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WATER AND SEDIMENT QUALITY ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING 2009

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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 2009, 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 2009 surveys, the following conclusions can be made concerning the water and sediment quality along the study reach:

Water Quality

During 2009, the mean concentration of total suspended solids (TSS) was highest in the Marseilles and Starved Rock Pools (48 and 45mg/L, respectively).

The mean concentration of five-day biochemical oxygen demand remained below the limit of quantitation (10 mg/L) throughout each of the sampled pools.

The mean dissolved oxygen (DO) concentration increased substantially along the waterway from the Lockport Pool (5.6 mg/L) to the Upper Peoria Pool (9.5 mg/L). In the Lower Peoria Pool, mean DO fell slightly (8.3 mg/L).

There was an increase in the mean pH from the Lockport Pool (7.0) to the Lower Peoria Pool (7.9).

The mean ammonia nitrogen (NH_4-N) concentration generally decreased between the Lockport Pool (0.46 mg/L) and the Lower Peoria Pool (0.15 mg/L).

There was an overall increase in the mean concentration of un-ionized ammonia (NH_3-N) between the Lockport Pool (0.002 mg/L) and the Lower Peoria Pool (0.009 mg/L) due largely to the increase in water pH that occurs along this reach. The NH_3-N concentration is calculated based on ammonia concentration, pH and temperature.

There was an overall decrease in mean nitrite plus nitrate nitrogen (NO_2+NO_3-N) and total nitrogen (TN) values from 5.22 and 6.48 mg/L, respectively, in the Lockport Pool to 3.48 and 4.35 mg/L, respectively, in the Lower Peoria Pool.

The mean total Kjeldahl nitrogen (TKN) concentration generally decreased from the Lockport Pool (1.26 mg/L) to the Lower Peoria Pool (0.87 mg/L).

There was a considerable decrease in the mean total phosphorus (TP) concentration along the Illinois Waterway from the Lockport Pool (0.90 mg/L) to the Lower Peoria Pool (0.43 mg/L).

Mean chlorophyll *a* concentration substantially increased along the Illinois Waterway from the Brandon Road Pool (8 µg/L) to the Lower Peoria Pool (36 µg/L).

The mean concentrations of cyanide and phenols were both less than 0.01 mg/L throughout the Illinois Waterway sampling reach.

After peaking in the Brandon Road Pool, there were decreases in the geometric mean density of fecal coliform (FC) and *E. coli* throughout the Dresden Island Pool. FC and *E. coli* densities then remained fairly uniform along the Illinois Waterway. The overall geometric mean decreases in FC and *E. coli* from Lockport to the Lower Peoria Pool were 227 to 23 cfu/100 mL, and 39 to 15 cfu/100 mL, respectively.

Total mean concentrations of chromium, lead, and nickel remained relatively constant from the Lockport to the Lower Peoria Pool (Table 6). Total concentrations of arsenic, cadmium, copper, mercury, and silver were less than the limit of quantitation for all water samples collected. The total iron generally increased progressively downstream, while total manganese increased downstream to the Marseilles Pool and then was somewhat stable. Total zinc decreased between Lockport and Marseilles Pool and then remained relatively constant for the remainder of the sampling reach.

Sediment Quality

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

The concentration of total volatile solids (TVS) was highest at Station 5 in the Dresden Island Pool (17 percent), decreased and remained relatively constant for the remainder of the sampling reach.

NH_4-N in sediment substantially decreased from its peak of 234 mg/kg in the Brandon Road Pool to 2 mg/kg in the Starved Rock Pool. NH_4-N increased again from Starved Rock to the Lower Peoria Pool where the concentration was 120 mg/kg at Station 44.

The concentrations of TKN and TP fluctuated widely along the Illinois Waterway sampling reach, but NO_2+NO_3-N concentration remained similar throughout (2 - 14 mg/kg).

The concentration of total cyanide (TCN) in the sediment was highest in the Lockport Pool (3.129 mg/kg) and then decreased considerably throughout the remainder of the sampling reach.

The concentration of phenols in the sediment was highest in the Brandon Road Pool (0.166 mg/kg) and fluctuated at sampling stations downstream.

