0	0	W
0600 1 0 0 OIL AND GREASE	*****	*****	*****	( 26 )	*****	1.0	*****	( 19 )	0	0	W
0650 1 0 0 SOXILET EXTR. TOT.	*****	*****	*****	( 26 )	*****	20.0	*****	DAILY MAX	0	0	W
0700 1 0 0 EFFLUENT GROSS VALUE	*****	*****	*****	LBS/DY	*****	*****	*****	*****	0	0	W
0750 1 0 0 FLOW, IN CONDUIT OR	*****	*****	*****	( 03 )	*****	*****	*****	*****	0	0	W
0800 1 0 0 THRU TREATMENT PLANT	*****	*****	*****	REPORT	*****	5.912	*****	*****	0	0	W
0850 1 0 0 EFFLUENT GROSS VALUE	*****	*****	*****	DAILY MAX	*****	*****	*****	*****	0	0	W

NAME/TITLE: Lynn A. Fieby, General Manager, Public Utilities

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER: *Lynn A. Fieby*

TELEPHONE: 786-4004

DATE: 94 07 08

OFFICER OR AUTHORIZED AGENT: SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

AREA CODE: 217

NUMBER: 786-4004

COMMENTS: I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN, AND BASED ON MY KNOWLEDGE OF THESE INDIVIDUALS I BELIEVE THE INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 10 USC 1101 AND 33 USC 1319. (Penalties under these statutes may include fines up to \$100,000 and/or maximum imprisonment of between 6 months and 5 years.)

REPLACES EPA FORM 1-40 WHICH MAY NOT BE USED

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power  
 ADDRESS: Seventh & Monroe  
 PHONE: Springfield, IL 62757  
 (217) 786-4080

COMMENTS

Outfall discharged for 48 hours on  
 October 26 through October 28, 1993.

PERMIT NUMBER: IL 0024767  
 DIS: 008  
 SIC: [ ]  
 REPORTING PERIOD FROM: 9/30/93 TO 10/31/93  
 YEAR: 93 MONTH: 10 DAY: 31

PARAMETER	3-MONTH PERIOD (10-1-93)		QUARTERLY (10-1-93)		4-QUARTERLY (10-1-93)		CONCENTRATION (10-1-93)		UNIT	FREQUENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM	AVERAGE	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	AVERAGE	MAXIMUM			
Flow	0	0.046		0.72					MGD	2/30	EST
PH					7.8	7.9	8.1			1/7	EST
Total Suspended Solids					6.0	9.0	9.0			3/30	GRAVE
Oil and Grease					5	7	9			1/7	GRAVE
Total Iron					3	3	6		mg/l	2/30	CONF
Dissolved Iron					0.2	15	20		mg/l	1/7	GRAVE
					0.02	0.2	0.2		mg/l	2/30	CONF
					2.0	4.0	4.0		mg/l	1/7	CONF
					0.06	0.06	0.09		mg/l	2/30	CONF
							1		mg/l	1/7	CONF

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.

General Manager  
 Public Utilities

DATE OF REPORT EXCLUSIVE OF FEES: 9/30/93

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

DISCHARGE MONITORING REPORT

PERMITTEE NAME  
 City Water, Light & Power  
 Seventh & Monroe  
 Springfield, IL 62757  
 (217) 786-4080

COMMENTS

No discharge during this period.

PERMIT NUMBER: IL 0024767

DATE: 9/3/93 TIME: 11:01

LOCATION: 126.211 (26-29) 130-311

REPORTING PERIOD FROM: 9/3/93 TO: 9/3/93

PARAMETER	QUANTITY (100-51)		CONCENTRATION (100-51)		UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM (130-45)	MAXIMUM (130-45)	AVERAGE (130-45)	MAXIMUM (130-45)			
Flow	REPORTED						EST
pH	REPORTED					1/7	EST
	PERMITS CONDITION						
Total Suspended Solids	REPORTED		15	30	mg/l	1/7	COMP
	PERMITS CONDITION						
Oil and Grease	REPORTED		15	20	mg/l	1/7	GRAB
	PERMITS CONDITION						
Total Iron	REPORTED		2.0	4.0	mg/l	1/7	COMP
	PERMITS CONDITION						
Dissolved Iron	REPORTED			1	mg/l	1/7	COMP
	PERMITS CONDITION						
DATE OF PERMIT EXPIRES: _____							
NAME OF PUBLIC UTILITIES: General Manager, Public Utilities							
SIGNATURE OF PUBLIC UTILITIES AUTHORIZED AGENT: <i>[Signature]</i>							

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.

