Metropolitan Water Reclamation District of Greater Chicago

RESEARCH AND DEVELOPMENT DEPARTMENT

REPORT NO. *08-61*

WATER AND SEDIMENT QUALITY ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING 2007

October 2008

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, Illinois 60611-2803 312-751-5600

WATER AND SEDIMENT QUALITY ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING 2007

By

Jennifer L. Wasik
Biologist II

Thomas A. Minarik Jr.
Biologist I

Research and Development Department
Louis Kollias, Director

October 2008

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF FIGURES

ACKNOWLEDGEMENT

The authors wish to acknowledge the Industrial Waste Division staff for collecting water samples along the Illinois Waterway in 2007.

For sample preparation and collection, thanks are extended to Michael Sopcak, Dustin Gallagher, Panu Lansiri, Colleen Joyce, Richard Schackart, Justin Vick, and Angel Whitington of the Aquatic Ecology and Water Quality Monitoring Section.

We are grateful to the Analytical Laboratory Division for performing sample analysis.

Our gratitude is also extended to Dr. Thomas Granato, Assistant Director of Research and Development, Environmental Monitoring and Research Division, and Dr. Samuel Dennison, Biologist IV, Environmental Monitoring and Research Division, for their review of the draft report.

Many thanks to Ms. Rhonda Griffith, Principal Office Support Specialist, for her assistance in formatting and organizing this report.

DISCLAIMER

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

SUMMARY

During May, August, and October 2007, the Metropolitan Water Reclamation District of Greater Chicago (District) conducted water quality surveys at 49 monitoring stations along a 133 nautical mile reach of the Illinois Waterway from the Lockport Lock to the Peoria Lock. Sediment quality was assessed at 14 of the monitoring stations in October. Based on results from the 2007 surveys, the following conclusions can be made concerning the water and sediment quality along the study reach:

Water Quality

During 2007, the mean concentration of total suspended solids (TSS) generally increased in the downstream direction along the Illinois Waterway from the Lockport Pool (14 mg/L) to the lower Peoria Pool (64 mg/L).

The mean concentration of five-day biochemical oxygen demand (BOD_5) remained between <2–4 mg/L throughout each of the sampled pools.

The mean dissolved oxygen (DO) concentration increased substantially along the waterway from the Lockport Pool (5.2 mg/L) to the upper Peoria Pool (8.8 mg/L). In the lower Peoria Pool, mean DO fell slightly (7.6 mg/L).

There was an increase in the mean pH from the Lockport Pool (7.3) to the lower Peoria Pool (8.4).

The mean ammonia nitrogen (NH_4-N) concentration decreased between the Lockport Pool (0.35 mg/L) and the Starved Rock Pool (0.07 mg/L), and then increased to 0.15 mg/L in the lower Peoria Pool.

There was an overall increase in the mean concentration of un-ionized ammonia (NH_3-N) between the Lockport Pool (0.005 mg/L) and the lower Peoria Pool (0.020 mg/L). This was due largely to the increase in water pH that occurs along this reach.

There was an overall decrease in mean nitrite plus nitrate nitrogen (NO_2+NO_3-N) and total nitrogen (TN) values from 5.24 and 6.63 mg/L, respectively, in the Lockport Pool to 2.22 and 3.75 mg/L, respectively, in the lower Peoria Pool.

The mean total Kjeldahl nitrogen (TKN) concentration decreased from the Lockport Pool (1.39 mg/L) to the Marseilles Pool (1.05 mg/L), and then increased to a mean of 1.53 mg/L in the lower Peoria Pool.

There was a considerable decrease in the mean total phosphorus (TP) concentration along the Illinois Waterway from the Lockport Pool (1.01 mg/L) to the lower Peoria Pool (0.51 mg/L).

Mean chlorophyll *a* concentration substantially increased along the Illinois Waterway from the Brandon Road Pool (12 µg/L) to the lower Peoria Pool (49 µg/L).

The mean concentrations of cyanide and phenols were both less than 0.003 mg/L (method detection limit) throughout the Illinois Waterway sampling reach.

After peaking in the Lockport and Brandon Road Pools, there were dramatic drops in the geometric mean density of fecal coliform (FC) and *E. coli* throughout the Dresden Island Pool. Fecal coliform and *E. coli* densities then remained fairly uniform along the Illinois Waterway. The overall decreases in FC and *E. coli* from Lockport to the lower Peoria Pool were 286 to 36 cfu/100 mL, and 24 to 17 cfu/100 mL, respectively.

Mean total concentrations of arsenic, cadmium, chromium, copper, lead, mercury, nickel, and silver remained relatively constant from the Lockport to the lower Peoria Pool. Mean total zinc was highest from the Lockport through the Dresden Pool and decreased in the Marseilles through the lower Peoria Pool. The mean total iron and manganese concentrations increased progressively downstream to the lower Peoria Pool.

The mean dissolved concentrations of arsenic, cadmium, chromium, copper, lead, mercury, nickel, and silver remained similar from the Lockport Pool downstream to the lower Peoria Pool. Mean values of dissolved manganese and zinc were highest in the Lockport through the Dresden Island Pools and then were relatively uniform downstream to the lower Peoria Pool. Mean values of dissolved iron decreased from the Lockport to the Marseilles Pool, increased in the Starved Rock Pool, and finally decreased throughout the rest of the sampling reach.

Sediment Quality

The mean total solids (TS) concentration in sediment fluctuated throughout the Illinois Waterway and was highest in the Starved Rock Pool.

The concentration of mean total volatile solids (TVS) was highest in the Lockport Pool (12 percent), decreased and remained relatively constant until a slight increase in the lower Peoria Pool (7 percent).

Mean ammonia nitrogen in sediment substantially decreased from 200 mg/kg in the Lockport Pool to 6 mg/kg in the Starved Rock Pool. Ammonia nitrogen increased again from Starved Rock to the lower Peoria Pool where the mean was 52 mg/kg.

The mean concentration of TKN in sediment decreased from the Lockport Pool (4,069 mg/kg) to the Starved Rock Pool (85 mg/kg) and increased downstream to the lower Peoria Pool (2,720 mg/kg).

Mean TP in the sediment was highest in the Lockport Pool and Dresden Island Pools (4,908 and 2,499 mg/kg, respectively), decreased along the Illinois Waterway until the lower Peoria Pool, where it increased to a mean of 1,477 mg/kg.

The mean concentration of total cyanide (TCN) in the sediment was highest in the Lockport Pool (0.959 mg/kg) and generally decreased through the Starved Rock Pool (0.004 mg/kg). There was then an increase in cyanide until the lower Peoria Pool (0.094 mg/kg).

The mean concentration of phenols in the sediment was highest in the Lockport Pool (0.813 mg/kg) and generally decreased until the lower Peoria Pool (0.090 mg/kg).

Although the concentrations of the 11 trace metals measured in the sediment were variable among the 14 monitoring stations, considerably higher levels of cadmium, chromium, copper, lead, mercury, nickel, and zinc were measured in the Lockport Pool compared to the remaining pools. Sediment from Station 8 in the Dresden Island Pool generally exhibited higher trace metal concentrations than upstream and downstream sediment sampling stations. There were also relatively elevated levels of most trace metals in the sediment from the lower Peoria Pool.

INTRODUCTION

The Illinois Waterway provides a water resource for agricultural and urban drainage, commercial and recreational navigation, electric power generation, fishing, industrial and public water supply, and other recreational activities. A principal function of this waterway is for stormwater and treated wastewater conveyance. At the upstream end of the Illinois Waterway, the District operates three major water reclamation plants (WRPs) in Cook County, Illinois, whose treated discharges make up approximately 90 percent of all point source treated wastewater flows entering the Illinois Waterway. These three WRPs provided wastewater treatment for an average flow of 1,246 million gallons per day in 2007.

The District first began monitoring the Illinois Waterway in 1977. With the exception of 1998, the District has conducted annual water quality surveys from the Lockport Lock to the Peoria Lock, a distance of 133 river miles, since 1984. Forty-nine monitoring stations in six navigational pools were selected for study. The primary purpose of the monitoring program is to assess water quality changes downstream of the District's major point source wastewater discharges. A secondary objective is to characterize the sediment chemistry at selected monitoring stations.

This report presents the results from the water and sediment quality surveys conducted during 2007. Data from previous years have been compiled in formal annual reports for 1977, 1983–1985, 1989, 1991, and 2002–2006.

DESCRIPTION OF THE STUDY AREA

Illinois Waterway

The Illinois Waterway extends from Grafton, Illinois, located on the Mississippi River upstream of St. Louis, Missouri, to Lake Michigan in Chicago, Illinois. The 327-mile waterway is composed of a series of eight navigational pools (Lockport, Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, LaGrange, and Alton) whose lengths and United States Army Corps of Engineers waterway mile-point designations are presented in Table 1.

The pools were created in the 1930s by lock and dam structures to maintain the water depths required for commercial navigation. The present study area is a 133-mile reach of the Illinois Waterway extending from the Lockport Lock to the Peoria Lock (Figures 1 and 2).

TABLE 1: ILLINOIS WATERWAY NAVIGATIONAL POOLS

Navigational Pool	Inclusive Waterway Mile-Points	Length (Miles)
Lockport	327.2 - 291.0	36.2
Brandon Road	291.0 - 286.0	5.0
Dresden Island	286.0 - 271.5	14.5
Marseilles	271.5 – 244.5	27.0
Starved Rock	244.5 - 231.0	13.5
Peoria	231.0 - 157.6	73.4
LaGrange	157.6 - 80.2	77.4
Alton	80.2 - 0.0	80.2

Monitoring Stations

Forty-nine monitoring stations were selected for the study (Figures 1 and 2). Two stations were located on the Chicago Sanitary and Ship Canal (CSSC), eight on the Des Plaines River, and 39 stations on the Illinois River. Table 2 lists the locations of the 49 monitoring stations.

FIGURE 1: MAP OF THE ILLINOIS WATERWAY FROM LOCKPORT TO MARSEILLES SHOWING SAMPLING STATIONS 1 TO 21

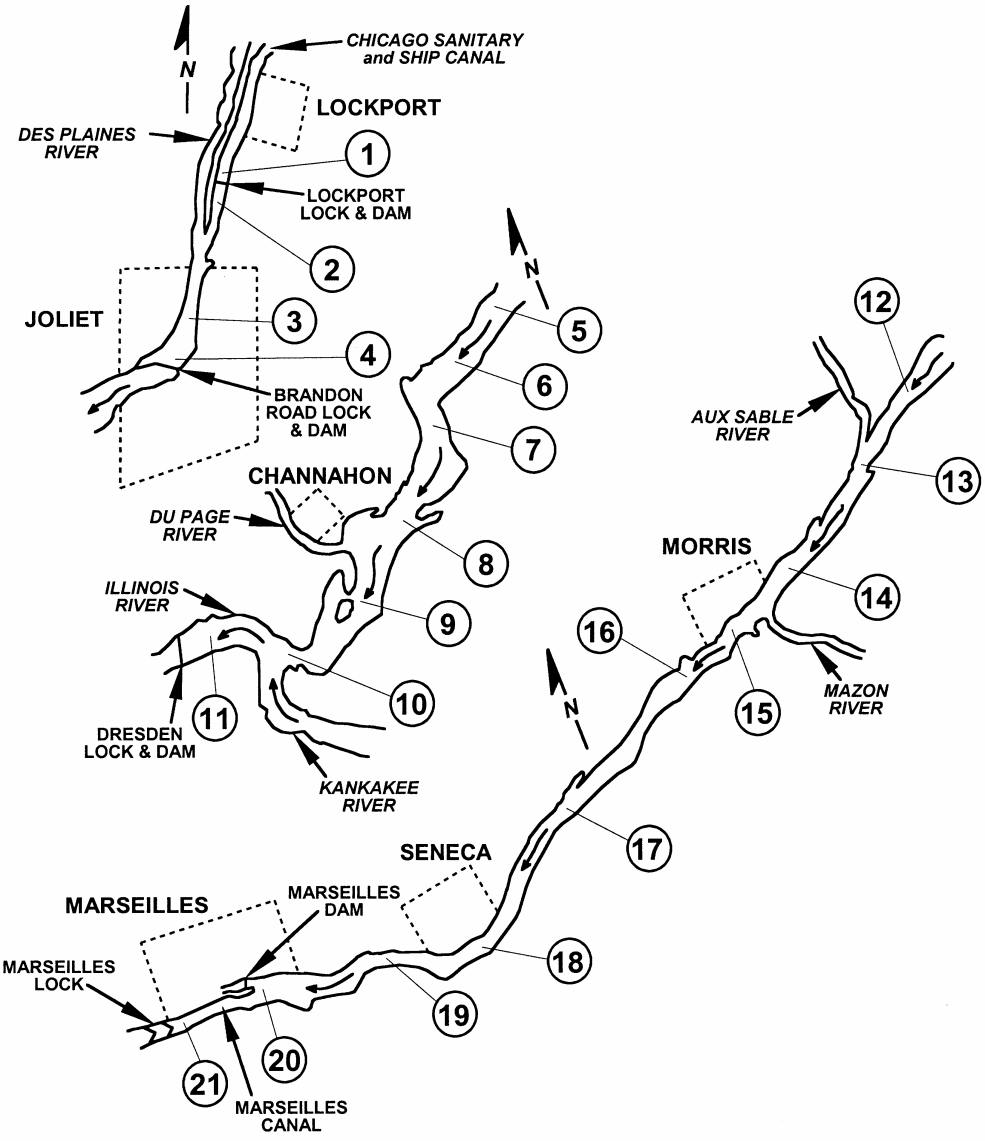

FIGURE 2: MAP OF ILLINOIS WATERWAY FROM OTTAWA TO PEORIA SHOWING SAMPLING STATIONS 22 TO 49

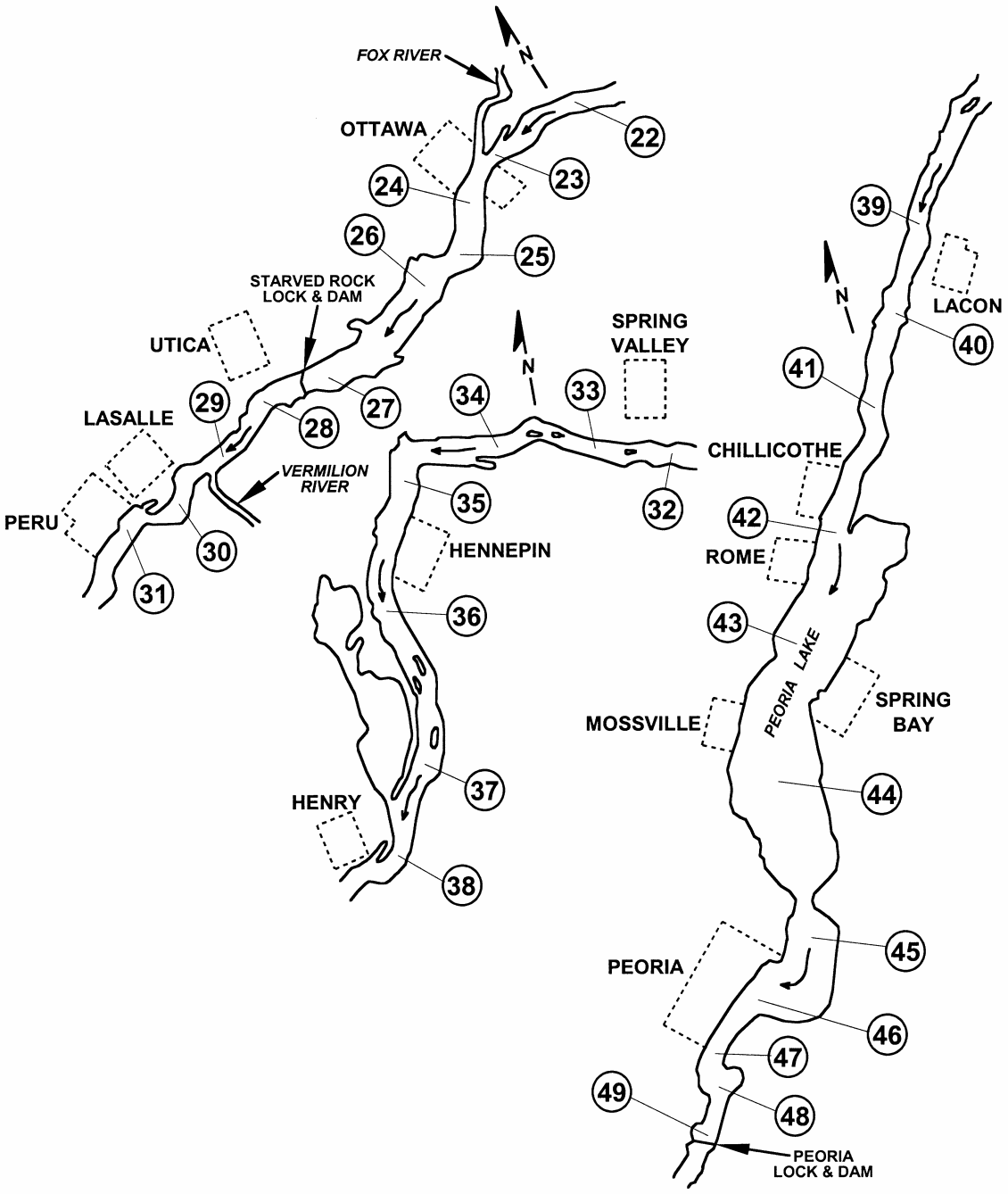

TABLE 2: MONITORING STATIONS ALONG THE ILLINOIS WATERWAY FROM LOCKPORT LOCK TO PEORIA LOCK

Station Number	Waterway	Waterway Mile-Point Location	Navigational Pool
1	Chicago Sanitary and Ship Canal	291.5	Lockport
2	Chicago Sanitary and Ship Canal	290.5	Brandon Road
3	Des Plaines River	287.3	Brandon Road
4	Des Plaines River	286.5	Brandon Road
5	Des Plaines River	285.0	Dresden Island
6	Des Plaines River	282.8	Dresden Island
7	Des Plaines River	280.5	Dresden Island
8	Des Plaines River	278.0	Dresden Island
9	Des Plaines River	276.1	Dresden Island
10	Des Plaines River	274.0	Dresden Island
11	Illinois River	272.4	Dresden Island
12	Illinois River	270.0	Marseilles
13	Illinois River	268.9	Marseilles
14	Illinois River	265.0	Marseilles
15	Illinois River	263.0	Marseilles
16	Illinois River	261.6	Marseilles
17	Illinois River	256.0	Marseilles
18	Illinois River	253.0	Marseilles
19	Illinois River	250.0	Marseilles
20	Illinois River	247.5	Marseilles
21	Illinois River	246.0	Marseilles
22	Illinois River	243.7	Starved Rock
23	Illinois River	240.6	Starved Rock
24	Illinois River	238.5	Starved Rock
25	Illinois River	236.8	Starved Rock
26	Illinois River	234.5	Starved Rock
27	Illinois River	231.7	Starved Rock

TABLE 2 (CONTINUED): MONITORING STATIONS ALONG THE ILLINOIS WATERWAY FROM LOCKPORT LOCK TO PEORIA LOCK

Station Number	Waterway	Waterway Mile-Point Location	Navigational Pool
28	Illinois River	229.6	Peoria
29	Illinois River	226.9	Peoria
30	Illinois River	224.7	Peoria
31	Illinois River	222.6	Peoria
32	Illinois River	219.8	Peoria
33	Illinois River	217.1	Peoria
34	Illinois River	213.4	Peoria
35	Illinois River	209.4	Peoria
36	Illinois River	205.0	Peoria
37	Illinois River	200.4	Peoria
38	Illinois River	196.9	Peoria
39	Illinois River	190.0	Peoria
40	Illinois River	186.4	Peoria
41	Illinois River	183.2	Peoria
42	Illinois River	179.0	Peoria
43	Illinois River	174.9	Peoria
44	Illinois River	170.9	Peoria
45	Illinois River	165.3	Peoria
46	Illinois River	162.8	Peoria
47	Illinois River	160.6	Peoria
48	Illinois River	159.4	Peoria
49	Illinois River	158.2	Peoria

MATERIALS AND METHODS

Field Monitoring and Laboratory Analysis

Water. *Chemical Constituents*. Water samples for chemical analyses were collected from the 49 monitoring stations on May 7–10, May 15–18, August 6–9, August 14–17, October 1–4, and October 9–12, 2007. Samples were collected at a depth of three feet below the water surface in the center of the waterway with a submersible drainage pump. Water samples were collected for dissolved trace metal analysis by the Environmental Monitoring and Research Division (EM&RD) personnel with an air-driven Teflon bellows pump. Samples were filtered in the field through a 0.45 µm high capacity in-line groundwater sampling capsule (Gelman Laboratory) attached to the bellows pump. Prior to sample collection, the Teflon bellows pump was flushed with one gallon of de-ionized water followed by river water for two minutes. Except for FC and *E. coli*, all water samples were transported to the Cecil Lue-Hing R&D Laboratory in iced, insulated chests within 24 hours of collection. PDC Laboratories in Peoria, Illinois, were contracted to retrieve water samples from EM&RD personnel and perform FC and *E. coli* analysis.