Although the concentrations of the 11 trace metals measured in the sediment were variable among the 14 monitoring stations, considerably higher levels of chromium, copper, iron, lead, nickel, and zinc were measured between the Lockport and Dresden Island Pools compared to the remaining pools. There were also relatively higher 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 1,281 million gallons per day in 2009.

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 2009. Data from previous years have been compiled in formal annual reports for 1977, 1983–1985, 1989, 1991, and 2002–2008.

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

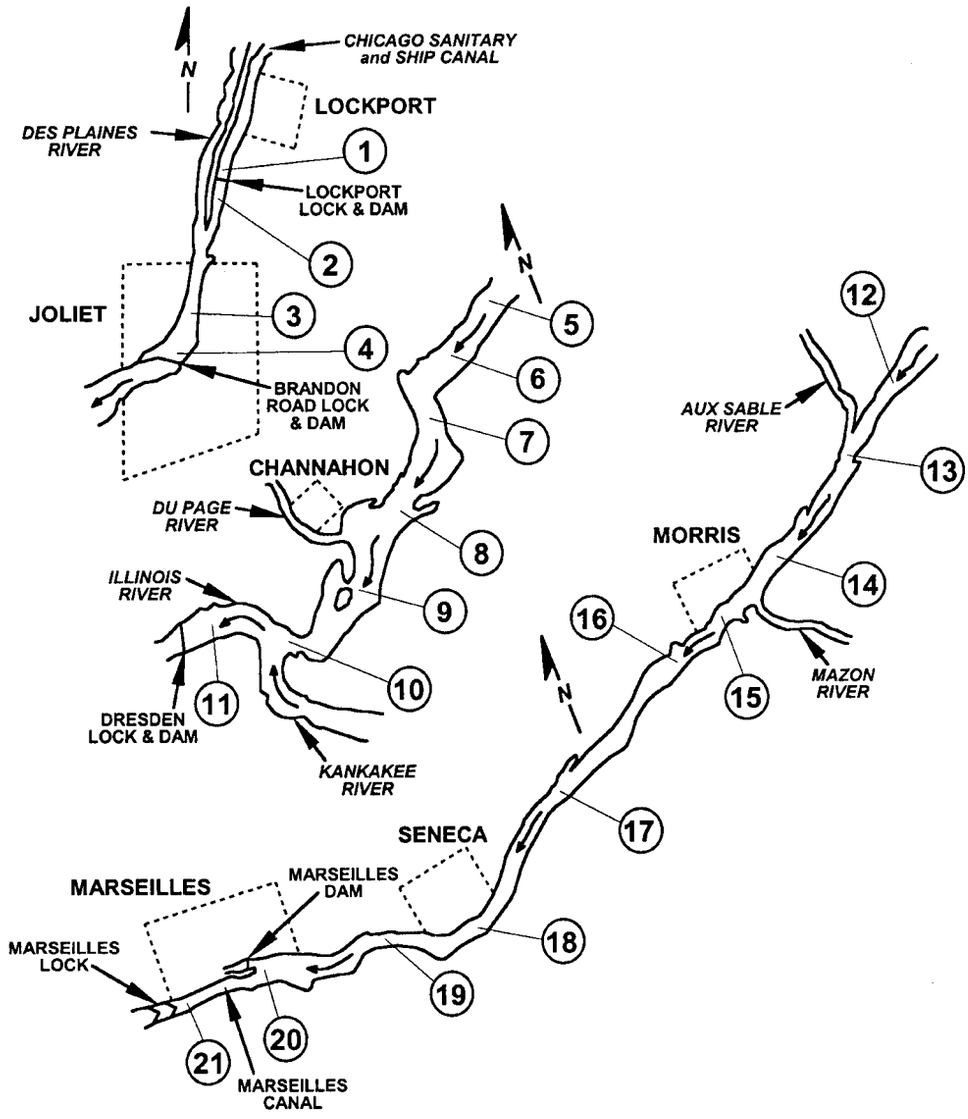


FIGURE 2: MAP OF THE ILLINOIS WATERWAY FROM OTTAWA TO PEORIA SHOWING SAMPLING STATIONS 22 TO 49