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 State of Illinois.

DISCHARGE MONITORING REPORT

PERMITTEE NAME: City Water, Light & Power  
 ADDRESS: Seventh & Monroe  
 Springfield, IL 62757  
 PHONE: (217) 786-4080

COMMENTS: No discharge during this period.

14-150  
 IL 0024767 PERMIT NUMBER  
 008 DIS  
 126-211 122-221 124-251  
 9 13 1 2 0 1 10 9 4 0 1 9 1  
 YEAR MO DAY YEAR MO DAY YEAR MO DAY

PARAMETER	3 year only (126-251)			QUANTITY (124-611)			UNITS	UNIT TYPE	4 year only (126-251)			CONCENTRATION (124-54)	FREQUENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM			MINIMUM	AVERAGE	MAXIMUM			
Flow	REPORTED						MGD							EST
pH	PERMIT CONDITION													EST
Total Suspended Solids	REPORTED													CRAB
Oil and Grease	PERMIT CONDITION									6.0		9.0		CRAB
Total Iron	REPORTED									15		30		COBP
Dissolved Iron	PERMIT CONDITION									15		20		CRAB
	REPORTED									2.0		4.0		COBP
	PERMIT CONDITION													COBP
	REPORTED													COBP
	PERMIT CONDITION													COBP
	REPORTED													COBP
	PERMIT CONDITION													COBP

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.

NAME OF PRINCIPAL EXECUTIVE OFFICER: Frasco, Lynn A.  
 TITLE: General Manager, Public Utilities  
 DATE: 9 4 0 1 1 4  
 YEAR MO DAY

NATIONAL POLLUTANT DISCHARGE LIMITATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

PERMITTEE NAME

City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 786-4080

COMMENTS

No discharge during this period.

IL 51 PERMIT NUMBER: IL 0024767  
 008 SEC. 120-213 122-233 124-250  
 9/4 YEAR 0/1 MO 0/1 DAY  
 10  
 9/16 YEAR 0/12 MO 0/1 DAY  
 120-213 122-233 124-250

REPORTING PERIOD FROM

PARAMETER	3 year only (120-213)		QUANTITY (120-233)		602-213		602-213		CONCENTRATION (120-250)		UNIT	FREQUENCY OF ANALYSIS	COMPLIANCE CODE
	MINIMUM	MAXIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM			
Flow	REPORTED	REPORTED											EST
pH	REPORTED	REPORTED										1/1	EST
Total Suspended Solids	REPORTED	REPORTED						6.0		9.0		1/1	GRAB
Oil and Grease	REPORTED	REPORTED								30	mg/l	1/1	COMP
Total Iron	REPORTED	REPORTED								20	mg/l	1/1	GRAB
Dissolved Iron	REPORTED	REPORTED								4.0	mg/l	1/1	GRAB
	REPORTED	REPORTED								1	mg/l	1/1	COMP
	REPORTED	REPORTED											COMP

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.

DATE: 9/16/02  
 NAME OF PUBLIC UTILITIES: General Manager, Public Utilities  
 SIGNATURE OF PUBLIC UTILITIES: [Signature]

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 treble damages.



NATIONAL POLLUTANT DISCHARGE LIMITATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

7

PERMITTEE NAME

City Water, Light & Power  
Seventh & Monroc  
Springfield, IL 62757  
(217) 786-4080

ADDRESS  
PHONE

11. 11. IL 0024767 PERMIT NUMBER  
 008 008 008  
 9 4 0 2 0 1 9 4 0 3 0 1  
 YEAR MO DAY YEAR MO DAY  
 TO

No discharge during this period.