The constituents analyzed in water, sample containers used, and preservation methods are presented in Table 3. Water temperature, turbidity, conductivity, DO, and pH were measured in the field using a calibrated YSI Incorporated, Model 6600 water quality monitor. In the laboratory, all constituents were analyzed using procedures established by the United States Environmental Protection Agency (USEPA), except for suspended solids, five-day biochemical oxygen demand, total cyanide, total and dissolved metals, and total mercury, which are described in the 20th edition of Standard Methods for the Examination of Water and Wastewater (Standard Methods,1998). The concentration of un-ionized ammonia (NH_3-N) was calculated using the equation given by the Illinois Environmental Protection Agency in Section 302.407 of Title 35.

Bacteria. Water samples for FC and *E. coli* analyses were collected from the 49 stations on the same day and at the same time as the chemical constituents. Samples were collected with a submersible drainage pump at a depth of three feet below the water surface in the center of the waterway. The sample was poured into a sterile, 175-mL plastic bottle containing 0.3 mL of a 15 percent solution of sodium thiosulfate and 0.1 mL of a 10 percent solution of EDTA. The bacteria samples were kept cool in iced, insulated chests. The analyses were performed within 24 hours by membrane filter analysis as described in Standard Methods.

Chlorophyll a. Water samples for chlorophyll analysis were collected at 22 selected monitoring stations (2, 3, 5, 7, 10, 11, 15, 18, 20, 22, 25, 27, 28, 31, 34, 36, 38, 41, 42, 44, 45, and 48) in the same manner as described for chemical constituents. The sample was poured into a 1-liter, wide-mouth, amber plastic bottle containing 1 mg of magnesium carbonate. The water samples were stored in iced, insulated chests. In the laboratory, the water samples were analyzed for chlorophyll *a*, *b*, and *c* using methods described in Standard Methods.

TABLE 3: CONSTITUENTS ANALYZED, SAMPLE CONTAINERS, AND PRESERVATION METHODS FOR WATER SAMPLES COLLECTED FROM THE ILLINOIS WATERWAY STUDY AREA

Constituent and Abbreviation	Units of Measure	Sample Container	Preservative
Water Temperature	°C	NA	Measured in Field
Total Suspended Solids (TSS)	mg/L	Plastic	Cool, 4°C
Turbidity	NTU	NA	Measured in Field
Conductivity	µS/cm	NA	Measured in Field
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	Plastic	Cool, 4°C
Dissolved Oxygen	mg/L	NA	Measured in Field
pH	units	NA	Measured in Field
Ammonia Nitrogen (NH_4-N)	mg/L	Plastic	Cool, 4°C, H_2SO_4 to pH <2
Un-ionized Ammonia (NH_3-N)*	mg/L	---	---
Total Kjeldahl Nitrogen (TKN)	mg/L	Plastic	Cool, 4°C, H_2SO_4 to pH <2
Nitrite plus Nitrate Nitrogen (NO_2+NO_3-N)	mg/L	Plastic	Cool, 4°C, H_2SO_4 to pH <2
Total Phosphorus (TP)	mg/L	Plastic	Cool, 4°C
Chlorophyll *a*	µg/L	Plastic, Amber	Cool, 4°C, $MgCO_3$
Total Cyanide (TCN)	mg/L	Plastic	NaOH to pH 12
Phenols	mg/L	Glass	H_2SO_4 to pH <2
Total and Soluble Metals (Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver, and Zinc)	mg/L	Plastic	HNO_3 to pH <2
Fecal Coliform (FC)	cfu/100 mL	Sterile Plastic	Cool, 4°C, EDTA**, and Thiosulfate
E. coli	cfu/100 mL	Sterile Plastic	Cool, 4°C, EDTA, and Thiosulfate

NA = Not Applicable.
*Determined by calculation using water temperature, pH and NH_4-N.
**Ethylenediamine-tetraaceticacid.

Dissolved Mercury. The Method Detection Limit (MDL) for total and dissolved mercury was 0.05 µg/L during 2007 (Standard Methods). Dissolved mercury was only analyzed if the total mercury value was greater than the limit of quantitation, which was 5 times the MDL (0.25 µg/L).

Sediment. *Chemical Constituents.* Sediment samples were collected during the 2006 survey at 14 of the 49 monitoring stations (1, 2, 5, 8, 12, 18, 23, 28, 32, 35, 38, 41, 44, and 48). Over the period of October 1–4 2007, one sediment sample was taken with a 6- x 6-inch Ponar grab sampler from each of the 14 stations. The sediment sample was transferred to a wide-mouth, quart glass jar and analyzed for TS, TVS, ammonia, TKN, NO_2+NO_3-N, TP, TCN, phenols, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc. The constituents analyzed, sample containers, and preservation methods are summarized in Table 4. All constituents were analyzed according to USEPA procedures except TS, TVS, TCN, and total and soluble metals, which are from Standard Methods.

TABLE 4: CONSTITUENTS ANALYZED, SAMPLE CONTAINERS, AND PRESERVATION METHODS FOR SEDIMENT SAMPLES COLLECTED FROM THE ILLINOIS WATERWAY STUDY AREA

Constituent and Abbreviation	Units of Measure[1]	Sample Container	Preservative
Total Solids (TS)	Percent	Glass	Cool, 4°C
Total Volatile Solids (TVS)	Percent	Glass	Cool, 4°C
Ammonia Nitrogen (NH_4-N)	mg/kg	Glass	Cool, 4°C
Total Kjeldahl Nitrogen (TKN)	mg/kg	Glass	Cool, 4°C
Nitrite plus Nitrate Nitrogen (NO_2+NO_3-N)	mg/kg	Glass	Cool, 4°C
Total Phosphorus (TP)	mg/kg	Glass	Cool, 4°C
Total Cyanide (TCN)	mg/kg	Glass	Cool, 4°C
Phenols	mg/kg	Glass	Cool, 4°C
Total and Soluble Metals (Arsenic, Cadmium, Chromium Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver, and Zinc)	mg/kg	Glass	Cool, 4°C

[1]Expressed on a dry weight basis.

RESULTS AND DISCUSSION

Water Quality

Water quality in lotic ecosystems can be evaluated by assessing a combination of biological, chemical, and physical parameters, including bacterial levels, the concentrations of dissolved gases, dissolved and suspended inorganic and organic compounds, nutrients, water temperature, and rate of flow. Methods for measuring the biological and chemical constituents and the physical properties of water are well defined, and they have considerable precision. While sediment data can reflect long-term conditions, water samples are indicative of the water quality only at the time of monitoring.

In order to describe water quality in the Illinois Waterway, the 133-mile study area was divided by navigational pool:

1. Lockport (Station 1).

2. Brandon Road (Stations 2–4).

3. Dresden Island (Stations 5–11).

4. Marseilles (Stations 12–21).

5. Starved Rock (Stations 22–27).

6. Peoria, upper Peoria (Stations 28–41), and lower Peoria (Stations 42–49).

The Peoria Pool was subdivided based on geo-morphological differences between the upper and lower reaches.

The concentrations of the 38 constituents measured at each of the 49 monitoring stations, including calculated values for NH_3-N and TN, are presented in Appendices AI through AVII. The water quality data for selected parameters are summarized by navigational pool in Table 5. When the analytical result was less than the MDL, the MDL value was used to calculate the mean.

Dissolved mercury data are not reported in the tables or appendices because the analysis was not performed on these samples during 2007. Dissolved mercury is only analyzed if the total mercury value exceeds the limit of quantitation designated by the reporting laboratory.

TABLE 5: SUMMARY OF WATER QUALITY FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Lockport	Water Temperature (°C)[b]	22.9 – 31.3	27.3
	TSS	10 – 17	14
	Turbidity (NTU)[b]	10 – 37	16
	Conductivity (µS/cm)[b]	716 – 1,276	911
	BOD_5	<2 – 3	<2
	Dissolved Oxygen (DO)[b]	4.2 – 7.7	5.2
	pH (units)[b]	7.1 – 7.3	7.3
	NH_4-N	0.19 – 0.67	0.35
	NH_3-N	0.003 – 0.010	0.005
	TKN	1.05 – 2.11	1.39
	NO_2+NO_3-N	3.73 – 7.24	5.24
	TN	4.78 – 8.34	6.63
	TP	0.71 – 1.70	1.01
	Chlorophyll *a* (µg/L)	No Data	No Data
	Total Cyanide	<0.003 – 0.003	<0.003
	Total Cyanide	<0.003 – 0.003	<0.003
	FC (cfu/100 mL)	80 – 3,100	286[c]
	E. coli (cfu/100 mL)	<10 – 130	24[c]
Brandon Road	Water Temperature (°C)[b]	20.6 – 31.4	25.9
	TSS	8 – 31	16
	Turbidity (NTU)[b]	7 – 42	18
	Conductivity (µS/cm)[b]	722 – 1,275	934
	BOD_5	<2 – 4	3
	Dissolved Oxygen (DO)[b]	4.3 – 7.7	5.6
	pH (units)[b]	7.1 – 7.6	7.4
	NH_4-N	0.15 – 0.47	0.27
	NH_3-N	0.002 – 0.006	0.004
	TKN	1.01 – 1.88	1.33
	NO_2+NO_3-N	3.97 – 6.97	5.14
	TN	5.11 – 8.17	6.47
	TP	0.51 – 1.61	0.98
	Chlorophyll *a* (µg/L)	3 – 30	12
	Total Cyanide	<0.003 – 0.003	<0.003
	Phenols	<0.003 – 0.004	<0.003
	FC (cfu/100 mL)	<10 – 2,300	270[c]
	E. coli (cfu/100 mL)	<10 – 180	36[c]

TABLE 5 (CONTINUED): SUMMARY OF WATER QUALITY FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Dresden Island	Water Temperature (°C)[b]	18.4 – 32.1	25.3
	TSS	7 – 55	17
	Turbidity (NTU)[b]	9 – 54	22
	Conductivity (µS/cm)[b]	758 – 1,271	972
	BOD_5	<2 – 5	3
	Dissolved Oxygen (DO)[b]	4.7 – 11.0	7.3
	pH (units)[b]	7.4 – 8.1	7.7
	NH_4-N	0.06 – 0.46	0.18
	NH_3-N	0.002 – 0.011	0.005
	TKN	0.30 – 1.82	1.20
	NO_2+NO_3-N	3.33 – 7.23	4.91
	TN	4.28 – 8.45	6.12
	TP	0.34 – 1.34	0.90
	Chlorophyll *a* (µg/L)	4 – 29	14
	Total Cyanide	<0.003 – 0.003	<0.003
	Phenols	<0.003 – 0.003	<0.003
	FC (cfu/100 mL)	<10 – 9,000	207[c]
	E. coli (cfu/100 mL)	<10 – 160	27[c]
Marseilles	Water Temperature (°C)[b]	18.2 – 31.5	24.0
	TSS	9 – 371	29
	Turbidity (NTU)[b]	8 – 213	27
	Conductivity (µS/cm)[b]	751 – 989	825
	BOD_5	<2 – 5	3
	Dissolved Oxygen (DO)[b]	6.7 – 10.3	8.3
	pH (units)[b]	7.4 – 8.4	8.1
	NH_4-N	<0.02 – 0.38	0.09
	NH_3-N	<0.001 – 0.028	0.005
	TKN	0.63 – 1.84	1.05
	NO_2+NO_3-N	2.03 – 4.52	3.41
	TN	2.83 – 5.58	4.45
	TP	0.21 – 1.13	0.58
	Chlorophyll *a* (µg/L)	9 – 37	20
	Total Cyanide	<0.003 – 0.003	<0.003
	Phenols	<0.003 – 0.003	<0.003
	FC (cfu/100 mL)	<10 – 2,500	65[c]
	E. coli (cfu/100 mL)	<10 – 40	12[c]

TABLE 5 (CONTINUED): SUMMARY OF WATER QUALITY FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Starved Rock	Water Temperature (°C)[b]	18.9 – 31.5	23.7
	TSS	8 – 48	25
	Turbidity (NTU)[b]	9 – 49	25
	Conductivity (µS/cm)[b]	739 – 959	823
	BOD_5	<2 – 6	3
	Dissolved Oxygen (DO)[b]	6.5 – 13.3	9.2
	pH (units)[b]	6.9 – 8.8	8.3
	NH_4-N	<0.02 – 0.28	0.07
	NH_3-N	<0.001 – 0.030	0.006
	TKN	0.66 – 1.77	1.17
	NO_2+NO_3-N	1.51 – 3.87	2.96
	TN	2.72 – 5.27	4.13
	TP	0.22 – 0.86	0.50
	Chlorophyll *a* (µg/L)	14 – 88	46
	Total Cyanide	<0.003 – <0.003	<0.003
	Phenols	<0.003 – 0.003	<0.003
	FC (cfu/100 mL)	<10 – 1,500	83[c]
	E. coli (cfu/100 mL)	<10 – 80	17[c]
Upper Peoria	Water Temperature (°C)[b]	19.1 – 30.4	23.8
	TSS	12 – 83	39
	Turbidity (NTU)[b]	15 – 88	39
	Conductivity (µS/cm)[b]	723 – 906	796
	BOD_5	<2 – 7	4
	Dissolved Oxygen (DO)[b]	5.8 – 13.3	8.8
	pH (units)[b]	8.1 – 8.8	8.5
	NH_4-N	<0.02 – 0.29	0.10
	NH_3-N	0.001 – 0.045	0.014
	TKN	0.95 – 2.09	1.41
	NO_2+NO_3-N	1.53 – 4.89	2.75
	TN	2.58 – 6.01	4.16
	TP	0.17 – 0.76	0.43
	Chlorophyll *a* (µg/L)	25 – 131	56
	Total Cyanide	<0.003 – 0.005	<0.003
	Phenols	<0.003 – 0.003	<0.003
	FC (cfu/100 mL)	<10 – 480	44[c]
	E. coli (cfu/100 mL)	<10 – 200	18[c]

TABLE 5 (CONTINUED): SUMMARY OF WATER QUALITY FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Lower Peoria	Water Temperature (°C)[b]	19.6 – 30.1	24.1
	TSS	31 – 178	64
	Turbidity (NTU)[b]	28 – 179	73
	Conductivity (µS/cm)[b]	720 – 878	770
	BOD_5	<2 – 6	4
	Dissolved Oxygen (DO)[b]	4.6 – 12.1	7.6
	pH (units)[b]	8.1 – 8.6	8.4
	NH_4-N	0.04 – 0.35	0.15
	NH_3-N	0.004 – 0.048	0.020
	TKN	1.17 – 2.79	1.53
	NO_2+NO_3-N	0.06 – 4.88	2.22
	TN	1.29 – 6.82	3.75
	TP	0.19 – 1.55	0.51
	Chlorophyll *a* (µg/L)	22 – 177	49
	Total Cyanide	<0.003 – <0.003	<0.003
	Phenols	<0.003 – 0.003	<0.003
	FC (cfu/100 mL)	<10 – 19,000	36[c]
	E. coli (cfu/100 mL)	<10 – 350	17[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

Spatial Variability Along the Illinois Waterway. *Total Suspended Solids*. As shown in Figure 3, TSS generally increased in concentration from Lockport to the Peoria Pool. The increase in TSS along the Illinois Waterway may be related to an increase in agricultural runoff. There was a sharp increase in mean TSS at Station 21 in the Marseilles Pool due to elevated concentrations during the first week of May and October. An increase of this magnitude at Station 21 has not been observed in previous years.

Dissolved Oxygen. DO concentration trends along the Illinois Waterway are shown in Figure 4. The dramatic increase in DO between Stations 4 and 5 is directly attributable to the natural re-aeration resulting from water passing over the Brandon Road Dam. The mean DO concentration along the Illinois Waterway remained above 7.0 mg/L below the Dresden Island Lock and Dam to the end of the sampling reach.

Ammonia Nitrogen. Ammonia nitrogen rapidly decreased in the Brandon Road and Dresden Island Pools (Figure 5). Mean NH_4-N remained relatively uniform from Marseilles to the upper Peoria Pool, where it increased slightly.

Total Nitrogen. As shown in Figure 6, there was a general decrease in TN concentration from the Lockport Pool to the upper Peoria Pool. Sediment deposition may be responsible for reduced TN in the water column along the Illinois Waterway. The sharp decrease in TN between Stations 10 and 12 may be attributable to the confluence of the Kankakee River with the Des Plaines River.

Total Phosphorus. Mean concentrations of TP generally decreased along the Illinois Waterway from the Lockport Pool through the upper Peoria Pool, and then increased in the lower Peoria Pool, as shown in Figure 7. Sediment deposition may be responsible for reduced TP in the water column along the Illinois Waterway. The sharp decrease in TP between Stations 10 and 12 may be attributable to the confluence of the Kankakee River with the Des Plaines River.