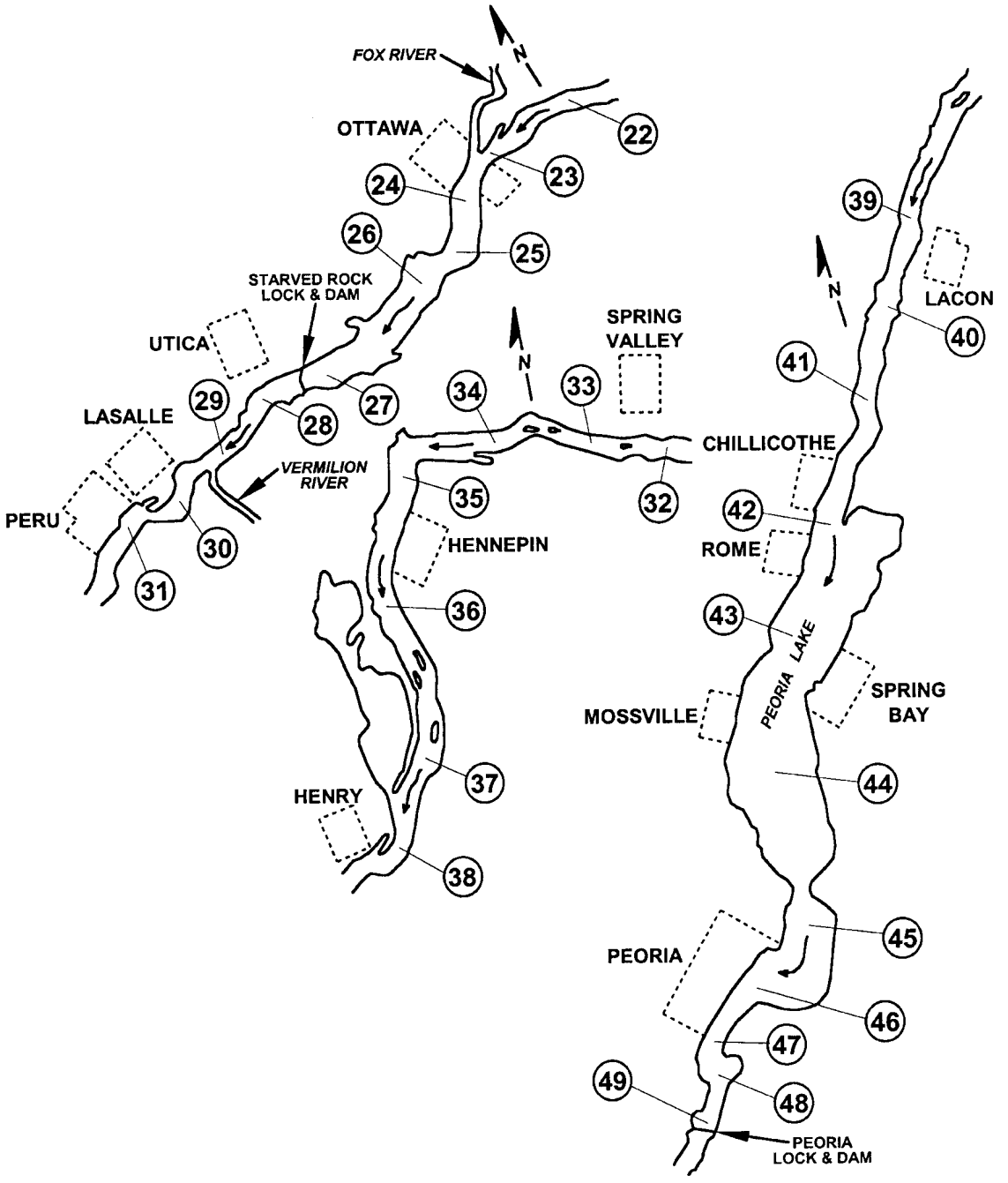


TABLE 2: MONITORING STATIONS ALONG THE ILLINOIS WATERWAY FROM LOCKPORT LOCK TO PEORIA LOCK

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 4 – 7, May 15 – 18, August 3 – 6, and October 5 – 8, 2009. Biochemical oxygen demand (BOD) was not analyzed during the May 15 – 18 period. Soluble metal analysis was discontinued along the Illinois Waterway during 2009. Samples were collected at a depth of three feet below the water surface in the center of the waterway with a submersible drainage pump. Except for FC and *E. coli*, all water samples were transported to the Cecil Lue-Hing Research and Development 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 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.