PARAMETER	QUANTITY (14.53)			UNITS	16.7.4.1 NO. OF TX	CONCENTRATION (15.2.41)			16.4.6.1 FREQUENCY OF ANALYSIS	SAMPLE TYPE
	MINIMUM (126.45)	AVERAGE (146.52)	MAXIMUM (146.51)			MINIMUM (15.2.41)	AVERAGE (15.2.41)	MAXIMUM (15.2.41)		
Flow	REPORTED			MGD						EST
Flow	PERMIT CONDITION								1/7	EST
pH	REPORTED									GRAB
pH	PERMIT CONDITION						6.0	9.0	1/7	GRAB
Total Suspended Solids	REPORTED									COMP
Total Suspended Solids	PERMIT CONDITION						15	30	1/7	COMP
Oil and Grease	REPORTED									GRAB
Oil and Grease	PERMIT CONDITION						15	20	1/7	GRAB
Total Iron	REPORTED									COMP
Total Iron	PERMIT CONDITION						2.0	4.0	1/7	COMP
Dissolved Iron	REPORTED									COMP
Dissolved Iron	PERMIT CONDITION							1	1/7	COMP
Dissolved Iron	REPORTED									
Dissolved Iron	PERMIT CONDITION									
Dissolved Iron	REPORTED									
Dissolved Iron	PERMIT CONDITION									

NAME OF PRINCIPAL EXECUTIVE OFFICER: Frasco, Lynn A.  
 TITLE OF THE OFFICER: General Manager, Public Utilities  
 DATE: 9/4/03  
 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.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

PERMITTEE NAME:

City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 786-4080

COMMENTS

11. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

No discharge during this period

| PARAMETER              | REPORTING PERIOD FROM |                  | QUANTITY |         |         | CONCENTRATION |         |         | FREQUENCY OF ANALYSIS | SAMPLE TYPE |      |
|------------------------|-----------------------|------------------|----------|---------|---------|---------------|---------|---------|-----------------------|-------------|------|
|                        | 11. 12.               | 13. 14.          | 15. 16.  | 17. 18. | 19. 20. | 21. 22.       | 23. 24. | 25. 26. |                       |             |      |
| Flow                   | REPORTED              | PERMIT CONDITION | MINIMUM  | AVERAGE | MAXIMUM | MINIMUM       | AVERAGE | MAXIMUM | UNITS                 | 1/7         | EST  |
| pH                     | REPORTED              | PERMIT CONDITION | MINIMUM  | AVERAGE | MAXIMUM | MINIMUM       | AVERAGE | MAXIMUM | UNITS                 | 1/7         | EST  |
| Total Suspended Solids | REPORTED              | PERMIT CONDITION | MINIMUM  | AVERAGE | MAXIMUM | MINIMUM       | AVERAGE | MAXIMUM | UNITS                 | 1/7         | GRAB |
| Oil and Grease         | REPORTED              | PERMIT CONDITION | MINIMUM  | AVERAGE | MAXIMUM | MINIMUM       | AVERAGE | MAXIMUM | UNITS                 | 1/7         | GRAB |
| Total Iron             | REPORTED              | PERMIT CONDITION | MINIMUM  | AVERAGE | MAXIMUM | MINIMUM       | AVERAGE | MAXIMUM | UNITS                 | 1/7         | COMP |
| Dissolved Iron         | REPORTED              | PERMIT CONDITION | MINIMUM  | AVERAGE | MAXIMUM | MINIMUM       | AVERAGE | MAXIMUM | UNITS                 | 1/7         | COMP |

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.

DATE: 04/04/15  
TITLE: General Manager, Public Utilities  
NAME: Frasco, Lynn A.  
FIRST MI

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 per year.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

WASTE NAME

City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 786-4080

COMMENTS

Total and Dissolved Iron were not analyzed due to lab error.