Fecal Coliform. Geometric mean FC peaked in the Dresden Island Pool, decreased drastically downstream of this peak, and then remained rather uniform along the Illinois Waterway into the Peoria Pool (Figure 8). FC sharply increased in the lower Peoria Pool at Station 47, consistent with previous years' data.

Trace Metals. Mean total concentrations of arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc remained relatively constant from the Lockport to the lower Peoria Pool (Table 6). The mean total iron and manganese concentrations increased progressively downstream to the lower Peoria Pool.

FIGURE 3: MEAN TOTAL SUSPENDED SOLIDS CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2007

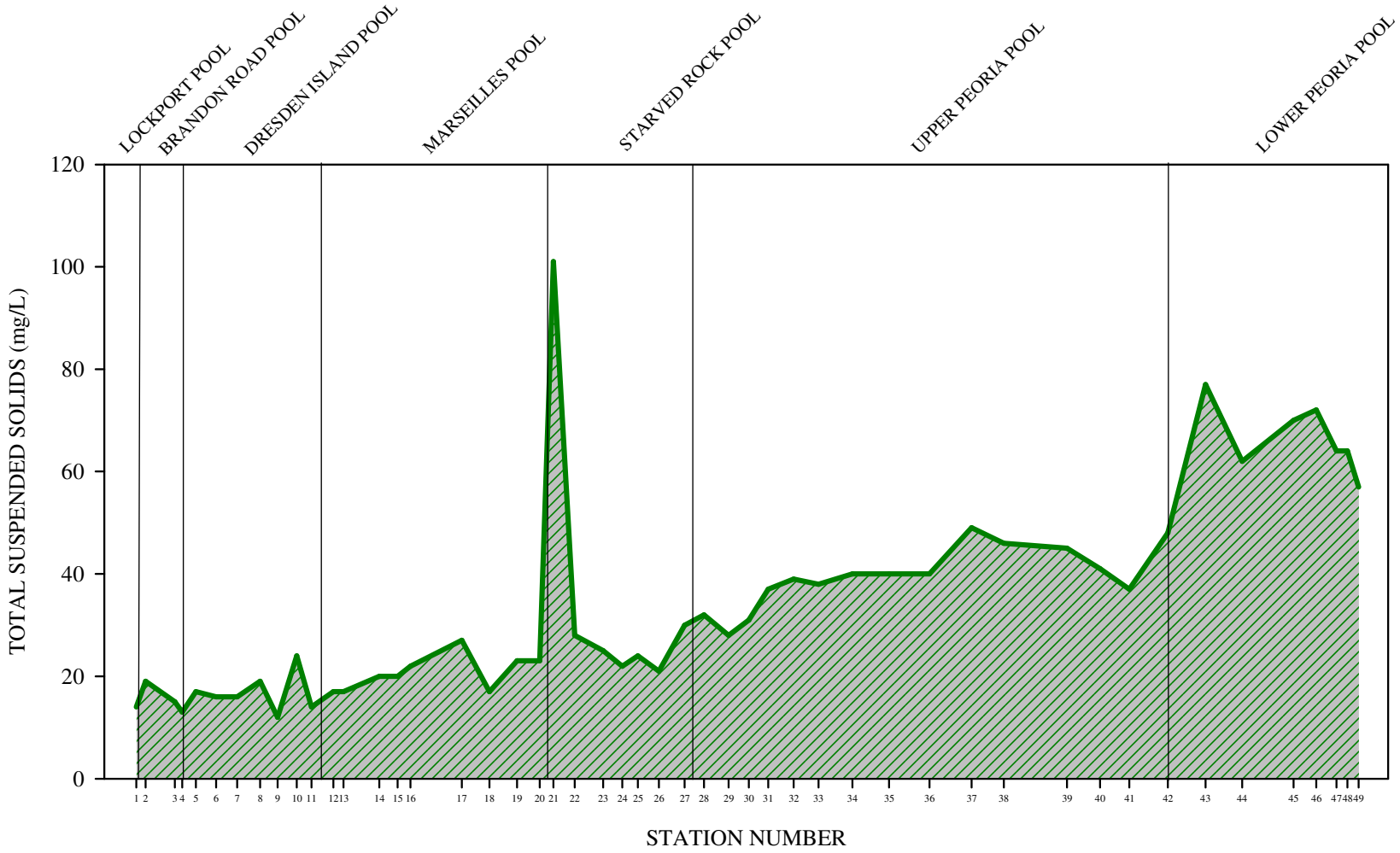

FIGURE 4: MEAN DISSOLVED OXYGEN CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2007

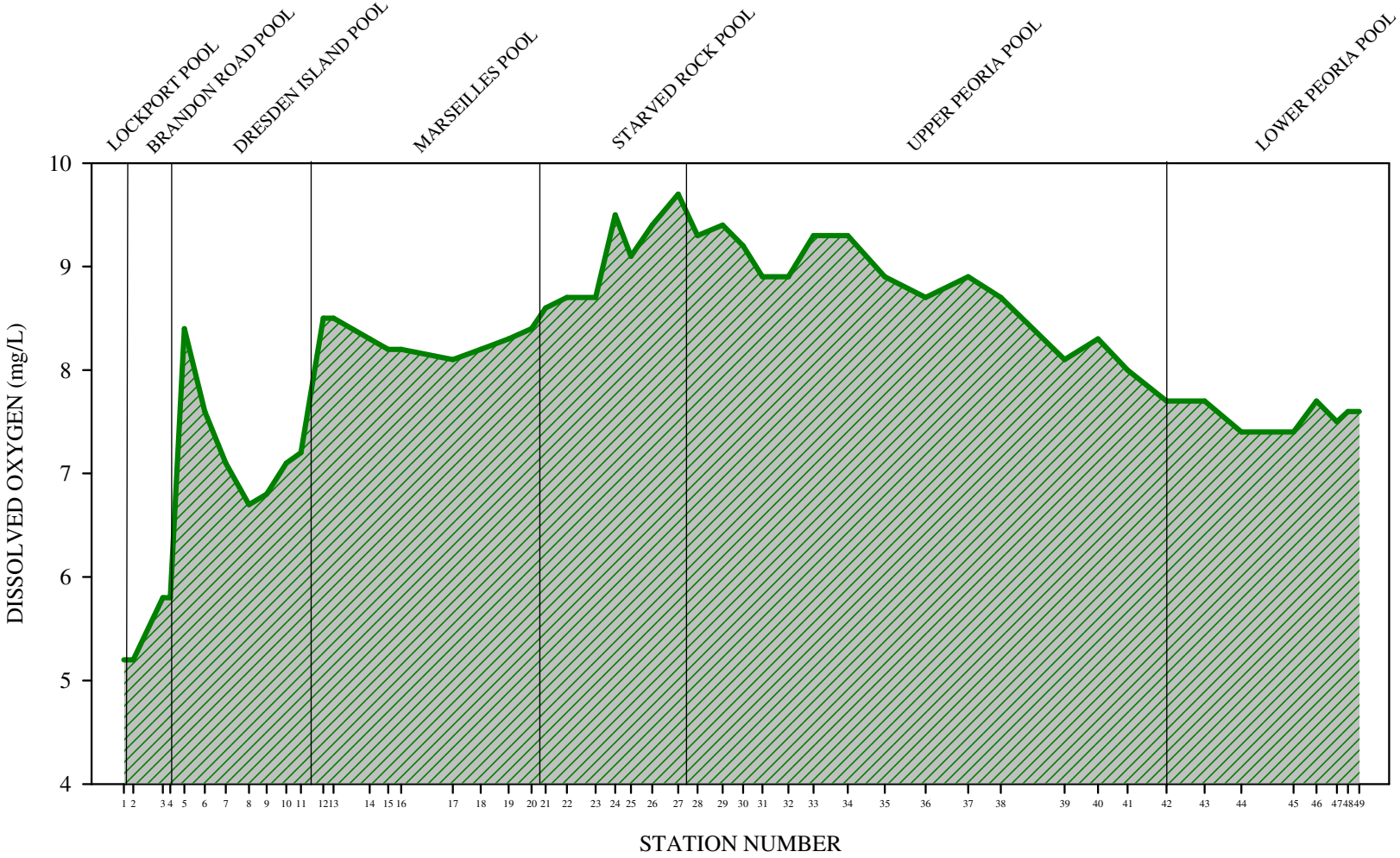

FIGURE 5: MEAN AMMONIA NITROGEN CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2007

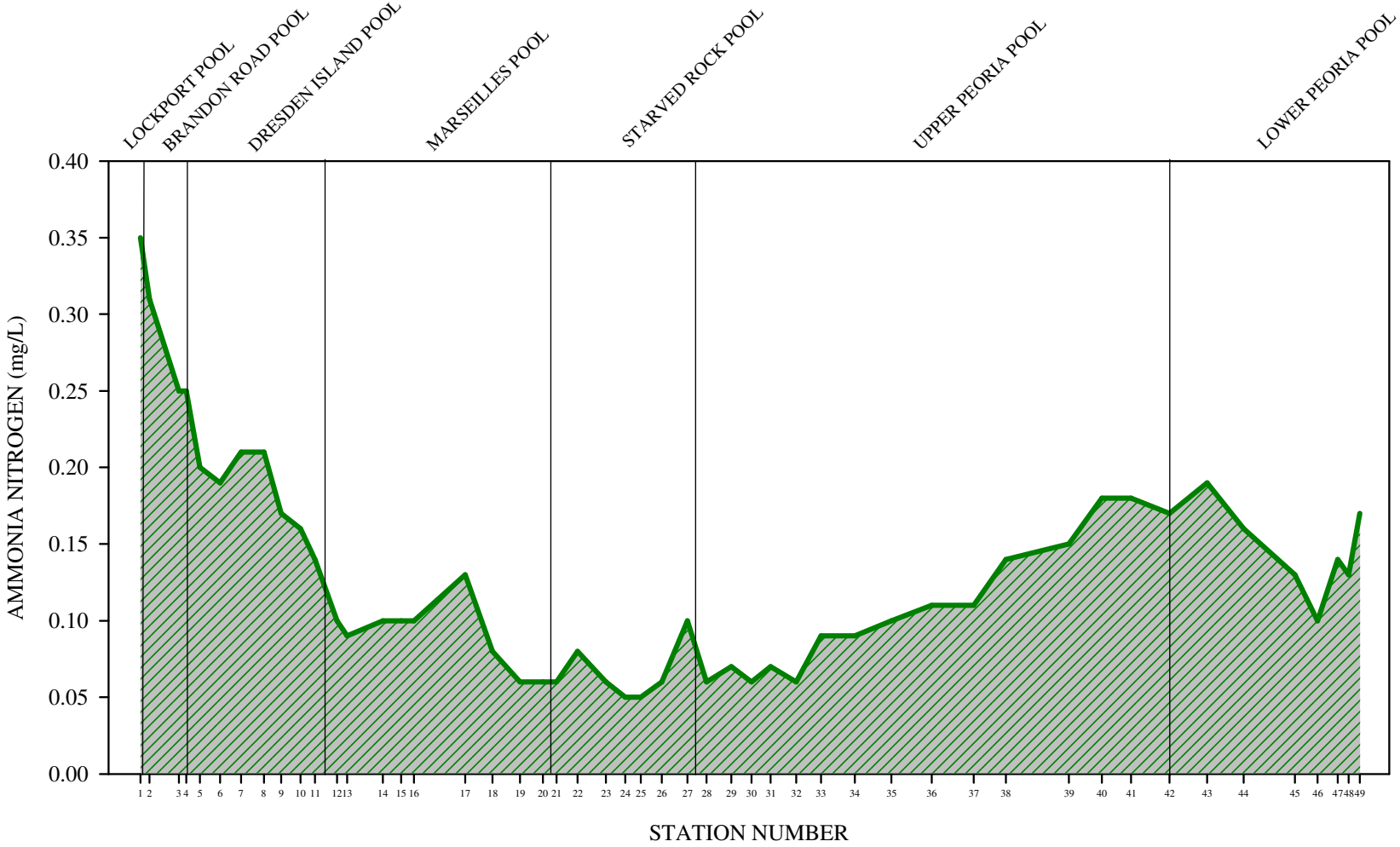

FIGURE 6: MEAN TOTAL NITROGEN CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2007

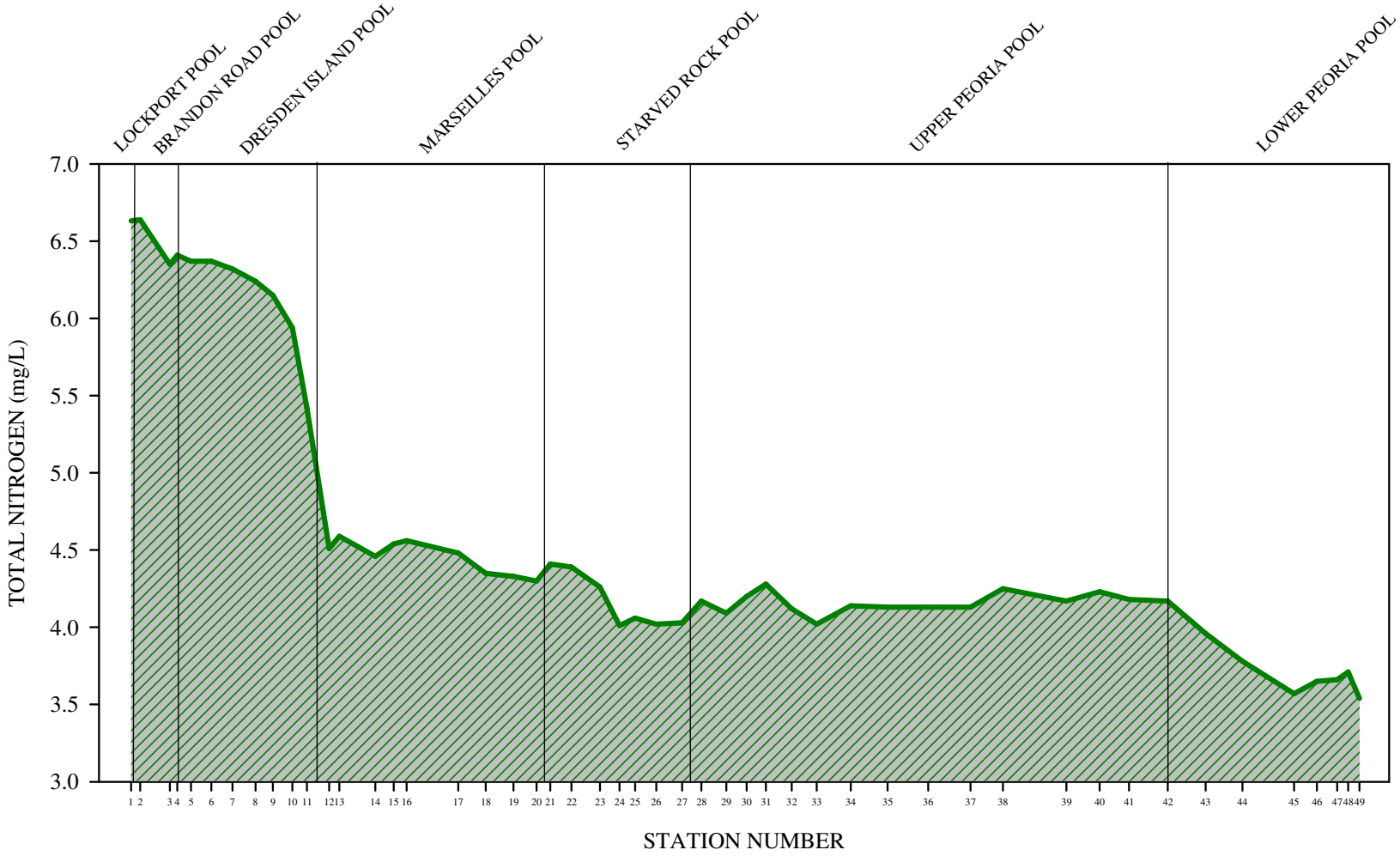

FIGURE 7: MEAN TOTAL PHOSPHORUS CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2007

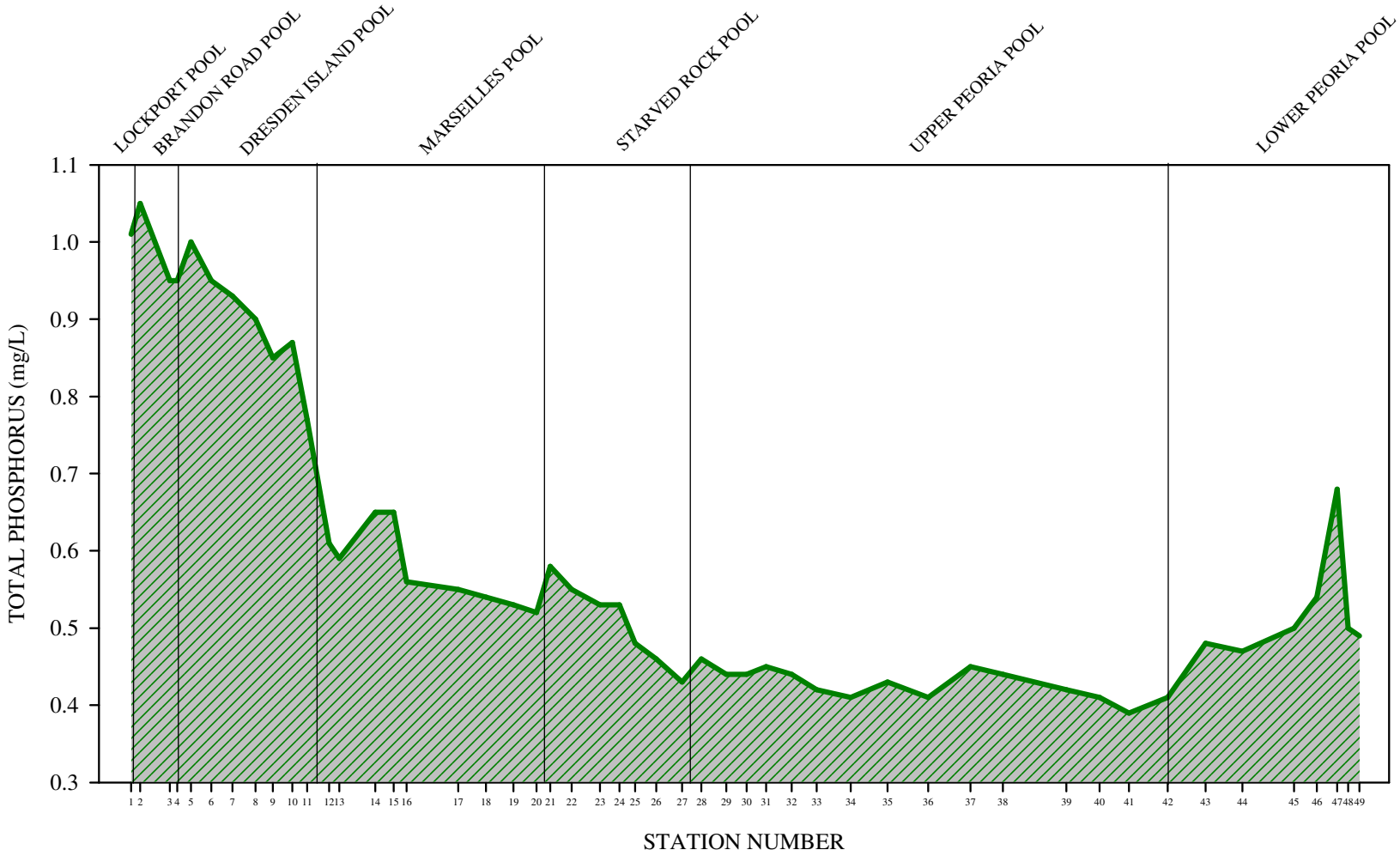

FIGURE 8: GEOMETRIC MEAN FECAL COLIFORM AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2007