When an analytical result was less than the limit of quantitation (LOQ), the LOQ value was used to calculate the mean. The LOQ is the point at which the results can be reported with the highest degree of quantitative certainty and ranges from five to ten times the method detection limit (MDL).

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. *E. coli* was not analyzed during the May 15 – 18 period. 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)

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 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.

in the same manner as described for chemical constituents. The sample was poured into a 1-liter, widemouth, 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.

Sediment. *Chemical Constituents.* Sediment samples were collected during the 2009 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 5 – 8, 2009, one sediment sample was taken with a six- by six-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 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 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 29 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.

Spatial Variability Along the Illinois Waterway. *Total Suspended Solids.* As shown in Figure 3, TSS was generally similar between Lockport and the Peoria Pool. The elevated concentration of TSS during the second week in May could have been related to a storm event that occurred during the sampling.

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 2009

Navigational Pool	Constituents[a]	Range	Average
Lockport	Water Temperature (°C)[b]	18.3 – 27.6	21.5
	TSS	8 – 45	24
	Turbidity (NTU)[b]	7 – 40	24
	Conductivity (µS/cm)[b]	588 – 1,114	876
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	5.2 – 6.0	5.6
	pH (units)[b]	6.9 – 7.2	7.0
	NH_4-N	0.27 – 0.74	0.46
	NH_3-N	0.001 – 0.004	0.002
	TKN	0.75 – 1.95	1.26
	NO_2+NO_3-N	4.27 – 6.40	5.22
	TN	5.02 – 8.35	6.48
	TP	0.44 – 1.33	0.90
	Chlorophyll a (µg/L)	No Data	No Data
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	80 – 600	227[c]
	E. coli (cfu/100 mL)	20 – 60	39[c]
Brandon Road	Water Temperature (°C)[b]	16.8 – 27.8	20.8
	TSS	11 – 46	22
	Turbidity (NTU)[b]	9 – 47	29
	Conductivity (µS/cm)[b]	605 – 1,163	873
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	5.4 – 8.4	6.5
	pH (units)[b]	6.6 – 7.3	7.1
	NH_4-N	0.16 – 0.76	0.36
	NH_3-N	<0.001 – 0.004	0.002
	TKN	0.78 – 1.76	1.20
	NO_2+NO_3-N	3.18 – 6.73	4.75
	TN	4.14 – 8.49	5.95
	TP	0.35 – 1.34	0.84
	Chlorophyll a (µg/L)	2 – 13	8
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	30 – 1,500	331[c]
	E. coli (cfu/100 mL)	10 – 470	85[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 2009

Navigational Pool	Constituents[a]	Range	Average
Dresden Island	Water Temperature (°C)[b]	16.1 – 31.1	21.6
	TSS	11 – 245	31
	Turbidity (NTU)[b]	11 – 488	47
	Conductivity (µS/cm)[b]	555 – 1,097	874
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	7.1 – 9.7	8.6
	pH (units)[b]	6.8 – 8.0	7.5
	NH_4-N	<0.10 – 0.46	0.21
	NH_3-N	<0.001 – 0.012	0.004
	TKN	0.56 – 1.99	1.05
	NO_2+NO_3-N	3.05 – 5.49	4.45
	TN	4.09 – 6.75	5.49
	TP	0.33 – 1.30	0.80
	Chlorophyll a (µg/L)	6 – 28	12
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	20 – 1,800	220[c]
	E. coli (cfu/100 mL)	<10 – 140	31[c]
Marseilles	Water Temperature (°C)[b]	16.5 – 28.0	19.7
	TSS	11 – 197	48
	Turbidity (NTU)[b]	13 – 154	58
	Conductivity (µS/cm)[b]	616 – 807	730
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	7.4 – 11.0	9.2
	pH (units)[b]	7.2 – 8.3	7.9
	NH_4-N	<0.10 – 0.31	0.16
	NH_3-N	<0.001 – 0.014	0.005
	TKN	0.18 – 1.62	0.89
	NO_2+NO_3-N	2.89 – 4.83	3.99
	TN	3.87 – 5.70	4.88
	TP	0.25 – 1.07	0.57
	Chlorophyll a (µg/L)	5 – 79	20
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	<10 – 1,500	81[c]
	E. coli (cfu/100 mL)	<10 – 36	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 2009