Discharge was operational less than 8 hours on April 12, 1994

PLANT NUMBER: IL 0024767  
 REPORTING PERIOD FROM: 9/14 014 011 TO: 9/14 015 011  
 (YEAR MONTH DAY) (YEAR MONTH DAY)

LATITUDE: [ ] LONGITUDE: [ ]  
 (28-23) (28-29) (26-31)

| PARAMETER              | 1994 (38-45) |         |         | 1995 (38-45) |         |         | 1996 (38-45) |         |         | CONCENTRATION (S.S.) | UNITS | METHOD | FREQUENCY OF ANALYSIS | SAMPLE TYPE |
|------------------------|--------------|---------|---------|--------------|---------|---------|--------------|---------|---------|----------------------|-------|--------|-----------------------|-------------|
|                        | MINIMUM      | AVERAGE | MAXIMUM | MINIMUM      | AVERAGE | MAXIMUM | MINIMUM      | AVERAGE | MAXIMUM |                      |       |        |                       |             |
| Flow                   | 0.00         | 0.008   | 0.24    |              |         |         |              |         |         |                      |       | 1/30   | EST                   |             |
| pH                     |              |         |         |              |         |         | 6.0          | 8.05    | 9.0     |                      |       | 1/7    | EST                   |             |
| Total suspended Solids |              |         |         |              | 15      | 30      |              | 72      |         |                      | mg/l  | 1/30   | GRAB                  |             |
| Oil and Grease         |              |         |         |              | 15      | 20      |              |         |         |                      | mg/l  | 1/30   | GRAB                  |             |
| Total Iron             |              |         |         |              | 2.0     | 4.0     |              |         |         |                      | mg/l  | 1/7    | COMP                  |             |
| Dissolved Iron         |              |         |         |              |         | 1       |              |         |         |                      | mg/l  | 1/7    | COMP                  |             |

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.

NAME OF PRINCIPAL EXECUTIVE OFFICER: Franco, Lynn A.  
 TITLE: General Manager, Public Utilities  
 DATE: 9/14 015 116  
 (YEAR MONTH DAY)

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.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM COMMENTS  
DISCHARGE MONITORING REPORT

PERMITTEE NAME:

City Water, Light & Power  
Seventh & Monroe  
Springfield, IL 62757  
(217) 786-4080

COMMENTS

No discharge during this period.

17-11  
 IL 0024767 PERMIT NUMBER  
 00B DIS.  
 14 05 011  
 YEAR MONTH DAY  
 9 16 016 011  
 YEAR MONTH DAY  
 TO  
 14 05 011  
 YEAR MONTH DAY  
 14 05 011  
 YEAR MONTH DAY  
 14 05 011  
 YEAR MONTH DAY  
 14 05 011  
 YEAR MONTH DAY

REPORTING PERIOD FROM

137-328

| PARAMETER  | REPORTED PLUMT CONDITION | QUANTITY (14-6-83) |                   |                   |      | UNITS | CONCENTRATIONS (14-6-83) |                   |                   |      | FREQUENCY OF ANALYSIS   | SAMPLE TYPE |
|--|--------------------------|--------------------|-------------------|-------------------|------|-------|--------------------------|-------------------|-------------------|------|---|-------------|
|  |                          | MINIMUM (138-23)   | AVERAGE (14-6-83) | MAXIMUM (14-6-83) | DATE |       | MINIMUM (138-23)         | AVERAGE (14-6-83) | MAXIMUM (14-6-83) | DATE |   |             |
| Flow   | REPORTED PLUMT CONDITION |                    |                   |                   | MGD  |       |                          |                   |                   |      |   | EST         |
| pH   | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 6.0               |                   |      |   | EST         |
| Total Suspended Solids                                 | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 9.0               |                   |      |   | GRAB        |
| Oil and Grease   | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 30                |                   |      |   | GRAB        |
| Total Iron   | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 15                |                   |      |   | COMP        |
| Dissolved Iron   | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 15                |                   |      |   | COMP        |
|  | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 2.0               |                   |      |   | COMP        |
|  | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 4.0               |                   |      |   | COMP        |
|  | REPORTED PLUMT CONDITION |                    |                   |                   |      |       |                          | 1                 |                   |      |   | COMP        |
| NAME OF PRINCIPAL EXECUTIVE OFFICER<br>Frasco, Lynn A. |                          |                    |                   |                   |      |       |                          |                   |                   |      | SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT<br>L. Frasco |             |

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.