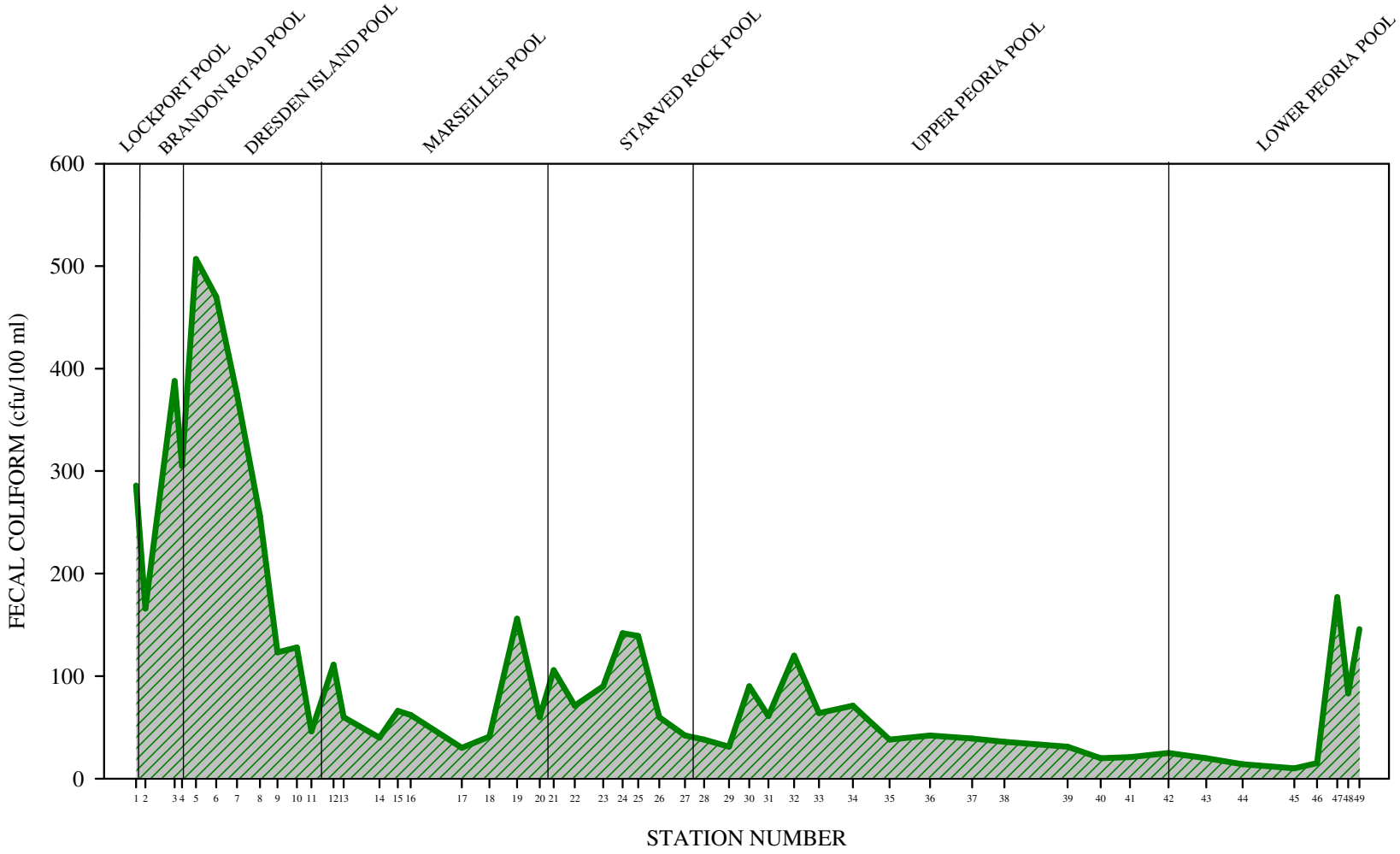

TABLE 6: SUMMARY OF METALS CONCENTRATIONS FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Lockport	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	<0.01 – 0.01	0.01
	Total Cadmium	All values <0.002	<0.002
	Dissolved Cadmium	<0.0004 – 0.0008	0.0005
	Total Chromium	0.0006 – 0.0036	0.0021
	Dissolved Chromium	<0.0005 – 0.0011	0.0008
	Total Copper	0.003 – 0.005	0.004
	Dissolved Copper	<0.002 – 0.002	0.002
	Total Iron	0.37 – 0.53	0.44
	Dissolved Iron	0.013 – 0.026	0.020
	Total Lead	<0.003 – 0.007	0.005
	Dissolved Lead	All values <0.004	<0.004
	Total Manganese	0.0211 – 0.0442	0.0342
	Dissolved Manganese	0.0127 – 0.0330	0.0218
	Total Mercury (µg/L)	<0.05 – 0.05	0.05
	Total Nickel	0.003 – 0.006	0.005
	Dissolved Nickel	0.0021 – 0.0040	0.0033
	Total Silver	<0.0006 – 0.0006	0.0006
	Dissolved Silver	All values <0.0006	<0.0006
	Total Zinc	0.028 – 0.040	0.034
	Dissolved Zinc	0.014 – 0.018	0.016
Brandon Road	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	All values <0.01	<0.01
	Total Cadmium	All values <0.002	<0.002
	Dissolved Cadmium	<0.0004 – 0.0008	0.0005
	Total Chromium	<0.0005 – 0.0048	0.0023
	Dissolved Chromium	<0.0005 – 0.0012	0.0008
	Total Copper	0.002 – 0.008	0.004
	Dissolved Copper	<0.002 – 0.002	0.002
	Total Iron	0.21 – 0.92	0.48
	Dissolved Iron	0.009 – 0.054	0.023
	Total Lead	<0.003 – 0.010	0.005
	Dissolved Lead	<0.004 – 0.005	0.004
	Total Manganese	0.0245 – 0.0452	0.0336
	Dissolved Manganese	0.0098 – 0.0394	0.0205
	Total Mercury (µg/L)	<0.05 – 0.07	0.05

TABLE 6 (CONTINUED): SUMMARY OF METALS CONCENTRATIONS FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Brandon Road (Continued)	Total Nickel	0.003 – 0.006	0.005
	Dissolved Nickel	0.0017 – 0.0043	0.0032
	Total Silver	All values <0.0006	<0.0006
	Dissolved Silver	All values <0.0006	<0.0006
	Total Zinc	0.022 – 0.055	0.032
	Dissolved Zinc	0.014 – 0.023	0.017
Dresden Island	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	All values <0.01	<0.01
	Total Cadmium	All values <0.002	<0.002
	Dissolved Cadmium	<0.0004 – 0.0008	0.0005
	Total Chromium	<0.0005 – 0.0174	0.0031
	Dissolved Chromium	<0.0005 – 0.0130	0.0015
	Total Copper	0.002 – 0.010	0.004
	Dissolved Copper	<0.002 – 0.002	0.002
	Total Iron	0.20 – 1.66	0.50
	Dissolved Iron	0.005 – 0.048	0.019
	Total Lead	<0.003 – 0.009	0.004
	Dissolved Lead	<0.004 – 0.005	0.004
	Total Manganese	0.0213 – 0.0529	0.0322
	Dissolved Manganese	0.0021 – 0.0239	0.0102
	Total Mercury (µg/L)	<0.05 – 0.09	0.05
	Total Nickel	0.002 – 0.006	0.005
	Dissolved Nickel	0.0017 – 0.0046	0.0031
	Total Silver	All values <0.0006	<0.0006
	Dissolved Silver	All values <0.0006	<0.0006
	Total Zinc	0.014 – 0.062	0.030
	Dissolved Zinc	0.008 – 0.019	0.013
Marseilles	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	All values <0.01	<0.01
	Total Cadmium	All values <0.002	<0.002
	Dissolved Cadmium	<0.0004 – 0.0009	0.0005
	Total Chromium	<0.0005 – 0.0128	0.0019
	Dissolved Chromium	<0.0005 – 0.0015	0.0008
	Total Copper	<0.002 – 0.014	0.003

TABLE 6 (CONTINUED): SUMMARY OF METALS CONCENTRATIONS FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Marseilles (Continued)	Dissolved Copper	<0.002 – 0.003	0.002
	Total Iron	0.29 – 6.66	0.78
	Dissolved Iron	<0.004 – 0.043	0.013
	Total Lead	<0.003 – 0.018	0.004
	Dissolved Lead	<0.004 – 0.005	0.004
	Total Manganese	0.0223 – 0.2120	0.0485
	Dissolved Manganese	0.0006 – 0.0090	0.0029
	Total Mercury (µg/L)	<0.05 – 0.10	0.05
	Total Nickel	<0.002 – 0.010	0.003
	Dissolved Nickel	0.0006 – 0.0035	0.0016
	Total Silver	All values <0.0006	<0.0006
	Dissolved Silver	All values <0.0006	<0.0006
	Total Zinc	0.011 – 0.093	0.022
	Dissolved Zinc	0.003 – 0.018	0.009
Starved Rock	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	All values <0.01	<0.01
	Total Cadmium	All values <0.002	<0.002
	Dissolved Cadmium	<0.0004 – 0.0010	0.0005
	Total Chromium	<0.0005 – 0.0037	0.0013
	Dissolved Chromium	<0.0005 – 0.0010	0.0007
	Total Copper	<0.002 – 0.004	0.002
	Dissolved Copper	<0.002 – 0.002	0.002
	Total Iron	0.20 – 1.31	0.60
	Dissolved Iron	<0.004 – 0.020	0.010
	Total Lead	<0.003 – 0.006	0.003
	Dissolved Lead	<0.004 – 0.005	0.004
	Total Manganese	0.0223 – 0.0799	0.0434
	Dissolved Manganese	<0.0002 – 0.0040	0.0017
	Total Mercury (µg/L)	<0.05 – 0.55	0.07
	Total Nickel	<0.002 – 0.005	0.003
	Dissolved Nickel	<0.0004 – 0.0032	0.0013
	Total Silver	All values <0.0006	<0.0006

TABLE 6 (CONTINUED): SUMMARY OF METALS CONCENTRATIONS FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Starved Rock (Continued)	Dissolved Silver	All values <0.0006	<0.0006
	Total Zinc	0.011 – 0.051	0.018
	Dissolved Zinc	0.003 – 0.014	0.008
Upper Peoria	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	All values <0.01	<0.01
	Total Cadmium	<0.002 – 0.008	0.002
	Dissolved Cadmium	<0.0004 – 0.0017	0.0005
	Total Chromium	<0.0005 – 0.0782	0.0030
	Dissolved Chromium	<0.0005 – 0.0025	0.0007
	Total Copper	<0.002 – 0.007	0.003
	Dissolved Copper	<0.002 – 0.003	0.002
	Total Iron	0.30 – 2.46	1.01
	Dissolved Iron	0.004 – 0.115	0.014
	Total Lead	<0.003 – 0.030	0.004
	Dissolved Lead	<0.004 – 0.006	0.004
	Total Manganese	0.0358 – 0.1157	0.0615
	Dissolved Manganese	0.0008 – 0.0135	0.0026
	Total Mercury (µg/L)	<0.05 – 0.11	0.05
	Total Nickel	<0.002 – 0.048	0.004
	Dissolved Nickel	<0.0004 – 0.0030	0.0012
	Total Silver	All values <0.0006	<0.0006
	Dissolved Silver	All values <0.0006	<0.0006
	Total Zinc	0.008 – 0.053	0.022
	Dissolved Zinc	0.003 – 0.037	0.008
Lower Peoria	Total Arsenic	All values <0.02	<0.02
	Dissolved Arsenic	All values <0.01	<0.01
	Total Cadmium	All values <0.002	<0.002
	Dissolved Cadmium	<0.0004 – 0.0011	0.0005
	Total Chromium	0.0006 – 0.0075	0.0031
	Dissolved Chromium	<0.0005 – 0.0011	0.0006
	Total Copper	0.002 – 0.007	0.004
	Dissolved Copper	<0.002 – 0.003	0.002
	Total Iron	0.58 – 3.79	1.95
	Dissolved Iron	<0.004 – 0.088	0.020

TABLE 6 (CONTINUED): SUMMARY OF METALS CONCENTRATIONS FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, MAY, AUGUST, AND OCTOBER 2007

Navigational Pool	Constituents[a]	Range	Average
Lower Peoria (Continued)	Total Lead	<0.003 – 0.007	0.004
	Dissolved Lead	<0.004 – 0.005	0.004
	Total Manganese	0.0485 – 0.1733	0.1065
	Dissolved Manganese	<0.0002 – 0.0173	0.0040
	Total Mercury (µg/L)	<0.05 – 0.13	0.06
	Total Nickel	<0.002 – 0.007	0.004
	Dissolved Nickel	<0.0004 – 0.0028	0.0013
	Total Silver	<0.0006 – 0.0009	0.0006
	Dissolved Silver	<0.0006 – 0.0007	0.0006
	Total Zinc	0.011 – 0.044	0.027
	Dissolved Zinc	<0.002 – 0.023	0.007

[a]Expressed in mg/L except where noted.

The mean dissolved concentrations of arsenic, cadmium, chromium, copper, iron, lead, and silver remained fairly uniform from the Lockport Pool downstream to the lower Peoria Pool (Table 6). Mean values of dissolved nickel, manganese, and zinc were highest in the Lockport through the Dresden Island Pools and then were relatively uniform downstream to the lower Peoria Pool.

Waterway Use Designations

The Illinois Pollution Control Board (IPCB) has designated water uses for particular waters within the State of Illinois. The CSSC and the Des Plaines River from its confluence with the CSSC to the Interstate Highway 55 (I-55) bridge are classified as Secondary Contact and Indigenous Aquatic Life waters (Stations 1–8). All other waters in Illinois are designated as General Use. The Des Plaines River downstream of the I-55 bridge (Station 9) and the Illinois River are General Use waters (Stations 10–49).

Water Quality Standards. *Dissolved Oxygen*. The General Use and Secondary Contact Use Standards for DO are 5.0 and 4.0 mg/L, respectively. The Secondary Contact Standard was consistently achieved during each of the sampling periods. The only DO concentrations measured below the General Use Standard were on May 18 and August 9 at stations 9 and 43, respectively. The concentrations were within 0.2 mg/L of the standard.

Fecal Coliform. During the first week of August sampling, FC exceeded the General Use Standard of 400 cfu/100 mL at Stations 9, 10, 19, 20, 23, 24, and 34. The FC concentrations ranged from 420 to 520 cfu/100 mL. During the second week of August sampling, FC measured 580 cfu/100 mL at Station 11 in the Dresden Island Pool. During the first week of October, FC concentrations were above the standard at Stations 10, 12, 13, 19, 21, 22, and 32. The FC violations ranged from 480–2,500 cfu/100 mL.

Total Mercury. The Water Quality Standard for the Protection of Human Health for total mercury in General Use waters is 0.012 µg/L. Total mercury was detected 45 times when the concentration equaled or exceeded the MDL of 0.05 µg/L during 2007. The total mercury values for the remaining stations and dates were less than the MDL, so it is not known whether they actually exceeded the Human Health Standard for mercury.

Sediment Quality

Sediment quality can considerably impact overlying water quality, benthic community structure, food chain dynamics, and other elements of freshwater ecosystems. Since sediment acts as a reservoir for persistent or bioaccumulative contaminants, sediment data reflects a long-term record of quality.

The concentrations of the eight general chemistry constituents measured in sediment at each of the 14 selected monitoring stations are presented in Table 7. Sediment from Lockport

TABLE 7: CHEMICAL CHARACTERISTICS OF SEDIMENT COLLECTED FROM MONITORING STATIONS IN THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, OCTOBER 2007

Station No.	Navigational Pool	Constituents (Expressed on a dry weight basis)							
		Total Solids (%)	Total Volatile Solids (% of Total)	Ammonia Nitrogen (mg/kg)	Total Kjeldahl Nitrogen (mg/kg)	Nitrite + Nitrate Nitrogen (mg/kg)	Total Phos-phorus (mg/kg)	Total Cyanide (mg/kg)	Phenols (mg/kg)
1	Lockport	34	12	200	4,069	16	4,908	0.959	0.813
2	Brandon Road	71	6	5	473	3	919	0.074	0.159
5	Dresden Island	72	4	10	614	6	1,554	0.475	0.039
8	Dresden Island	38	10	79	3,832	15	3,444	0.246	0.159
12	Marseilles	71	3	5	397	4	889	0.056	0.035
18	Marseilles	67	4	12	1,394	6	553	0.029	0.257
23	Starved Rock	79	1	6	85	2	101	0.004	0.046
28	Peoria	73	2	7	567	3	361	0.052	0.138
32	Peoria	78	2	3	200	2	212	0.018	0.057
35	Peoria	69	3	8	819	5	573	0.080	0.025
38	Peoria	57	4	44	1,471	5	957	0.034	0.081
41	Peoria	48	6	38	2,254	5	1,564	0.108	0.083
44	Peoria	42	7	46	2,737	9	1,610	0.103	0.093
48	Peoria	38	7	58	2,703	11	1,344	0.084	0.087

station contained the highest level of each of these constituents, except for total solids. Contaminant concentrations were consistently lowest in the Starved Rock Pool and upstream stations of the upper Peoria Pool. TVS, NH_3-N, TKN-N, NO_3+NO_2-N, and TP concentrations all increased in the lower Peoria Pool.