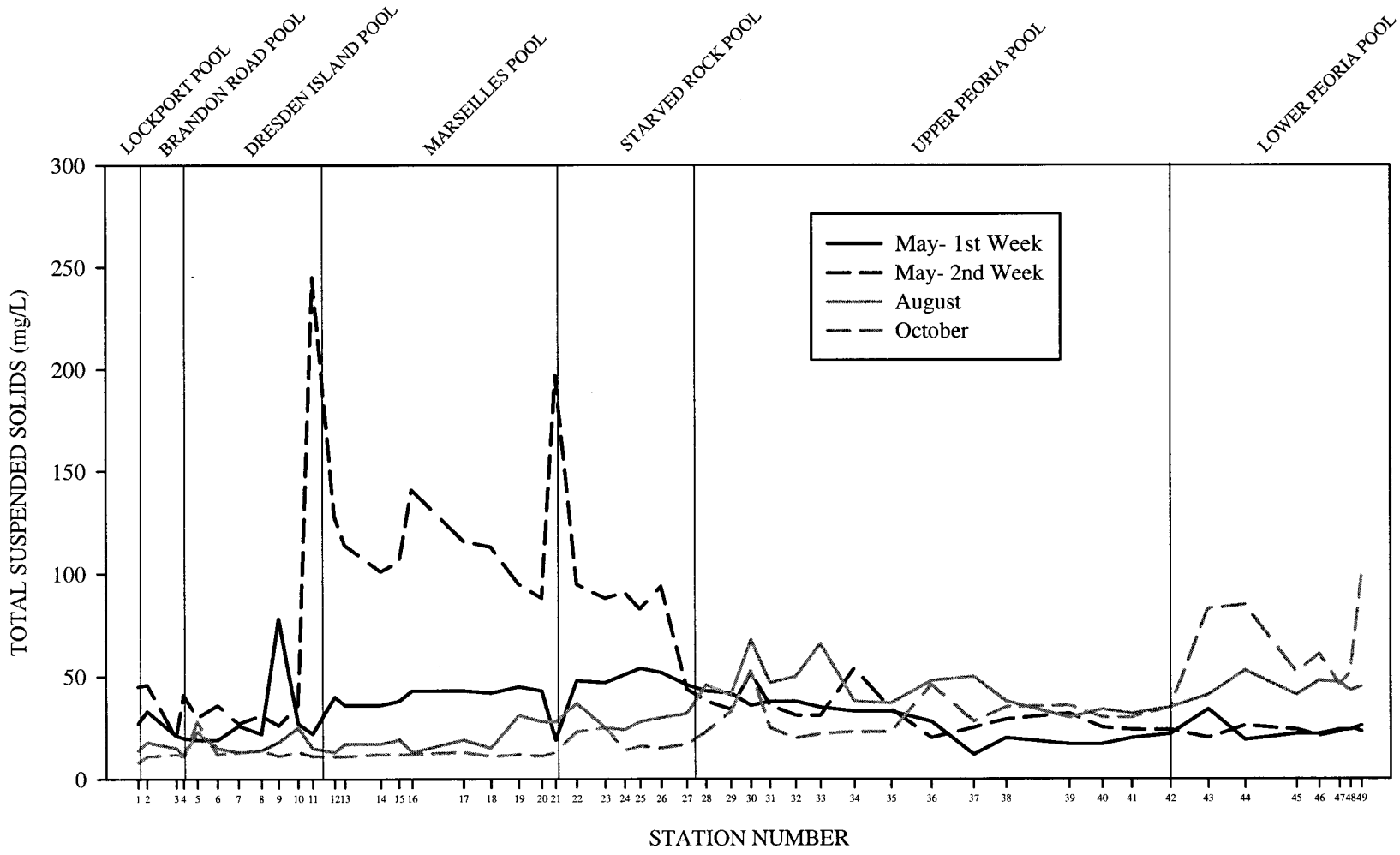
Navigational Pool	Constituents[a]	Range	Average
Starved Rock	Water Temperature (°C)[b]	15.4 – 27.0	19.3
	TSS	14 – 95	45
	Turbidity (NTU)[b]	16 – 141	58
	Conductivity (µS/cm)[b]	681 – 837	760
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	8.4 – 13.7	9.9
	pH (units)[b]	6.3 – 8.6	7.8
	NH_4-N	<0.10 – 0.22	0.15
	NH_3-N	<0.001 – 0.011	0.004
	TKN	0.50 – 1.44	1.02
	NO_2+NO_3-N	1.97 – 4.70	3.62
	TN	3.25 – 5.74	4.64
	TP	0.25 – 1.08	0.53
	Chlorophyll a (µg/L)	8 – 129	39
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	<10 – 1,000	72[c]
	E. coli (cfu/100 mL)	<10 – 36	12[c]
Upper Peoria	Water Temperature (°C)[b]	15.2 – 26.4	18.8
	TSS	12 – 68	34
	Turbidity (NTU)[b]	22 – 72	38
	Conductivity (µS/cm)[b]	623 – 839	748
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	7.8 – 11.9	9.5
	pH (units)[b]	6.8 – 8.8	8.0
	NH_4-N	<0.10 – 0.23	0.13
	NH_3-N	<0.001 – 0.031	0.005
	TKN	0.65 – 1.60	1.01
	NO_2+NO_3-N	1.73 – 4.84	3.48
	TN	2.92 – 5.70	4.49
	TP	0.25 – 0.86	0.48
	Chlorophyll a (µg/L)	11 – 119	34
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	<10 – 230	30[c]
	E. coli (cfu/100 mL)	<10 – 40	13[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 2009