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 \$26,000.00 per day of violation and imprisonment.

1. FIRM NAME/ADDRESS (Include  
city name/location if different)

NAME - SPRINGFIELD CNLPR  
ADDRESS AND MONITORING STREETS  
- ENVIRONMENTAL DEPT  
- SPRINGFIELD - IL 62257  
CITY SPRINGFIELD, CNLPR  
LOCATION SPRINGFIELD - IL 62207  
TITLE: GENERAL MANAGER, PUBLIC UTIL

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
DISCHARGE MONITORING REPORT (DAIR)

PERMIT NUMBER: JL0024767  
DISCHARGE NUMBER: 0080

MONITORING PERIOD  
FROM: 04/06/01 TO: 06/30/01  
NOTE: Read instructions before completing this form.

MAJOR (SUBR 05) Form Approved.  
F - FINAL OMB No. 2040-0004  
LAKE SIDE (Approval expires 10-31-94)  
STORMWATER

| PARAMETER (12-17)  | QUANTITY OR LOADING (13-15) |                 | QUANTITY OR CONCENTRATION (14-16) |               | MAXIMUM (17-19)  | AVERAGE (16-18) | MINIMUM (15-17) | UNITS (18-19)  | NO. EX. (19-20) | SAMPLE TYPE (19-20) |
|--|-----------------------------|-----------------|-----------------------------------|---------------|------------------|-----------------|-----------------|----------------|-----------------|---------------------|
|  | AVERAGE (14-15)             | MAXIMUM (16-17) | MINIMUM (18-19)                   | UNITS (17-18) |                  |                 |                 |                |                 |                     |
| 00400 1 0 0<br>EFFLUENT GROSS VALUE<br>SOLIDS, TOTAL<br>SUSPENDED                  | XXXXXX                      | XXXXXX          | 6.0<br>MD MIN                     | XXXXXX        | 9.0<br>MD MAX    | XXXXXX          | XXXXXX          | ( 12 )         |                 |                     |
| 00530 1 0 0<br>EFFLUENT GROSS VALUE<br>OIL AND GREASE<br>(SOXHELT EXTR.) TOT.      | XXXXXX                      | XXXXXX          | XXXXXX                            | XXXXXX        | 30.0<br>DAILY MX | XXXXXX          | XXXXXX          | ML/L<br>( 17 ) |                 |                     |
| 00550 1 0 0<br>EFFLUENT GROSS VALUE<br>IRON, TOTAL<br>(AS FE)                      | XXXXXX                      | XXXXXX          | XXXXXX                            | XXXXXX        | 20.0<br>DAILY MX | XXXXXX          | XXXXXX          | ML/L<br>( 17 ) |                 |                     |
| 01045 1 0 0<br>EFFLUENT GROSS VALUE<br>IRON, DISSOLVED<br>(AS FE)                  | XXXXXX                      | XXXXXX          | XXXXXX                            | XXXXXX        | 4.0<br>DAILY MX  | XXXXXX          | XXXXXX          | ML/L<br>( 17 ) |                 |                     |
| 01046 1 0 0<br>EFFLUENT GROSS VALUE<br>FLOW, IN CONDUIT OR<br>THRU TREATMENT PLANT | XXXXXX                      | XXXXXX          | XXXXXX                            | XXXXXX        | 1.0<br>DAILY MX  | XXXXXX          | XXXXXX          | MG/L<br>( 17 ) |                 |                     |
| 00050 1 0 0<br>EFFLUENT GROSS VALUE  | XXXXXX                      | XXXXXX          | XXXXXX                            | XXXXXX        | XXXXXX           | XXXXXX          | XXXXXX          | XXXXXX         |                 |                     |

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER  
Lynn A. Frisco  
General Manager, Public Utilities

TYPED OR PRINTED

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT  
L. Frisco

AREA CODE: 317 / 864-4330  
NUMB: 117

TELEPHONE

DATE: YEAR 99, MO 07, DAY 01

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)