The concentrations of 11 measured trace metals for the same 14 selected stations are presented in Table 8. Arsenic and silver concentrations were below the method detection limits at all of the sediment sampling stations. Besides iron and manganese, all of the constituents were highest in the Lockport Pool. Relatively higher trace metals concentrations were detected in sediment from Stations 8 (Dresden Island Pool), 44, and 48 (lower Peoria Pool), compared to proximate sediment sampling locations

TABLE 8: TRACE METALS IN SEDIMENT COLLECTED FROM MONITORING STATIONS IN THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY, OCTOBER 2007

Station No.	Navigational Pool	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
		(mg/kg dry weight)										
1	Lockport	<5	10.5	145	161	29,868	196	526	0.981	41.5	<0.2	821
2	Brandon Road	<5	1.1	24	78	16,637	46	295	0.106	23.9	<0.2	138
5	Dresden Island	<5	1.8	30	26	15,588	31	231	0.159	17.7	<0.2	148
8	Dresden Island	<5	5.7	84	104	35,195	103	530	0.851	34.7	<0.2	474
12	Marseilles	<5	0.6	17	8	9,962	19	390	0.082	9.2	<0.2	71
18	Marseilles	<5	<0.4	22	12	14,401	14	355	0.136	11.8	<0.2	63
23	Starved Rock	<5	<0.4	7	4	5,413	9	140	0.014	7.4	<0.2	40
28	Peoria	<5	0.4	10	7	6,824	11	202	0.053	6.2	<0.2	43
32	Peoria	<5	0.4	10	5	8,000	10	199	0.037	8.5	<0.2	68
35	Peoria	<5	0.6	17	9	13,322	11	397	0.045	13.0	<0.2	73
38	Peoria	<5	0.8	20	14	12,606	17	383	0.152	11.4	<0.2	113
41	Peoria	<5	1.2	27	22	16,095	26	471	0.336	16.3	<0.2	135
44	Peoria	<5	2.1	40	37	22,229	33	546	0.324	22.6	<0.2	192
48	Peoria	<5	1.4	42	39	23,034	30	559	0.223	26.4	<0.2	177

APPENDIX AI

WATER QUALITY AT STATION 1 IN THE LOCKPORT POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AI-1: WATER QUALITY AT STATION 1 IN THE CHICAGO SANITARY AND SHIP CANAL MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	22.9[b]	31.3[b]	27.3
Total Suspended Solids	10	17	14
Turbidity (NTU)	10[b]	37[b]	16
Conductivity (µS/cm)	716[b]	1,276[b]	911
Five-Day Biochemical Oxygen Demand	<2	3	<2
Dissolved Oxygen	4.2[b]	7.7[b]	5.2
pH (units)	7.1[b]	7.3[b]	7.3
Ammonia Nitrogen	0.19	0.67	0.35
Un-ionized Ammonia	0.003	0.010	0.005
Total Kjeldahl Nitrogen	1.05	2.11	1.39
Nitrite plus Nitrate Nitrogen	3.73	7.24	5.24
Total Nitrogen	4.78	8.34	6.63
Total Phosphorus	0.71	1.70	1.01
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	0.01	0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0006	0.0036	0.0021
Dissolved Chromium	<0.0005	0.0011	0.0008
Total Copper	0.003	0.005	0.004
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.37	0.53	0.44
Dissolved Iron	0.013	0.026	0.020
Total Lead	<0.003	0.007	0.005
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0211	0.0442	0.0342
Dissolved Manganese	0.0127	0.0330	0.0218
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	0.003	0.006	0.005
Dissolved Nickel	0.0021	0.0040	0.0033
Total Silver	<0.0006	0.0006	0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.028	0.040	0.034
Dissolved Zinc	0.014	0.018	0.016
Fecal Coliform (cfu/100 mL)	80	3,100	286[c]
E.coli (cfu/100 mL)	<10	130	24[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

APPENDIX AII

WATER QUALITY AT STATIONS 2–4 IN THE BRANDON ROAD POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AII-1: WATER QUALITY AT STATION 2 IN THE CHICAGO SANITARY AND SHIP CANAL MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	22.8[b]	31.4[b]	27.3
Total Suspended Solids	12	31	19
Turbidity (NTU)	13[b]	42[b]	20
Conductivity (µS/cm)	722[b]	1,275[b]	910
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	4.3[b]	6.9[b]	5.2
pH (units)	7.1[b]	7.4[b]	7.3
Ammonia Nitrogen	0.17	0.47	0.31
Un-ionized Ammonia	0.003	0.006	0.004
Total Kjeldahl Nitrogen	1.09	1.88	1.40
Nitrite plus Nitrate Nitrogen	3.97	6.97	5.24
Total Nitrogen	5.11	8.17	6.64
Total Phosphorus	0.74	1.61	1.05
Chlorophyll *a* (µg/L)	3	23	10
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0008	0.0048	0.0028
Dissolved Chromium	<0.0005	0.0012	0.0009
Total Copper	0.003	0.008	0.005
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.42	0.92	0.58
Dissolved Iron	0.013	0.029	0.020
Total Lead	<0.003	0.007	0.005
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0245	0.0420	0.0333
Dissolved Manganese	0.0136	0.0394	0.0245
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.003	0.006	0.005
Dissolved Nickel	0.0017	0.0043	0.0032
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.029	0.055	0.037
Dissolved Zinc	0.016	0.023	0.018
Fecal Coliform (cfu/100 mL)	20	1,400	166[c]
E. coli (cfu/100 mL)	<10	70	19[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AII-2: WATER QUALITY AT STATION 3 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.6[b]	31.1[b]	25.4
Total Suspended Solids	12	18	15
Turbidity (NTU)	7[b]	39[b]	17
Conductivity (µS/cm)	767[b]	1,260[b]	943
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	4.7[b]	7.7[b]	5.8
pH (units)	7.2[b]	7.6[b]	7.4
Ammonia Nitrogen	0.15	0.31	0.25
Un-ionized Ammonia	0.003	0.005	0.004
Total Kjeldahl Nitrogen	1.01	1.81	1.30
Nitrite plus Nitrate Nitrogen	3.99	6.68	5.05
Total Nitrogen	5.11	7.96	6.35
Total Phosphorus	0.54	1.36	0.95
Chlorophyll *a* (µg/L)	3	30	13
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	0.004	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0010	0.0039	0.0021
Dissolved Chromium	0.0005	0.0011	0.0008
Total Copper	0.003	0.006	0.004
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.29	0.55	0.45
Dissolved Iron	0.009	0.024	0.018
Total Lead	<0.003	0.007	0.004
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0254	0.0452	0.0347
Dissolved Manganese	0.0098	0.0287	0.0175
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.004	0.005	0.004
Dissolved Nickel	0.0018	0.0041	0.0032
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.027	0.035	0.030
Dissolved Zinc	0.014	0.018	0.016
Fecal Coliform (cfu/100 mL)	70	2,300	388[c]
E. coli (cfu/100 mL)	20	180	56[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AII-3 WATER QUALITY AT STATION 4 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	21.0[b]	30.7[b]	25.0
Total Suspended Solids	8	18	13
Turbidity (NTU)	9[b]	38[b]	17
Conductivity (µS/cm)	773[b]	1,247[b]	949
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	4.4[b]	7.4[b]	5.8
pH (units)	7.2[b]	7.6[b]	7.4
Ammonia Nitrogen	0.15	0.32	0.25
Un-ionized Ammonia	0.002	0.006	0.004
Total Kjeldahl Nitrogen	1.06	1.56	1.28
Nitrite plus Nitrate Nitrogen	4.06	6.85	5.12
Total Nitrogen	5.23	8.13	6.41
Total Phosphorus	0.51	1.38	0.95
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	<0.0005	0.0039	0.0020
Dissolved Chromium	0.0005	0.0011	0.0008
Total Copper	0.002	0.005	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.21	0.68	0.41
Dissolved Iron	0.015	0.054	0.032
Total Lead	<0.003	0.010	0.005
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0264	0.0425	0.0329
Dissolved Manganese	0.0122	0.0293	0.0196
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	0.004	0.006	0.005
Dissolved Nickel	0.0018	0.0043	0.0032
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.022	0.037	0.029
Dissolved Zinc	0.014	0.021	0.017
Fecal Coliform (cfu/100 mL)	<10	2,000	305[c]
E. coli (cfu/100 mL)	<10	90	43[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

APPENDIX AIII

WATER QUALITY AT STATIONS 5–11 IN THE DRESDEN ISLAND POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AIII-1: WATER QUALITY AT STATION 5 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.4[b]	30.3[b]	24.2
Total Suspended Solids	11	36	17
Turbidity (NTU)	9[b]	54[b]	23
Conductivity (µS/cm)	809[b]	1,271[b]	996
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	7.0[b]	11.0[b]	8.4
pH (units)	7.4[b]	8.0[b]	7.7
Ammonia Nitrogen	0.10	0.34	0.20
Un-ionized Ammonia	0.003	0.007	0.005
Total Kjeldahl Nitrogen	1.07	1.51	1.23
Nitrite plus Nitrate Nitrogen	4.14	7.11	5.14
Total Nitrogen	5.38	8.28	6.37
Total Phosphorus	0.53	1.34	1.00
Chlorophyll *a* (µg/L)	5	29	14
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0006	0.0005
Total Chromium	0.0005	0.0050	0.0028
Dissolved Chromium	0.0006	0.0012	0.0008
Total Copper	0.003	0.007	0.005
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.20	1.09	0.56
Dissolved Iron	0.018	0.034	0.022
Total Lead	<0.003	0.008	0.005
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0266	0.0449	0.0343
Dissolved Manganese	0.0093	0.0225	0.0157
Total Mercury (µg/L)	<0.05	0.09	0.06
Total Nickel	0.003	0.006	0.005
Dissolved Nickel	0.0023	0.0044	0.0033
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.021	0.047	0.036
Dissolved Zinc	0.013	0.019	0.015
Fecal Coliform (cfu/100 mL)	180	1,400	507[c]
E. coli (cfu/100 mL)	10	130	30[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIII-2: WATER QUALITY AT STATION 6 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	22.9[b]	32.1[b]	26.8
Total Suspended Solids	10	22	16
Turbidity (NTU)	12[b]	44[b]	22
Conductivity (µS/cm)	790[b]	1,239[b]	985
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	6.5[b]	10.4[b]	7.6
pH (units)	7.5[b]	7.9[b]	7.7
Ammonia Nitrogen	0.10	0.28	0.19
Un-ionized Ammonia	0.003	0.009	0.006
Total Kjeldahl Nitrogen	1.10	1.55	1.25
Nitrite plus Nitrate Nitrogen	3.78	7.23	5.13
Total Nitrogen	5.18	8.35	6.37
Total Phosphorus	0.53	1.24	0.95
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	0.0007	0.0065	0.0026
Dissolved Chromium	0.0007	0.0029	0.0012
Total Copper	0.003	0.008	0.005
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.23	0.59	0.44
Dissolved Iron	0.017	0.023	0.021
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0247	0.0373	0.0303
Dissolved Manganese	0.0077	0.0211	0.0135
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	0.003	0.006	0.005
Dissolved Nickel	0.0023	0.0046	0.0033
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.024	0.035	0.030
Dissolved Zinc	0.011	0.018	0.014
Fecal Coliform (cfu/100 mL)	180	1,300	470[c]
E. coli (cfu/100 mL)	30	150	65[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIII-3: WATER QUALITY AT STATION 7 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.9[b]	31.7[b]	26.3
Total Suspended Solids	11	21	16
Turbidity (NTU)	11[b]	40[b]	21
Conductivity (µS/cm)	761[b]	1,227[b]	977
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	5.7[b]	9.4[b]	7.1
pH (units)	7.5[b]	7.8[b]	7.6
Ammonia Nitrogen	0.10	0.39	0.21
Un-ionized Ammonia	0.003	0.007	0.005
Total Kjeldahl Nitrogen	1.00	1.68	1.25
Nitrite plus Nitrate Nitrogen	3.71	7.20	5.07
Total Nitrogen	5.04	8.45	6.32
Total Phosphorus	0.52	1.27	0.93
Chlorophyll *a* (µg/L)	4	25	12
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	0.0008	0.0149	0.0042
Dissolved Chromium	0.0007	0.0110	0.0026
Total Copper	0.003	0.005	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.36	0.71	0.52
Dissolved Iron	0.010	0.024	0.019
Total Lead	<0.003	0.009	0.005
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0263	0.0437	0.0324
Dissolved Manganese	0.0031	0.0239	0.0112
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	0.003	0.006	0.004
Dissolved Nickel	0.0023	0.0041	0.0032
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.022	0.042	0.030
Dissolved Zinc	0.011	0.017	0.013
Fecal Coliform (cfu/100 mL)	30	9,000	375[c]
E. coli (cfu/100 mL)	50	160	78[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIII-4: WATER QUALITY AT STATION 8 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.4[b]	31.3[b]	25.7
Total Suspended Solids	10	38	19
Turbidity (NTU)	13[b]	37[b]	23
Conductivity (µS/cm)	758[b]	1,217[b]	971
Five-Day Biochemical Oxygen Demand	<2	5	3
Dissolved Oxygen	4.7[b]	9.0[b]	6.7
pH (units)	7.4[b]	7.7[b]	7.6
Ammonia Nitrogen	0.10	0.46	0.21
Un-ionized Ammonia	0.004	0.010	0.005
Total Kjeldahl Nitrogen	0.91	1.82	1.23
Nitrite plus Nitrate Nitrogen	3.71	7.07	5.01
Total Nitrogen	4.76	8.21	6.24
Total Phosphorus	0.54	1.21	0.90
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0009	0.0174	0.0045
Dissolved Chromium	0.0006	0.0130	0.0029
Total Copper	0.003	0.005	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.42	0.63	0.51
Dissolved Iron	0.009	0.025	0.016
Total Lead	<0.003	0.008	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0233	0.0529	0.0336
Dissolved Manganese	0.0029	0.0230	0.0093
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.003	0.006	0.005
Dissolved Nickel	0.0024	0.0041	0.0032
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.022	0.035	0.030
Dissolved Zinc	0.010	0.017	0.014
Fecal Coliform (cfu/100 mL)	40	9,000	256[c]
E. coli (cfu/100 mL)	10	130	40[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIII-5: WATER QUALITY AT STATION 9 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.5[b]	32.0[b]	24.9
Total Suspended Solids	7	20	12
Turbidity (NTU)	10[b]	36[b]	18
Conductivity (µS/cm)	768[b]	1,215[b]	977
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	4.8[b]	9.6[b]	6.8
pH (units)	7.5[b]	7.9[b]	7.7
Ammonia Nitrogen	0.06	0.32	0.17
Un-ionized Ammonia	0.002	0.009	0.005
Total Kjeldahl Nitrogen	0.97	1.69	1.20
Nitrite plus Nitrate Nitrogen	3.67	6.85	4.96
Total Nitrogen	4.66	7.90	6.15
Total Phosphorus	0.50	1.18	0.85
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	<0.0005	0.0055	0.0021
Dissolved Chromium	0.0006	0.0038	0.0013
Total Copper	0.002	0.004	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.31	0.43	0.37
Dissolved Iron	0.012	0.032	0.017
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0213	0.0424	0.0278
Dissolved Manganese	0.0042	0.0191	0.0083
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	0.003	0.005	0.004
Dissolved Nickel	0.0022	0.0044	0.0031
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.020	0.030	0.025
Dissolved Zinc	0.010	0.017	0.013
Fecal Coliform (cfu/100 mL)	10	520	123[c]
E. coli (cfu/100 ml)	10	50	17[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIII-6: WATER QUALITY AT STATION 10 IN THE DES PLAINES RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.2[b]	31.1[b]	25.0
Total Suspended Solids	8	55	24
Turbidity (NTU)	17[b]	39[b]	26
Conductivity (µS/cm)	799[b]	1,206[b]	979
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	5.6[b]	9.1[b]	7.1
pH (units)	7.5[b]	8.0[b]	7.8
Ammonia Nitrogen	0.11	0.24	0.16
Un-ionized Ammonia	0.004	0.010	0.006
Total Kjeldahl Nitrogen	0.99	1.51	1.24
Nitrite plus Nitrate Nitrogen	3.37	5.92	4.70
Total Nitrogen	4.36	7.03	5.94
Total Phosphorus	0.49	1.25	0.87
Chlorophyll *a* (µg/L)	10	27	14
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0006	0.0005
Total Chromium	0.0011	0.0078	0.0035
Dissolved Chromium	<0.0005	0.0031	0.0012
Total Copper	0.003	0.010	0.005
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.36	1.66	0.68
Dissolved Iron	0.006	0.048	0.021
Total Lead	<0.003	0.007	0.005
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0266	0.0526	0.0356
Dissolved Manganese	0.0037	0.0121	0.0075
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.003	0.006	0.005
Dissolved Nickel	0.0021	0.0039	0.0030
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.020	0.062	0.034
Dissolved Zinc	0.009	0.017	0.013
Fecal Coliform (cfu/100 mL)	20	550	128[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIII-7: WATER QUALITY AT STATION 11 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.4[b]	30.8[b]	24.2
Total Suspended Solids	9	19	14
Turbidity (NTU)	12[b]	38[b]	21
Conductivity (µS/cm)	800[b]	1,128[b]	916
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	5.8[b]	9.0[b]	7.2
pH (units)	7.5[b]	8.1[b]	7.9
Ammonia Nitrogen	0.09	0.23	0.14
Un-ionized Ammonia	0.004	0.011	0.006
Total Kjeldahl Nitrogen	0.30	1.55	1.02
Nitrite plus Nitrate Nitrogen	3.33	5.39	4.40
Total Nitrogen	4.28	6.11	5.42
Total Phosphorus	0.34	1.08	0.77
Chlorophyll *a* (µg/L)	8	25	14
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0009	0.0029	0.0018
Dissolved Chromium	0.0005	0.0010	0.0007
Total Copper	0.002	0.004	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.30	0.57	0.43
Dissolved Iron	0.005	0.023	0.013
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0254	0.0428	0.0316
Dissolved Manganese	0.0021	0.0085	0.0058
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.002	0.006	0.004
Dissolved Nickel	0.0017	0.0035	0.0026
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.014	0.036	0.027
Dissolved Zinc	0.008	0.017	0.012
Fecal Coliform (cfu/100 mL)	<10	580	46[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