Navigational Pool	Constituents[a]	Range	Average
Lower Peoria	Water Temperature (°C)[b]	14.2 – 25.7	18.8
	TSS	19 – 99	39
	Turbidity (NTU)[b]	25 – 96	49
	Conductivity (µS/cm)[b]	609 – 830	716
	BOD_5	<10 – <10	<10
	Dissolved Oxygen (DO)[b]	6.0 – 9.3	8.3
	pH (units)[b]	6.6 – 8.5	7.9
	NH_4-N	<0.10 – 0.31	0.15
	NH_3-N	<0.001 – 0.051	0.009
	TKN	0.64 – 1.23	0.87
	NO_2+NO_3-N	1.80 – 4.77	3.48
	TN	2.92 – 5.57	4.35
	TP	0.25 – 0.65	0.43
	Chlorophyll a (µg/L)	12 – 53	26
	Total Cyanide	<0.01 – <0.01	<0.01
	Phenols	<0.01 – <0.01	<0.01
	FC (cfu/100 mL)	<10 – 400	23[c]
	E. coli (cfu/100 mL)	<10 – 130	15[c]

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

FIGURE 3: TOTAL SUSPENDED SOLIDS CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2009



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 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, except during August when there was a slight decrease in the Lower Peoria Pool.

Ammonia Nitrogen. Ammonia nitrogen generally decreased from the Lockport Pool through the Upper Peoria Pool (Figure 5), then increased slightly in the Lower Peoria Pool.

Total Nitrogen. As shown in Figure 6, there was a general decrease in TN concentration from the Lockport Pool to the Marseilles Pool. TN concentration remained stable throughout the rest of the sampling reach. 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. Concentrations of TP decreased along the Illinois Waterway from the Lockport Pool to the Marseilles Pool, and then remained relatively constant through the remaining sampling reach, as shown in Figure 7. 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. TP concentrations were generally below the LOQ during the first week in May from the Marseilles Pool throughout the sampling reach. During the second week of May, TP concentrations were below the LOQ throughout the entire Peoria Pool.

Fecal Coliform. During the first week of May, August, and October, the FC concentration peaked in the Brandon Road Pool, decreased drastically downstream of this peak, and then remained rather uniform along the Illinois Waterway through the Lower Peoria Pool (Figure 8). However, during the second week of May, FC fluctuated widely and was elevated at times between the Dresden Island Pool and the Starved Rock Pool due to the rain event that occurred during that sampling period.

Trace Metals. Total concentrations of chromium, lead, and nickel remained relatively constant from the Lockport to the Lower Peoria Pool (Table 6). The total iron generally increased progressively downstream, while total manganese increased downstream to the Marseilles Pool and then was somewhat stable. Total zinc decreased between Lockport and Marseilles Pool and then remained relatively constant for the remainder of the sampling reach. Total concentrations of arsenic, cadmium, copper, mercury, and silver were less than the LOQ for all water samples collected.

FIGURE 4: DISSOLVED OXYGEN CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2009

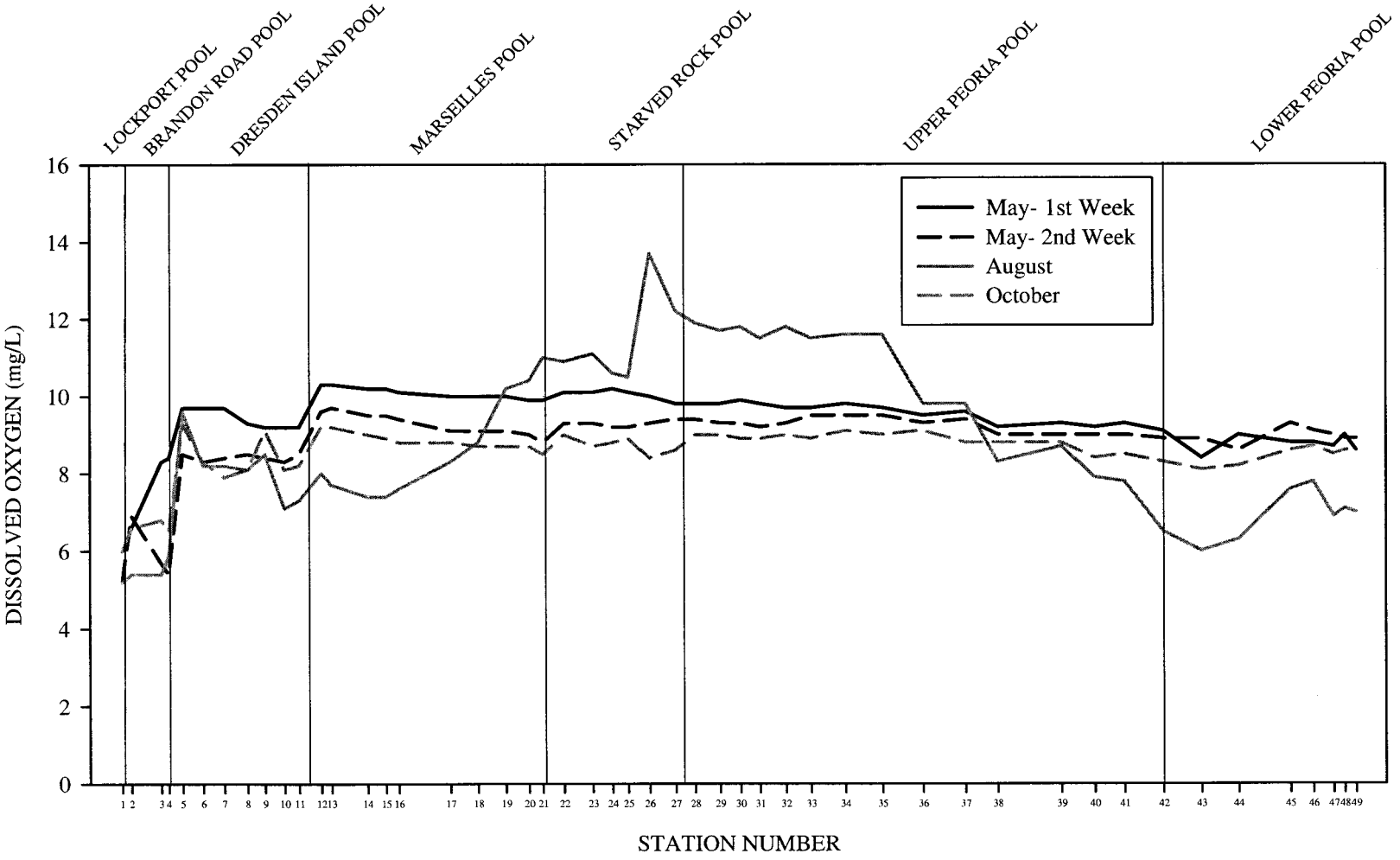


FIGURE 5: AMMONIA NITROGEN CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2009