APPENDIX AIV

WATER QUALITY AT STATIONS 12–21 IN THE MARSEILLES POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AIV-1: WATER QUALITY AT STATION 12 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.6[b]	31.5[b]	24.0
Total Suspended Solids	10	25	17
Turbidity (NTU)	15[b]	42[b]	23
Conductivity (µS/cm)	785[b]	907[b]	824
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	7.2[b]	9.9[b]	8.5
pH (units)	7.4[b]	8.3[b]	8.0
Ammonia Nitrogen	0.050	0.18	0.10
Un-ionized Ammonia	0.002	0.007	0.005
Total Kjeldahl Nitrogen	0.65	1.32	0.95
Nitrite plus Nitrate Nitrogen	2.77	4.50	3.56
Total Nitrogen	3.59	5.52	4.51
Total Phosphorus	0.25	1.02	0.61
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0007	0.0027	0.0017
Dissolved Chromium	<0.0005	0.0010	0.0007
Total Copper	0.002	0.003	0.002
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.48	0.75	0.56
Dissolved Iron	0.007	0.023	0.016
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0292	0.0512	0.0400
Dissolved Manganese	0.0024	0.0090	0.0050
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	0.0007	0.0034	0.0017
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.012	0.032	0.022
Dissolved Zinc	0.006	0.013	0.010
Fecal Coliform (cfu/100 mL)	20	2,500	111[c]
E. coli (cfu/100 mL)	<10	<10	<10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-2: WATER QUALITY AT STATION 13 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.7[b]	31.4[b]	24.0
Total Suspended Solids	9	28	17
Turbidity (NTU)	13[b]	42[b]	22
Conductivity (µS/cm)	787[b]	888[b]	828
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	7.2[b]	9.8[b]	8.5
pH (units)	7.4[b]	8.3[b]	8.0
Ammonia Nitrogen	0.06	0.16	0.09
Un-ionized Ammonia	0.003	0.007	0.005
Total Kjeldahl Nitrogen	0.70	1.37	0.99
Nitrite plus Nitrate Nitrogen	2.78	4.52	3.60
Total Nitrogen	3.60	5.58	4.59
Total Phosphorus	0.24	0.99	0.59
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0006	0.0005
Total Chromium	0.0005	0.0025	0.0016
Dissolved Chromium	<0.0005	0.0008	0.0006
Total Copper	0.002	0.003	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.41	0.70	0.53
Dissolved Iron	0.007	0.043	0.022
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0266	0.0646	0.0443
Dissolved Manganese	0.0009	0.0074	0.0041
Total Mercury (µg/L)	<0.05	0.09	0.06
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	0.0008	0.0028	0.0016
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.030	0.021
Dissolved Zinc	0.004	0.014	0.008
Fecal Coliform (cfu/100 mL)	<10	1,500	60[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-3: WATER QUALITY AT STATION 14 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.8[b]	31.3[b]	24.2
Total Suspended Solids	16	25	20
Turbidity (NTU)	10[b]	45[b]	23
Conductivity (µS/cm)	753[b]	921[b]	826
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	7.2[b]	9.8[b]	8.3
pH (units)	7.5[b]	8.2[b]	8.0
Ammonia Nitrogen	0.04	0.22	0.10
Un-ionized Ammonia	0.002	0.010	0.006
Total Kjeldahl Nitrogen	0.63	1.28	1.00
Nitrite plus Nitrate Nitrogen	2.08	4.35	3.47
Total Nitrogen	2.83	5.48	4.46
Total Phosphorus	0.22	1.10	0.65
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0008	0.0026	0.0016
Dissolved Chromium	<0.0005	0.0012	0.0008
Total Copper	0.002	0.004	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.35	0.79	0.59
Dissolved Iron	0.005	0.019	0.013
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0239	0.0511	0.0426
Dissolved Manganese	0.0008	0.0050	0.0024
Total Mercury (µg/L)	<0.05	0.09	0.06
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	0.0008	0.0033	0.0017
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.031	0.020
Dissolved Zinc	0.004	0.010	0.008
Fecal Coliform (cfu/100 mL)	10	230	40[c]
E. coli (cfu/100 mL)	<10	<10	<10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-4: WATER QUALITY AT STATION 15 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.4[b]	31.3[b]	24.1
Total Suspended Solids	13	27	20
Turbidity (NTU)	12[b]	40[b]	22
Conductivity (µS/cm)	766[b]	908[b]	818
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	6.8[b]	9.8[b]	8.2
pH (units)	7.5[b]	8.3[b]	8.0
Ammonia Nitrogen	0.05	0.18	0.10
Un-ionized Ammonia	0.002	0.008	0.005
Total Kjeldahl Nitrogen	0.78	1.16	0.98
Nitrite plus Nitrate Nitrogen	2.38	4.37	3.56
Total Nitrogen	3.25	5.53	4.54
Total Phosphorus	0.23	1.13	0.65
Chlorophyll *a* (µg/L)	9	22	15
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0005	0.0028	0.0017
Dissolved Chromium	0.0005	0.0011	0.0007
Total Copper	0.002	0.009	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.39	0.82	0.62
Dissolved Iron	0.009	0.020	0.013
Total Lead	<0.003	0.004	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0268	0.0501	0.0416
Dissolved Manganese	0.0009	0.0048	0.0035
Total Mercury (µg/L)	<0.05	0.08	0.06
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	0.0008	0.0030	0.0016
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.036	0.024
Dissolved Zinc	0.003	0.018	0.010
Fecal Coliform (cfu/100 mL)	10	210	66[c]
E. coli (cfu/100 mL)	<10	20	13[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-5: WATER QUALITY AT STATION 16 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.4[b]	31.3[b]	24.0
Total Suspended Solids	15	30	22
Turbidity (NTU)	11[b]	49[b]	24
Conductivity (µS/cm)	763[b]	914[b]	820
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	6.7[b]	9.8[b]	8.2
pH (units)	7.6[b]	8.2[b]	8.0
Ammonia Nitrogen	0.03	0.18	0.10
Un-ionized Ammonia	0.001	0.010	0.006
Total Kjeldahl Nitrogen	0.73	1.68	1.11
Nitrite plus Nitrate Nitrogen	2.54	4.37	3.45
Total Nitrogen	3.46	5.58	4.56
Total Phosphorus	0.23	0.95	0.56
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	0.0007	0.0027	0.0018
Dissolved Chromium	<0.0005	0.0015	0.0009
Total Copper	0.002	0.003	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.33	0.82	0.68
Dissolved Iron	0.004	0.023	0.012
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0234	0.0530	0.0451
Dissolved Manganese	0.0009	0.0046	0.0024
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	0.0007	0.0035	0.0018
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.028	0.020
Dissolved Zinc	0.004	0.018	0.010
Fecal Coliform (cfu/100 mL)	10	360	62[c]
E. coli (cfu/100 mL)	<10	<10	<10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-6: WATER QUALITY AT STATION 17 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.2[b]	31.5[b]	23.9
Total Suspended Solids	16	39	27
Turbidity (NTU)	11[b]	38[b]	26
Conductivity (µS/cm)	751[b]	859[b]	814
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	6.9[b]	9.8[b]	8.1
pH (units)	7.6[b]	8.3[b]	8.0
Ammonia Nitrogen	0.02	0.38	0.13
Un-ionized Ammonia	0.001	0.028	0.008
Total Kjeldahl Nitrogen	0.80	1.34	1.10
Nitrite plus Nitrate Nitrogen	2.30	4.15	3.39
Total Nitrogen	3.37	5.46	4.48
Total Phosphorus	0.23	0.89	0.55
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0014	0.0035	0.0021
Dissolved Chromium	<0.0005	0.0012	0.0008
Total Copper	0.002	0.004	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.36	1.21	0.80
Dissolved Iron	0.005	0.029	0.014
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0267	0.0757	0.0513
Dissolved Manganese	0.0009	0.0054	0.0025
Total Mercury (µg/L)	<0.05	0.10	0.06
Total Nickel	0.002	0.005	0.003
Dissolved Nickel	0.0007	0.0032	0.0016
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.030	0.022
Dissolved Zinc	0.006	0.012	0.008
Fecal Coliform (cfu/100 mL)	10	450	30[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-7: WATER QUALITY AT STATION 18 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.2[b]	31.2[b]	23.9
Total Suspended Solids	11	21	17
Turbidity (NTU)	8[b]	47[b]	23
Conductivity (µS/cm)	758[b]	861[b]	814
Five-Day Biochemical Oxygen Demand	<2	3	2
Dissolved Oxygen	6.7[b]	9.9[b]	8.2
pH (units)	7.6[b]	8.3[b]	8.1
Ammonia Nitrogen	<0.02	0.16	0.08
Un-ionized Ammonia	<0.001	0.007	0.005
Total Kjeldahl Nitrogen	0.92	1.15	1.01
Nitrite plus Nitrate Nitrogen	2.28	4.15	3.34
Total Nitrogen	3.24	5.28	4.35
Total Phosphorus	0.23	0.87	0.54
Chlorophyll *a* (µg/L)	11	27	19
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	18.2	31.2	23.9
Dissolved Arsenic	<0.02	<0.02	<0.02
Total Cadmium	<0.01	<0.01	<0.01
Dissolved Cadmium	<0.002	<0.002	<0.002
Total Chromium	<0.0004	0.0008	0.0005
Dissolved Chromium	<0.0005	0.0026	0.0018
Total Copper	<0.0005	0.0010	0.0007
Dissolved Copper	0.002	0.003	0.002
Total Iron	<0.002	0.003	0.002
Dissolved Iron	0.33	0.84	0.61
Total Lead	<0.004	0.016	0.010
Dissolved Lead	<0.003	0.005	0.004
Total Manganese	<0.004	0.004	0.004
Dissolved Manganese	0.0280	0.0569	0.0434
Total Mercury (µg/L)	0.0009	0.0065	0.0027
Total Nickel	<0.05	0.07	0.05
Dissolved Nickel	0.002	0.005	0.003
Total Silver	0.0009	0.0031	0.0015
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	<0.0006	<0.0006	<0.0006
Dissolved Zinc	0.015	0.030	0.021
Fecal Coliform (cfu/100 mL)	20	200	41[c]
E. coli (cfu/100 mL)	<10	20	13[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-8: WATER QUALITY AT STATION 19 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.3[b]	31.1[b]	24.1
Total Suspended Solids	9	33	23
Turbidity (NTU)	10[b]	49[b]	24
Conductivity (µS/cm)	752[b]	989[b]	834
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	6.7[b]	10.0[b]	8.3
pH (units)	7.6[b]	8.3[b]	8.1
Ammonia Nitrogen	0.02	0.16	0.06
Un-ionized Ammonia	0.002	0.006	0.004
Total Kjeldahl Nitrogen	0.74	1.23	1.01
Nitrite plus Nitrate Nitrogen	2.03	4.08	3.32
Total Nitrogen	2.92	5.29	4.33
Total Phosphorus	0.25	0.87	0.53
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0008	0.0032	0.0017
Dissolved Chromium	<0.0005	0.0009	0.0007
Total Copper	0.002	0.006	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.30	1.15	0.69
Dissolved Iron	<0.004	0.019	0.010
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0255	0.0718	0.0456
Dissolved Manganese	0.0006	0.0047	0.0019
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	0.0006	0.0032	0.0016
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.014	0.030	0.021
Dissolved Zinc	0.004	0.011	0.007
Fecal Coliform (cfu/100 mL)	30	550	156[c]
E. coli (cfu/100 mL)	<10	20	16[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-9: WATER QUALITY AT STATION 20 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.4[b]	31.2[b]	24.1
Total Suspended Solids	16	30	23
Turbidity (NTU)	9[b]	39[b]	22
Conductivity (µS/cm)	753[b]	945[b]	829
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	6.7[b]	10.3[b]	8.4
pH (units)	7.7[b]	8.3[b]	8.1
Ammonia Nitrogen	0.02	0.13	0.06
Un-ionized Ammonia	0.001	0.006	0.004
Total Kjeldahl Nitrogen	0.87	1.23	1.03
Nitrite plus Nitrate Nitrogen	2.13	3.94	3.27
Total Nitrogen	3.01	5.08	4.30
Total Phosphorus	0.21	0.83	0.52
Chlorophyll *a* (µg/L)	11	37	24
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	0.0007	0.0031	0.0017
Dissolved Chromium	<0.0005	0.0013	0.0009
Total Copper	0.002	0.003	0.002
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.34	0.97	0.67
Dissolved Iron	0.004	0.017	0.010
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0261	0.0634	0.0445
Dissolved Manganese	0.0008	0.0036	0.0017
Total Mercury (µg/L)	<0.05	0.08	0.06
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	0.0009	0.0028	0.0017
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.012	0.025	0.019
Dissolved Zinc	0.004	0.014	0.008
Fecal Coliform (cfu/100 mL)	10	420	60[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AIV-10: WATER QUALITY AT STATION 21 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.6[b]	30.7[b]	24.0
Total Suspended Solids	13	371	101
Turbidity (NTU)	10[b]	213[b]	60
Conductivity (µS/cm)	753[b]	974[b]	848
Five-Day Biochemical Oxygen Demand	3	5	4
Dissolved Oxygen	6.9[b]	10.3[b]	8.6
pH (units)	7.9[b]	8.4[b]	8.2
Ammonia Nitrogen	<0.02	0.13	0.06
Un-ionized Ammonia	<0.001	0.010	0.004
Total Kjeldahl Nitrogen	0.87	1.84	1.29
Nitrite plus Nitrate Nitrogen	2.15	3.92	3.12
Total Nitrogen	3.02	5.58	4.41
Total Phosphorus	0.36	1.04	0.58
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	<0.0005	0.0128	0.0039
Dissolved Chromium	<0.0005	0.0011	0.0008
Total Copper	<0.002	0.014	0.005
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.29	6.66	2.03
Dissolved Iron	0.005	0.017	0.010
Total Lead	<0.003	0.018	0.007
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0223	0.2120	0.0861
Dissolved Manganese	0.0010	0.0074	0.0027
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	0.002	0.010	0.005
Dissolved Nickel	0.0006	0.0022	0.0015
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.093	0.032
Dissolved Zinc	0.007	0.010	0.008
Fecal Coliform (cfu/100 mL)	20	2,500	106[c]
E. coli (cfu/100 mL)	<10	40	23[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

APPENDIX AV

WATER QUALITY AT STATIONS 22–27 IN THE STARVED ROCK POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AV-1: WATER QUALITY AT STATION 22 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.1[b]	31.5[b]	24.1
Total Suspended Solids	12	46	28
Turbidity (NTU)	11[b]	39[b]	27
Conductivity (µS/cm)	751[b]	959[b]	828
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	6.8[b]	10.7[b]	8.7
pH (units)	7.8[b]	8.4[b]	8.2
Ammonia Nitrogen	<0.02	0.18	0.08
Un-ionized Ammonia	<0.001	0.014	0.006
Total Kjeldahl Nitrogen	0.83	1.42	1.08
Nitrite plus Nitrate Nitrogen	2.20	3.85	3.31
Total Nitrogen	3.03	5.27	4.39
Total Phosphorus	0.25	0.86	0.55
Chlorophyll *a* (µg/L)	14	39	27
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	0.0005	0.0037	0.0018
Dissolved Chromium	<0.0005	0.0009	0.0007
Total Copper	<0.002	0.004	0.003
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.37	1.31	0.79
Dissolved Iron	0.005	0.020	0.011
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0265	0.0799	0.0491
Dissolved Manganese	0.0006	0.0034	0.0017
Total Mercury (µg/L)	<0.05	0.05	0.05
Total Nickel	0.002	0.005	0.003
Dissolved Nickel	0.0008	0.0027	0.0015
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.014	0.033	0.021
Dissolved Zinc	0.004	0.014	0.008
Fecal Coliform (cfu/100 mL)	<10	1,500	71[c]
E. coli (cfu/100 mL)	10	20	13[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AV-2: WATER QUALITY AT STATION 23 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.3[b]	31.5[b]	24.0
Total Suspended Solids	8	38	25
Turbidity (NTU)	9[b]	37[b]	25
Conductivity (µS/cm)	752[b]	951[b]	823
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	6.7[b]	11.0[b]	8.7
pH (units)	7.8[b]	8.4[b]	8.2
Ammonia Nitrogen	<0.02	0.16	0.06
Un-ionized Ammonia	<0.001	0.012	0.004
Total Kjeldahl Nitrogen	0.66	1.35	0.98
Nitrite plus Nitrate Nitrogen	2.21	3.87	3.28
Total Nitrogen	2.99	5.02	4.26
Total Phosphorus	0.23	0.81	0.53
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0010	0.0005
Total Chromium	0.0006	0.0030	0.0016
Dissolved Chromium	<0.0005	0.0008	0.0007
Total Copper	<0.002	0.003	0.002
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.23	1.12	0.69
Dissolved Iron	0.004	0.020	0.011
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0223	0.0694	0.0427
Dissolved Manganese	0.0002	0.0027	0.0014
Total Mercury (µg/L)	<0.05	0.55	0.13
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	0.0004	0.0032	0.0015
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.026	0.018
Dissolved Zinc	0.006	0.011	0.008
Fecal Coliform (cfu/100 mL)	20	470	90[c]
E. coli (cfu/100 mL)	<10	40	16[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AV-3: WATER QUALITY AT STATION 24 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.1[b]	30.9[b]	23.5
Total Suspended Solids	11	48	22
Turbidity (NTU)	10[b]	39[b]	23
Conductivity (µS/cm)	754[b]	922[b]	833
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	7.0[b]	13.3[b]	9.5
pH (units)	8.2[b]	8.6[b]	8.4
Ammonia Nitrogen	0.02	0.14	0.05
Un-ionized Ammonia	0.002	0.015	0.005
Total Kjeldahl Nitrogen	0.75	1.47	1.17
Nitrite plus Nitrate Nitrogen	1.70	3.38	2.84
Total Nitrogen	2.78	4.80	4.01
Total Phosphorus	0.42	0.68	0.53
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	<0.0005	0.0012	0.0009
Dissolved Chromium	<0.0005	0.0010	0.0007
Total Copper	<0.002	0.003	0.002
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.20	0.82	0.41
Dissolved Iron	<0.004	0.017	0.010
Total Lead	<0.003	0.003	0.003
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0250	0.0510	0.0375
Dissolved Manganese	0.0006	0.0029	0.0016
Total Mercury (µg/L)	<0.05	0.08	0.06
Total Nickel	<0.002	0.003	0.003
Dissolved Nickel	<0.0004	0.0023	0.0013
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.019	0.016
Dissolved Zinc	0.007	0.014	0.010
Fecal Coliform (cfu/100 mL)	40	470	142[c]
E. coli (cfu/100 mL)	<10	20	13[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AV-4: WATER QUALITY AT STATION 25 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	18.9[b]	30.8[b]	23.3
Total Suspended Solids	10	36	24
Turbidity (NTU)	10[b]	43[b]	25
Conductivity (µS/cm)	749[b]	915[b]	829
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	6.5[b]	12.1[b]	9.1
pH (units)	8.2[b]	8.5[b]	8.4
Ammonia Nitrogen	<0.02	0.16	0.05
Un-ionized Ammonia	0.001	0.016	0.005
Total Kjeldahl Nitrogen	0.80	1.77	1.25
Nitrite plus Nitrate Nitrogen	1.61	3.54	2.80
Total Nitrogen	2.72	5.11	4.06
Total Phosphorus	0.32	0.71	0.48
Chlorophyll *a* (µg/L)	37	73	51
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0006	0.0005
Total Chromium	<0.0005	0.0018	0.0011
Dissolved Chromium	<0.0005	0.0010	0.0007
Total Copper	<0.002	0.002	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.22	0.84	0.52
Dissolved Iron	0.004	0.015	0.010
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0260	0.0559	0.0419
Dissolved Manganese	0.0002	0.0027	0.0016
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.002	0.003	0.002
Dissolved Nickel	<0.0004	0.0022	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.014	0.019	0.016
Dissolved Zinc	0.003	0.013	0.007
Fecal Coliform (cfu/100 mL)	80	360	139[c]
E. coli (cfu/100 mL)	10	30	18[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AV-5: WATER QUALITY AT STATION 26 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.1[b]	30.7[b]	23.5
Total Suspended Solids	13	28	21
Turbidity (NTU)	12[b]	41[b]	23
Conductivity (µS/cm)	753[b]	902[b]	812
Five-Day Biochemical Oxygen Demand	3	6	4
Dissolved Oxygen	6.8[b]	11.8[b]	9.4
pH (units)	8.1[b]	8.5[b]	8.4
Ammonia Nitrogen	0.02	0.17	0.06
Un-ionized Ammonia	0.002	0.017	0.007
Total Kjeldahl Nitrogen	0.87	1.70	1.24
Nitrite plus Nitrate Nitrogen	1.82	3.70	2.78
Total Nitrogen	2.90	4.92	4.02
Total Phosphorus	0.22	0.71	0.46
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	<0.0005	0.0017	0.0011
Dissolved Chromium	<0.0005	0.0009	0.0007
Total Copper	<0.002	0.002	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.30	0.84	0.51
Dissolved Iron	0.004	0.015	0.009
Total Lead	<0.003	0.005	0.003
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0292	0.0541	0.0406
Dissolved Manganese	0.0003	0.0040	0.0019
Total Mercury (µg/L)	<0.05	0.05	0.05
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0026	0.0013
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.051	0.022
Dissolved Zinc	0.003	0.012	0.006
Fecal Coliform (cfu/100 mL)	40	300	60[c]
E. coli (cfu/100 mL)	<10	20	16[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AV-6: WATER QUALITY AT STATION 27 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.3[b]	23.7
Total Suspended Solids	17	47	30
Turbidity (NTU)	15[b]	49[b]	29
Conductivity (µS/cm)	739[b]	896[b]	813
Five-Day Biochemical Oxygen Demand	3	4	3
Dissolved Oxygen	8.1[b]	12.9[b]	9.7
pH (units)	6.9[b]	8.8[b]	8.2
Ammonia Nitrogen	<0.02	0.28	0.10
Un-ionized Ammonia	0.002	0.030	0.009
Total Kjeldahl Nitrogen	0.96	1.55	1.32
Nitrite plus Nitrate Nitrogen	1.51	3.45	2.71
Total Nitrogen	2.84	4.79	4.03
Total Phosphorus	0.23	0.69	0.43
Chlorophyll *a* (µg/L)	41	88	61
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	<0.0005	0.0021	0.0015
Dissolved Chromium	<0.0005	0.0009	0.0006
Total Copper	0.002	0.003	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.39	0.93	0.67
Dissolved Iron	0.006	0.018	0.010
Total Lead	<0.003	0.004	0.003
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0373	0.0600	0.0487
Dissolved Manganese	0.0014	0.0025	0.0019
Total Mercury (µg/L)	<0.05	0.08	0.06
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0028	0.0013
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.029	0.018
Dissolved Zinc	0.003	0.013	0.008
Fecal Coliform (cfu/100 mL)	10	250	42[c]
E. coli (cfu/100 mL)	<10	80	29[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

APPENDIX AVI

WATER QUALITY AT STATIONS 28–41 IN THE UPPER PEORIA POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AVI-1: WATER QUALITY AT STATION 28 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.0[b]	23.5
Total Suspended Solids	16	51	32
Turbidity (NTU)	20[b]	49[b]	31
Conductivity (µS/cm)	729[b]	894[b]	808
Five-Day Biochemical Oxygen Demand	<2	3	3
Dissolved Oxygen	7.3[b]	11.9[b]	9.3
pH (units)	8.1[b]	8.7[b]	8.4
Ammonia Nitrogen	<0.02	0.15	0.06
Un-ionized Ammonia	0.001	0.015	0.007
Total Kjeldahl Nitrogen	1.10	1.86	1.43
Nitrite plus Nitrate Nitrogen	1.70	3.40	2.74
Total Nitrogen	3.45	4.88	4.17
Total Phosphorus	0.22	0.76	0.46
Chlorophyll *a* (µg/L)	41	86	60
Total Cyanides	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	<0.0005	0.0025	0.0016
Dissolved Chromium	<0.0005	0.0010	0.0006
Total Copper	<0.002	0.003	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.48	1.35	0.79
Dissolved Iron	0.006	0.014	0.010
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0378	0.0701	0.0516
Dissolved Manganese	0.0011	0.0033	0.0025
Total Mercury (µg/L)	<0.05	0.10	0.06
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0025	0.0013
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.012	0.030	0.019
Dissolved Zinc	0.003	0.016	0.008
Fecal Coliform (cfu/100 mL)	10	140	38[c]
E. coli (cfu/100 mL)	<10	30	14[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-2: WATER QUALITY AT STATION 29 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.0[b]	23.6
Total Suspended Solids	15	50	28
Turbidity (NTU)	17[b]	46[b]	33
Conductivity (µS/cm)	728[b]	891[b]	804
Five-Day Biochemical Oxygen Demand	3	4	3
Dissolved Oxygen	7.4[b]	11.8[b]	9.4
pH (units)	8.2[b]	8.8[b]	8.5
Ammonia Nitrogen	0.02	0.20	0.07
Un-ionized Ammonia	0.003	0.022	0.009
Total Kjeldahl Nitrogen	1.09	1.68	1.35
Nitrite plus Nitrate Nitrogen	1.79	3.48	2.74
Total Nitrogen	3.13	4.77	4.09
Total Phosphorus	0.21	0.74	0.44
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	<0.0005	0.0026	0.0014
Dissolved Chromium	<0.0005	0.0009	0.0007
Total Copper	<0.002	0.003	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.38	1.30	0.68
Dissolved Iron	0.007	0.027	0.014
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0358	0.0696	0.0477
Dissolved Manganese	0.0010	0.0025	0.0018
Total Mercury (µg/L)	<0.05	0.06	0.05
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0027	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.024	0.016
Dissolved Zinc	0.003	0.008	0.006
Fecal Coliform (cfu/100 mL)	<10	140	31[c]
E. coli (cfu/100 mL)	<10	30	18[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-3: WATER QUALITY AT STATION 30 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.5[b]	30.1[b]	23.5
Total Suspended Solids	12	64	31
Turbidity (NTU)	17[b]	48[b]	31
Conductivity (µS/cm)	723[b]	890[b]	798
Five-Day Biochemical Oxygen Demand	4	4	4
Dissolved Oxygen	7.3[b]	11.4[b]	9.2
pH (units)	8.2[b]	8.7[b]	8.4
Ammonia Nitrogen	0.02	0.14	0.06
Un-ionized Ammonia	0.003	0.017	0.008
Total Kjeldahl Nitrogen	1.06	1.76	1.37
Nitrite plus Nitrate Nitrogen	1.73	4.03	2.83
Total Nitrogen	3.14	5.09	4.20
Total Phosphorus	0.22	0.73	0.44
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0006	0.0029	0.0016
Dissolved Chromium	<0.0005	0.0009	0.0006
Total Copper	<0.002	0.004	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.38	1.58	0.81
Dissolved Iron	0.006	0.018	0.011
Total Lead	<0.003	0.007	0.004
Dissolved Lead	<0.004	0.006	0.004
Total Manganese	0.0375	0.0842	0.0536
Dissolved Manganese	0.0008	0.0020	0.0017
Total Mercury (µg/L)	<0.05	0.08	0.06
Total Nickel	<0.002	0.005	0.003
Dissolved Nickel	<0.0004	0.0024	0.0010
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.025	0.017
Dissolved Zinc	0.003	0.019	0.008
Fecal Coliform (cfu/100 mL)	20	290	90[c]
E. coli (cfu/100 mL)	<10	40	16[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-4: WATER QUALITY AT STATION 31 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.2[b]	23.6
Total Suspended Solids	18	65	37
Turbidity (NTU)	17[b]	49[b]	33
Conductivity (µS/cm)	728[b]	891[b]	798
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	7.1[b]	10.5[b]	8.9
pH (units)	8.2[b]	8.7[b]	8.5
Ammonia Nitrogen	0.02	0.18	0.07
Un-ionized Ammonia	0.003	0.022	0.010
Total Kjeldahl Nitrogen	0.95	2.09	1.40
Nitrite plus Nitrate Nitrogen	1.75	4.40	2.87
Total Nitrogen	3.20	5.35	4.28
Total Phosphorus	0.17	0.74	0.45
Chlorophyll *a* (µg/L)	45	109	62
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	<0.0005	0.0034	0.0017
Dissolved Chromium	<0.0005	0.0007	0.0006
Total Copper	<0.002	0.004	0.003
Dissolved Copper	<0.002	0.003	0.002
Total Iron	0.50	1.89	0.92
Dissolved Iron	0.009	0.078	0.023
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0376	0.0911	0.0565
Dissolved Manganese	0.0017	0.0036	0.0026
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	<0.002	0.005	0.003
Dissolved Nickel	0.0005	0.0030	0.0014
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.008	0.030	0.019
Dissolved Zinc	0.003	0.026	0.009
Fecal Coliform (cfu/100 mL)	10	410	61[c]
E. coli (cfu/100 mL)	10	70	28[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-5: WATER QUALITY AT STATION 32 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.8[b]	30.3[b]	23.8
Total Suspended Solids	23	63	39
Turbidity (NTU)	20[b]	88[b]	43
Conductivity (µS/cm)	728[b]	887[b]	796
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	7.1[b]	11.0[b]	8.9
pH (units)	8.2[b]	8.7[b]	8.5
Ammonia Nitrogen	0.03	0.12	0.06
Un-ionized Ammonia	0.004	0.016	0.008
Total Kjeldahl Nitrogen	1.03	1.80	1.36
Nitrite plus Nitrate Nitrogen	1.70	3.95	2.76
Total Nitrogen	3.11	5.07	4.12
Total Phosphorus	0.25	0.66	0.44
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0017	0.0007
Total Chromium	0.0008	0.0021	0.0017
Dissolved Chromium	<0.0005	0.0013	0.0008
Total Copper	<0.002	0.002	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.54	1.27	0.87
Dissolved Iron	0.009	0.115	0.029
Total Lead	<0.003	0.004	0.004
Dissolved Lead	<0.004	0.006	0.004
Total Manganese	0.0395	0.0731	0.0549
Dissolved Manganese	0.0008	0.0135	0.0040
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0016	0.0010
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.014	0.025	0.021
Dissolved Zinc	0.003	0.011	0.008
Fecal Coliform (cfu/100 mL)	20	480	120[c]
E. coli (cfu/100 mL)	<10	70	19[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-6: WATER QUALITY AT STATION 33 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.9[b]	30.4[b]	23.9
Total Suspended Solids	20	57	38
Turbidity (NTU)	18[b]	78[b]	36
Conductivity (µS/cm)	729[b]	886[b]	795
Five-Day Biochemical Oxygen Demand	4	4	4
Dissolved Oxygen	7.3[b]	11.3[b]	9.3
pH (units)	8.3[b]	8.8[b]	8.5
Ammonia Nitrogen	<.02	0.18	0.09
Un-ionized Ammonia	0.002	0.039	0.014
Total Kjeldahl Nitrogen	1.01	1.77	1.34
Nitrite plus Nitrate Nitrogen	1.63	3.91	2.69
Total Nitrogen	3.01	5.07	4.02
Total Phosphorus	0.19	0.64	0.42
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	0.0007	0.0782	0.0143
Dissolved Chromium	<0.0005	0.0010	0.0006
Total Copper	<0.002	0.004	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.42	2.23	0.99
Dissolved Iron	0.004	0.019	0.011
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0419	0.0935	0.0585
Dissolved Manganese	0.0014	0.0021	0.0016
Total Mercury (µg/L)	<0.05	0.05	0.05
Total Nickel	<0.002	0.048	0.010
Dissolved Nickel	<0.0004	0.0024	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.010	0.032	0.021
Dissolved Zinc	0.003	0.011	0.007
Fecal Coliform (cfu/100 mL)	<10	290	64[c]
E. coli (cfu/100 mL)	10	120	52[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-7: WATER QUALITY AT STATION 34 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.8[b]	30.2[b]	23.7
Total Suspended Solids	20	77	40
Turbidity (NTU)	15[b]	59[b]	36
Conductivity (µS/cm)	737[b]	891[b]	796
Five-Day Biochemical Oxygen Demand	4	7	5
Dissolved Oxygen	7.6[b]	11.4[b]	9.3
pH (units)	8.3[b]	8.8[b]	8.5
Ammonia Nitrogen	0.04	0.15	0.09
Un-ionized Ammonia	0.004	0.031	0.015
Total Kjeldahl Nitrogen	1.05	1.94	1.42
Nitrite plus Nitrate Nitrogen	1.78	4.15	2.72
Total Nitrogen	3.04	5.34	4.14
Total Phosphorus	0.19	0.59	0.41
Chlorophyll *a* (µg/L)	36	131	63
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	0.002	0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	<0.0005	0.0023	0.0017
Dissolved Chromium	<0.0005	0.0013	0.0007
Total Copper	<0.002	0.007	0.003
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.30	1.64	0.88
Dissolved Iron	0.008	0.016	0.012
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0373	0.0887	0.0569
Dissolved Manganese	0.0010	0.0045	0.0023
Total Mercury (µg/L)	<0.05	0.09	0.06
Total Nickel	<0.002	0.007	0.004
Dissolved Nickel	<0.0004	0.0024	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.009	0.029	0.022
Dissolved Zinc	0.003	0.037	0.012
Fecal Coliform (cfu/100 mL)	20	420	71[c]
E. coli (cfu/100 mL)	<10	200	43[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-8: WATER QUALITY AT STATION 35 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.5[b]	29.9[b]	23.9
Total Suspended Solids	22	65	40
Turbidity (NTU)	21[b]	56[b]	36
Conductivity (µS/cm)	735[b]	895[b]	798
Five-Day Biochemical Oxygen Demand	3	5	4
Dissolved Oxygen	7.4[b]	10.6[b]	8.9
pH (units)	8.3[b]	8.7[b]	8.4
Ammonia Nitrogen	0.04	0.18	0.10
Un-ionized Ammonia	0.003	0.035	0.014
Total Kjeldahl Nitrogen	1.05	1.85	1.39
Nitrite plus Nitrate Nitrogen	1.85	4.30	2.74
Total Nitrogen	3.11	5.44	4.13
Total Phosphorus	0.21	0.62	0.43
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0006	0.0029	0.0018
Dissolved Chromium	<0.0005	0.0017	0.0008
Total Copper	<0.002	0.003	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.45	1.52	0.97
Dissolved Iron	0.009	0.014	0.012
Total Lead	<0.003	0.003	0.003
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0409	0.0836	0.0608
Dissolved Manganese	0.0011	0.0043	0.0023
Total Mercury (µg/L)	<0.05	0.05	0.05
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	0.0004	0.0023	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.040	0.025
Dissolved Zinc	0.003	0.013	0.008
Fecal Coliform (cfu/100 mL)	10	190	38[c]
E. coli (cfu/100 mL)	10	120	35[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-9: WATER QUALITY AT STATION 36 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.5[b]	30.1[b]	24.1
Total Suspended Solids	20	68	40
Turbidity (NTU)	18[b]	60[b]	39
Conductivity (µS/cm)	731[b]	906[b]	800
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	7.1[b]	10.8[b]	8.7
pH (units)	8.2[b]	8.7[b]	8.5
Ammonia Nitrogen	0.02	0.20	0.11
Un-ionized Ammonia	0.002	0.036	0.017
Total Kjeldahl Nitrogen	1.05	1.82	1.38
Nitrite plus Nitrate Nitrogen	1.90	4.38	2.75
Total Nitrogen	3.11	5.66	4.13
Total Phosphorus	0.18	0.58	0.41
Chlorophyll *a* (µg/L)	26	98	55
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0010	0.0005
Total Chromium	<0.0005	0.0033	0.0021
Dissolved Chromium	<0.0005	0.0025	0.0009
Total Copper	<0.002	0.003	0.002
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.39	1.82	0.96
Dissolved Iron	0.008	0.015	0.011
Total Lead	<0.003	0.003	0.003
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0406	0.0985	0.0596
Dissolved Manganese	0.0008	0.0032	0.0020
Total Mercury (µg/L)	<0.05	0.11	0.06
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0024	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.010	0.031	0.024
Dissolved Zinc	0.005	0.012	0.007
Fecal Coliform (cfu/100 mL)	<10	380	42[c]
E. coli (cfu/100 mL)	<10	<100	22[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-10: WATER QUALITY AT STATION 37 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.4[b]	24.2
Total Suspended Solids	29	83	49
Turbidity (NTU)	22[b]	70[b]	42
Conductivity (µS/cm)	733[b]	895[b]	799
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	7.0[b]	11.1[b]	8.9
pH (units)	8.2[b]	8.7[b]	8.5
Ammonia Nitrogen	0.03	0.17	0.11
Un-ionized Ammonia	0.003	0.033	0.017
Total Kjeldahl Nitrogen	1.05	2.04	1.44
Nitrite plus Nitrate Nitrogen	1.53	4.40	2.69
Total Nitrogen	2.58	5.73	4.13
Total Phosphorus	0.23	0.64	0.45
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0007	0.0040	0.0025
Dissolved Chromium	0.0005	0.0024	0.0009
Total Copper	0.002	0.005	0.003
Dissolved Copper	<0.002	0.003	0.002
Total Iron	0.64	2.46	1.35
Dissolved Iron	0.006	0.054	0.019
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0480	0.1157	0.0740
Dissolved Manganese	0.0010	0.0054	0.0033
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	0.002	0.005	0.003
Dissolved Nickel	<0.0004	0.0027	0.0013
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.016	0.047	0.031
Dissolved Zinc	0.003	0.012	0.006
Fecal Coliform (cfu/100 mL)	10	320	39[c]
E. coli (cfu/100 mL)	<10	20	13[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-11: WATER QUALITY AT STATION 38 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.4[b]	23.7
Total Suspended Solids	24	71	46
Turbidity (NTU)	24[b]	83[b]	51
Conductivity (µS/cm)	733[b]	892[b]	788
Five-Day Biochemical Oxygen Demand	3	5	4
Dissolved Oxygen	7.1[b]	12.1[b]	8.7
pH (units)	8.2[b]	8.6[b]	8.4
Ammonia Nitrogen	0.03	0.25	0.14
Un-ionized Ammonia	0.003	0.037	0.019
Total Kjeldahl Nitrogen	1.28	1.79	1.44
Nitrite plus Nitrate Nitrogen	1.88	4.67	2.81
Total Nitrogen	3.26	5.95	4.25
Total Phosphorus	0.22	0.59	0.44
Chlorophyll *a* (µg/L)	25	87	53
Total Cyanide	<0.003	0.005	0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	0.0007	0.0303	0.0067
Dissolved Chromium	<0.0005	0.0016	0.0008
Total Copper	0.002	0.004	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.58	1.89	1.24
Dissolved Iron	0.006	0.037	0.017
Total Lead	<0.003	0.004	0.003
Dissolved Lead	<0.004	0.006	0.004
Total Manganese	0.0491	0.0894	0.0676
Dissolved Manganese	0.0014	0.0094	0.0049
Total Mercury (µg/L)	<0.05	0.05	0.05
Total Nickel	<0.002	0.016	0.005
Dissolved Nickel	<0.0004	0.0024	0.0011
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.053	0.027
Dissolved Zinc	0.004	0.013	0.008
Fecal Coliform (cfu/100 mL)	<10	140	36[c]
E. coli (cfu/100 mL)	10	30	14[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-12: WATER QUALITY AT STATION 39 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.1[b]	30.1[b]	23.7
Total Suspended Solids	25	65	45
Turbidity (NTU)	19[b]	78[b]	50
Conductivity (µS/cm)	725[b]	893[b]	790
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	5.8[b]	12.1[b]	8.1
pH (units)	8.2[b]	8.6[b]	8.4
Ammonia Nitrogen	0.02	0.22	0.15
Un-ionized Ammonia	0.002	0.026	0.019
Total Kjeldahl Nitrogen	1.11	1.88	1.45
Nitrite plus Nitrate Nitrogen	1.90	4.83	2.73
Total Nitrogen	3.25	5.94	4.17
Total Phosphorus	0.18	0.57	0.42
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.004	0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0005	0.0029	0.0019
Dissolved Chromium	<0.0005	0.0008	0.0006
Total Copper	<0.002	0.004	0.003
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.39	1.96	1.27
Dissolved Iron	0.006	0.013	0.010
Total Lead	<0.003	0.003	0.003
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0403	0.0938	0.0711
Dissolved Manganese	0.0011	0.0036	0.0024
Total Mercury (µg/L)	<0.05	0.05	0.05
Total Nickel	<0.002	0.005	0.004
Dissolved Nickel	<0.0004	0.0025	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.009	0.028	0.023
Dissolved Zinc	0.003	0.010	0.006
Fecal Coliform (cfu/100 mL)	10	300	31[c]
E. coli (cfu/100 mL)	10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-13: WATER QUALITY AT STATION 40 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.5[b]	30.0[b]	23.8
Total Suspended Solids	24	56	41
Turbidity (NTU)	18[b]	72[b]	46
Conductivity (µS/cm)	726[b]	895[b]	788
Five-Day Biochemical Oxygen Demand	3	6	4
Dissolved Oxygen	6.0[b]	13.3[b]	8.3
pH (units)	8.2[b]	8.6[b]	8.4
Ammonia Nitrogen	0.03	0.27	0.18
Un-ionized Ammonia	0.004	0.033	0.022
Total Kjeldahl Nitrogen	1.12	2.01	1.47
Nitrite plus Nitrate Nitrogen	1.92	4.88	2.76
Total Nitrogen	3.12	6.00	4.23
Total Phosphorus	0.18	0.55	0.41
Chlorophyll *a* (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	0.004	0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	0.008	0.003
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	0.0014	0.0022	0.0019
Dissolved Chromium	<0.0005	0.0008	0.0006
Total Copper	<0.002	0.003	0.003
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.88	1.47	1.22
Dissolved Iron	0.005	0.015	0.010
Total Lead	<0.003	0.030	0.008
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0608	0.0971	0.0772
Dissolved Manganese	0.0016	0.0053	0.0030
Total Mercury (µg/L)	<0.05	0.07	0.05
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0024	0.0013
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.019	0.034	0.023
Dissolved Zinc	0.003	0.010	0.007
Fecal Coliform (cfu/100 mL)	<10	170	20[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVI-14: WATER QUALITY AT STATION 41 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.2[b]	30.1[b]	23.8
Total Suspended Solids	21	50	37
Turbidity (NTU)	19[b]	65[b]	44
Conductivity (µS/cm)	726[b]	885[b]	783
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	6.5[b]	12.0[b]	8.0
pH (units)	8.3[b]	8.6[b]	8.4
Ammonia Nitrogen	0.03	0.29	0.18
Un-ionized Ammonia	0.003	0.045	0.024
Total Kjeldahl Nitrogen	1.12	1.80	1.46
Nitrite plus Nitrate Nitrogen	1.78	4.89	2.72
Total Nitrogen	3.10	6.01	4.18
Total Phosphorus	0.18	0.52	0.39
Chlorophyll *a* (µg/L)	25	57	43
Total Cyanide	<0.003	0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0010	0.0005
Total Chromium	0.0005	0.0024	0.0018
Dissolved Chromium	<0.0005	0.0012	0.0007
Total Copper	<0.002	0.003	0.003
Dissolved Copper	<0.002	0.003	0.002
Total Iron	0.46	1.58	1.19
Dissolved Iron	0.005	0.014	0.010
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0372	0.0922	0.0716
Dissolved Manganese	0.0014	0.0048	0.0024
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	<0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0024	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.013	0.025	0.022
Dissolved Zinc	0.003	0.018	0.006
Fecal Coliform (cfu/100 mL)	<10	140	21[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

APPENDIX AVII

WATER QUALITY AT STATIONS 42–49 IN THE LOWER PEORIA POOL DURING MAY, AUGUST, AND OCTOBER 2007

TABLE AVII-1: WATER QUALITY AT STATION 42 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.6[b]	30.1[b]	23.8
Total Suspended Solids	31	84	48
Turbidity (NTU)	29[b]	86[b]	49
Conductivity (µS/cm)	722[b]	878[b]	776
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	6.1[b]	11.3[b]	7.7
pH (units)	8.3[b]	8.5[b]	8.4
Ammonia Nitrogen	0.04	0.28	0.17
Un-ionized Ammonia	0.004	0.044	0.022
Total Kjeldahl Nitrogen	1.17	1.85	1.50
Nitrite plus Nitrate Nitrogen	1.63	4.88	2.67
Total Nitrogen	3.12	6.05	4.17
Total Phosphorus	0.23	0.56	0.41
Chlorophyll a (µg/L)	22	60	41
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0005	0.0004
Total Chromium	0.0010	0.0028	0.0022
Dissolved Chromium	<0.0005	0.0011	0.0007
Total Copper	0.002	0.004	0.003
Dissolved Copper	<0.002	0.003	0.002
Total Iron	0.79	2.09	1.37
Dissolved Iron	<0.004	0.016	0.009
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0561	0.1066	0.0830
Dissolved Manganese	<0.0002	0.0020	0.0015
Total Mercury (µg/L)	<0.05	<0.05	<0.05
Total Nickel	0.002	0.004	0.003
Dissolved Nickel	<0.0004	0.0018	0.0011
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	0.0007	0.0006
Total Zinc	0.012	0.029	0.022
Dissolved Zinc	<0.002	0.006	0.004
Fecal Coliform (cfu/100 mL)	<10	150	25[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-2: WATER QUALITY AT STATION 43 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.0[b]	29.5[b]	24.3
Total Suspended Solids	34	178	77
Turbidity (NTU)	28[b]	179[b]	81
Conductivity (µS/cm)	720[b]	863[b]	772
Five-Day Biochemical Oxygen Demand	<2	4	3
Dissolved Oxygen	4.6[b]	12.0[b]	7.7
pH (units)	8.1[b]	8.6[b]	8.4
Ammonia Nitrogen	0.14	0.26	0.19
Un-ionized Ammonia	0.017	0.036	0.023
Total Kjeldahl Nitrogen	1.30	2.44	1.60
Nitrite plus Nitrate Nitrogen	0.10	4.74	2.35
Total Nitrogen	1.74	6.04	3.96
Total Phosphorus	0.21	0.65	0.48
Chlorophyll a (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0011	0.0007
Total Chromium	0.0006	0.0057	0.0029
Dissolved Chromium	<0.0005	0.0011	0.0007
Total Copper	0.002	0.006	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.59	3.44	1.91
Dissolved Iron	0.008	0.070	0.021
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	0.005	0.004
Total Manganese	0.0485	0.1436	0.0980
Dissolved Manganese	0.0032	0.0173	0.0103
Total Mercury (µg/L)	<0.05	0.10	0.06
Total Nickel	<0.002	0.006	0.004
Dissolved Nickel	<0.0004	0.0027	0.0013
Total Silver	<0.0006	0.0009	0.0007
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.044	0.028
Dissolved Zinc	0.005	0.012	0.009
Fecal Coliform (cfu/100 mL)	<10	90	20[c]
E. coli (cfu/100 mL)	<10	50	17[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-3: WATER QUALITY AT STATION 44 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	19.9[b]	28.9[b]	23.6
Total Suspended Solids	35	100	62
Turbidity (NTU)	30[b]	105[b]	77
Conductivity (µS/cm)	725[b]	858[b]	770
Five-Day Biochemical Oxygen Demand	3	4	4
Dissolved Oxygen	5.3[b]	11.3[b]	7.4
pH (units)	8.1[b]	8.5[b]	8.3
Ammonia Nitrogen	0.06	0.26	0.16
Un-ionized Ammonia	0.005	0.030	0.018
Total Kjeldahl Nitrogen	1.27	2.02	1.58
Nitrite plus Nitrate Nitrogen	0.09	4.80	2.21
Total Nitrogen	1.40	6.82	3.78
Total Phosphorus	0.19	0.67	0.47
Chlorophyll a (µg/L)	31	177	63
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0007	0.0075	0.0037
Dissolved Chromium	<0.0005	0.0009	0.0007
Total Copper	0.002	0.005	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.62	2.85	2.02
Dissolved Iron	0.006	0.083	0.026
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0558	0.1235	0.1033
Dissolved Manganese	0.0049	0.0096	0.0070
Total Mercury (µg/L)	<0.05	0.09	0.06
Total Nickel	0.002	0.007	0.005
Dissolved Nickel	<0.0004	0.0028	0.0013
Total Silver	<0.0006	0.0008	0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.011	0.040	0.027
Dissolved Zinc	0.003	0.009	0.006
Fecal Coliform (cfu/100 mL)	<10	20	14[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-4: WATER QUALITY AT STATION 45 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.5[b]	29.2[b]	23.8
Total Suspended Solids	47	102	70
Turbidity (NTU)	39[b]	92[b]	75
Conductivity (µS/cm)	738[b]	843[b]	767
Five-Day Biochemical Oxygen Demand	<2	5	4
Dissolved Oxygen	4.9[b]	11.3[b]	7.4
pH (units)	8.2[b]	8.5[b]	8.4
Ammonia Nitrogen	0.04	0.26	0.13
Un-ionized Ammonia	0.004	0.036	0.017
Total Kjeldahl Nitrogen	1.31	1.75	1.45
Nitrite plus Nitrate Nitrogen	0.07	4.85	2.13
Total Nitrogen	1.43	6.16	3.57
Total Phosphorus	0.23	0.73	0.50
Chlorophyll a (µg/L)	24	58	43
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0012	0.0043	0.0031
Dissolved Chromium	<0.0005	0.0008	0.0006
Total Copper	0.002	0.005	0.004
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.97	2.75	2.06
Dissolved Iron	0.005	0.088	0.027
Total Lead	<0.003	0.007	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0653	0.1379	0.1114
Dissolved Manganese	0.0013	0.0071	0.0034
Total Mercury (µg/L)	<0.05	0.09	0.06
Total Nickel	0.002	0.006	0.004
Dissolved Nickel	<0.0004	0.0026	0.0013
Total Silver	<0.0006	0.0007	0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.016	0.031	0.027
Dissolved Zinc	0.003	0.013	0.006
Fecal Coliform (cfu/100 mL)	<10	10	10[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-5: WATER QUALITY AT STATION 46 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.6[b]	29.5[b]	24.2
Total Suspended Solids	36	107	72
Turbidity (NTU)	38[b]	95[b]	70
Conductivity (µS/cm)	732[b]	842[b]	766
Five-Day Biochemical Oxygen Demand	3	4	3
Dissolved Oxygen	5.5[b]	12.1[b]	7.7
pH (units)	8.3[b]	8.6[b]	8.4
Ammonia Nitrogen	0.06	0.14	0.10
Un-ionized Ammonia	0.006	0.019	0.014
Total Kjeldahl Nitrogen	1.33	1.99	1.53
Nitrite plus Nitrate Nitrogen	0.07	4.81	2.12
Total Nitrogen	1.62	6.14	3.65
Total Phosphorus	0.24	0.72	0.54
Chlorophyll a (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	0.0011	0.0061	0.0039
Dissolved Chromium	<0.0005	0.0008	0.0006
Total Copper	0.002	0.005	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.75	3.79	2.51
Dissolved Iron	0.005	0.051	0.017
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	0.004	0.004
Total Manganese	0.0510	0.1733	0.1261
Dissolved Manganese	0.0018	0.0054	0.0034
Total Mercury (µg/L)	<0.05	0.11	0.06
Total Nickel	0.002	0.007	0.005
Dissolved Nickel	<0.0004	0.0028	0.0013
Total Silver	<0.0006	0.0007	0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.012	0.040	0.030
Dissolved Zinc	0.003	0.012	0.007
Fecal Coliform (cfu/100 mL)	<10	40	15[c]
E. coli (cfu/100 mL)	<10	10	10[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-6: WATER QUALITY AT STATION 47 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.6[b]	29.7[b]	24.2
Total Suspended Solids	45	109	64
Turbidity (NTU)	39[b]	107[b]	81
Conductivity (µS/cm)	741[b]	844[b]	768
Five-Day Biochemical Oxygen Demand	<2	5	4
Dissolved Oxygen	5.6[b]	11.6[b]	7.5
pH (units)	8.3[b]	8.6[b]	8.4
Ammonia Nitrogen	0.05	0.29	0.14
Un-ionized Ammonia	0.006	0.041	0.020
Total Kjeldahl Nitrogen	1.32	1.82	1.56
Nitrite plus Nitrate Nitrogen	0.06	4.84	2.10
Total Nitrogen	1.38	6.52	3.66
Total Phosphorus	0.21	1.55	0.68
Chlorophyll a (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0007	0.0005
Total Chromium	0.0010	0.0043	0.0032
Dissolved Chromium	<0.0005	0.0011	0.0007
Total Copper	0.002	0.006	0.004
Dissolved Copper	<0.002	<0.002	<0.002
Total Iron	0.78	3.01	2.04
Dissolved Iron	0.006	0.046	0.021
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0558	0.1380	0.1138
Dissolved Manganese	0.0010	0.0028	0.0019
Total Mercury (µg/L)	<0.05	0.13	0.07
Total Nickel	0.002	0.006	0.004
Dissolved Nickel	<0.0004	0.0024	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.015	0.035	0.027
Dissolved Zinc	0.004	0.014	0.010
Fecal Coliform (cfu/100 mL)	<10	19,000	177[c]
E. coli (cfu/100 mL)	<10	350	33[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-7: WATER QUALITY AT STATION 48 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2007

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.7[b]	29.5[b]	24.4
Total Suspended Solids	42	93	64
Turbidity (NTU)	31[b]	98[b]	75
Conductivity (µS/cm)	740[b]	852[b]	768
Five-Day Biochemical Oxygen Demand	<2	6	4
Dissolved Oxygen	5.7[b]	11.4[b]	7.6
pH (units)	8.3[b]	8.6[b]	8.5
Ammonia Nitrogen	0.04	0.23	0.13
Un-ionized Ammonia	0.005	0.039	0.019
Total Kjeldahl Nitrogen	1.22	2.79	1.62
Nitrite plus Nitrate Nitrogen	0.07	4.86	2.09
Total Nitrogen	1.29	6.23	3.71
Total Phosphorus	0.23	0.77	0.50
Chlorophyll a (µg/L)	33	71	50
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0008	0.0005
Total Chromium	0.0012	0.0046	0.0031
Dissolved Chromium	<0.0005	0.0009	0.0007
Total Copper	0.002	0.007	0.004
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.84	2.92	1.96
Dissolved Iron	0.008	0.045	0.020
Total Lead	<0.003	0.005	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0566	0.1501	0.1114
Dissolved Manganese	0.0012	0.0043	0.0025
Total Mercury (µg/L)	<0.05	0.11	0.06
Total Nickel	0.002	0.006	0.004
Dissolved Nickel	<0.0004	0.0028	0.0012
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.014	0.041	0.028
Dissolved Zinc	<0.002	0.010	0.005
Fecal Coliform (cfu/100 mL)	<10	290	83[c]
E. coli (cfu/100 mL)	10	190	27[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.

TABLE AVII-8: WATER QUALITY AT STATION 49 IN THE ILLINOIS RIVER
MAY, AUGUST, AND OCTOBER 2005

Constituents[a]	Minimum	Maximum	Mean
Water Temperature (°C)	20.7[b]	29.7[b]	24.6
Total Suspended Solids	41	80	57
Turbidity (NTU)	36[b]	89[b]	72
Conductivity (µS/cm)	742[b]	857[b]	773
Five-Day Biochemical Oxygen Demand	<2	6	4
Dissolved Oxygen	5.7[b]	11.2[b]	7.6
pH (units)	8.3[b]	8.5[b]	8.4
Ammonia Nitrogen	0.04	0.35	0.17
Un-ionized Ammonia	0.005	0.048	0.024
Total Kjeldahl Nitrogen	1.21	1.76	1.44
Nitrite plus Nitrate Nitrogen	0.07	4.87	2.09
Total Nitrogen	1.31	6.08	3.54
Total Phosphorus	0.23	0.73	0.49
Chlorophyll a (µg/L)	No Data	No Data	No Data
Total Cyanide	<0.003	<0.003	<0.003
Phenols	<0.003	<0.003	<0.003
Total Arsenic	<0.02	<0.02	<0.02
Dissolved Arsenic	<0.01	<0.01	<0.01
Total Cadmium	<0.002	<0.002	<0.002
Dissolved Cadmium	<0.0004	0.0009	0.0005
Total Chromium	0.0006	0.0035	0.0027
Dissolved Chromium	<0.0005	0.0007	0.0006
Total Copper	0.002	0.006	0.003
Dissolved Copper	<0.002	0.002	0.002
Total Iron	0.58	2.73	1.75
Dissolved Iron	0.007	0.055	0.021
Total Lead	<0.003	0.006	0.004
Dissolved Lead	<0.004	<0.004	<0.004
Total Manganese	0.0575	0.1283	0.1052
Dissolved Manganese	0.0009	0.0033	0.0019
Total Mercury (µg/L)	<0.05	0.11	0.06
Total Nickel	0.002	0.005	0.004
Dissolved Nickel	<0.0004	0.0028	0.0014
Total Silver	<0.0006	<0.0006	<0.0006
Dissolved Silver	<0.0006	<0.0006	<0.0006
Total Zinc	0.024	0.033	0.029
Dissolved Zinc	0.005	0.023	0.012
Fecal Coliform (cfu/100 mL)	40	500	146[c]
E. coli (cfu/100 mL)	<10	150	53[c]

[a]Expressed in mg/L except where noted.
[b]Field measurement.
[c]Geometric mean.