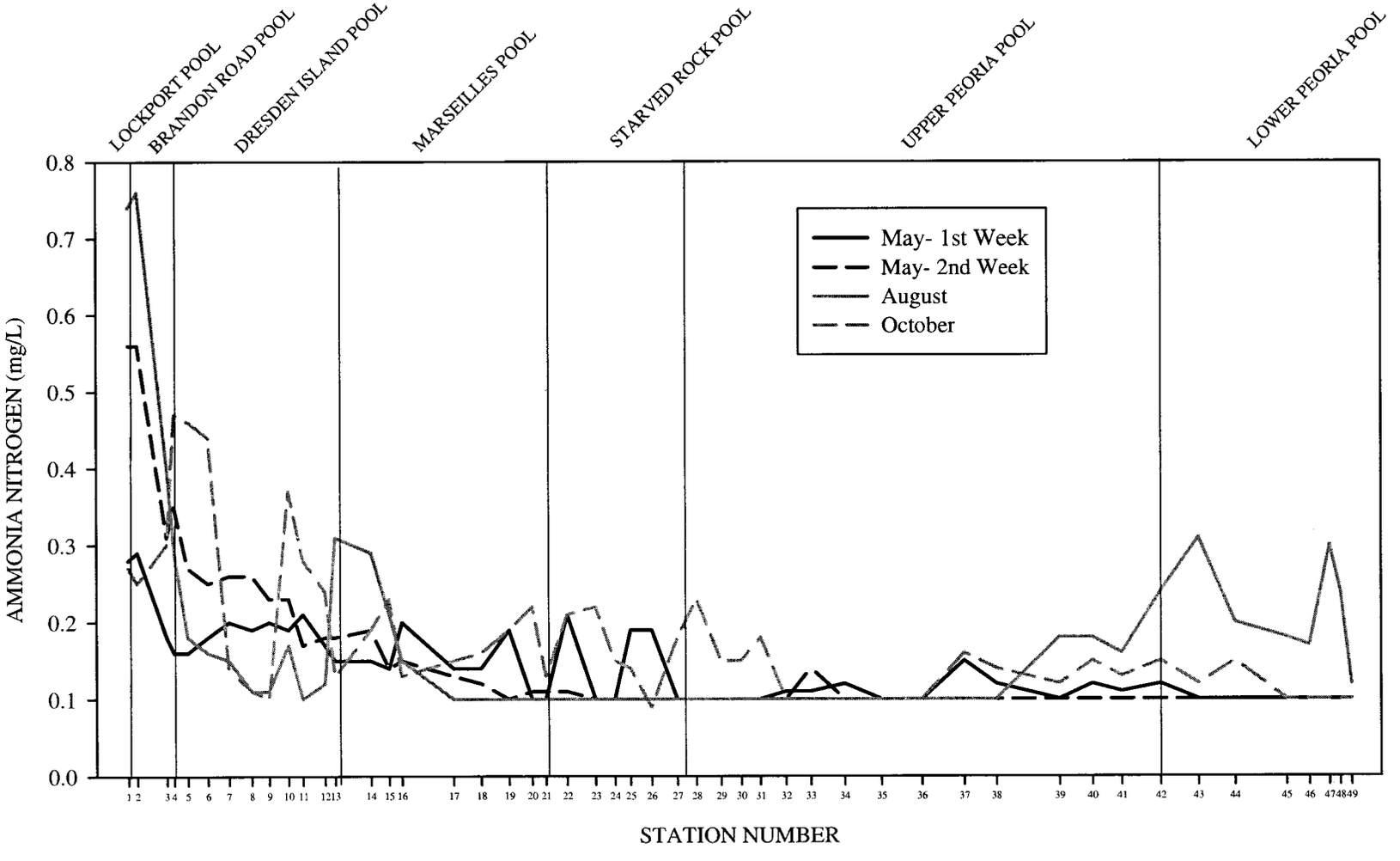


FIGURE 6: TOTAL NITROGEN CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2009

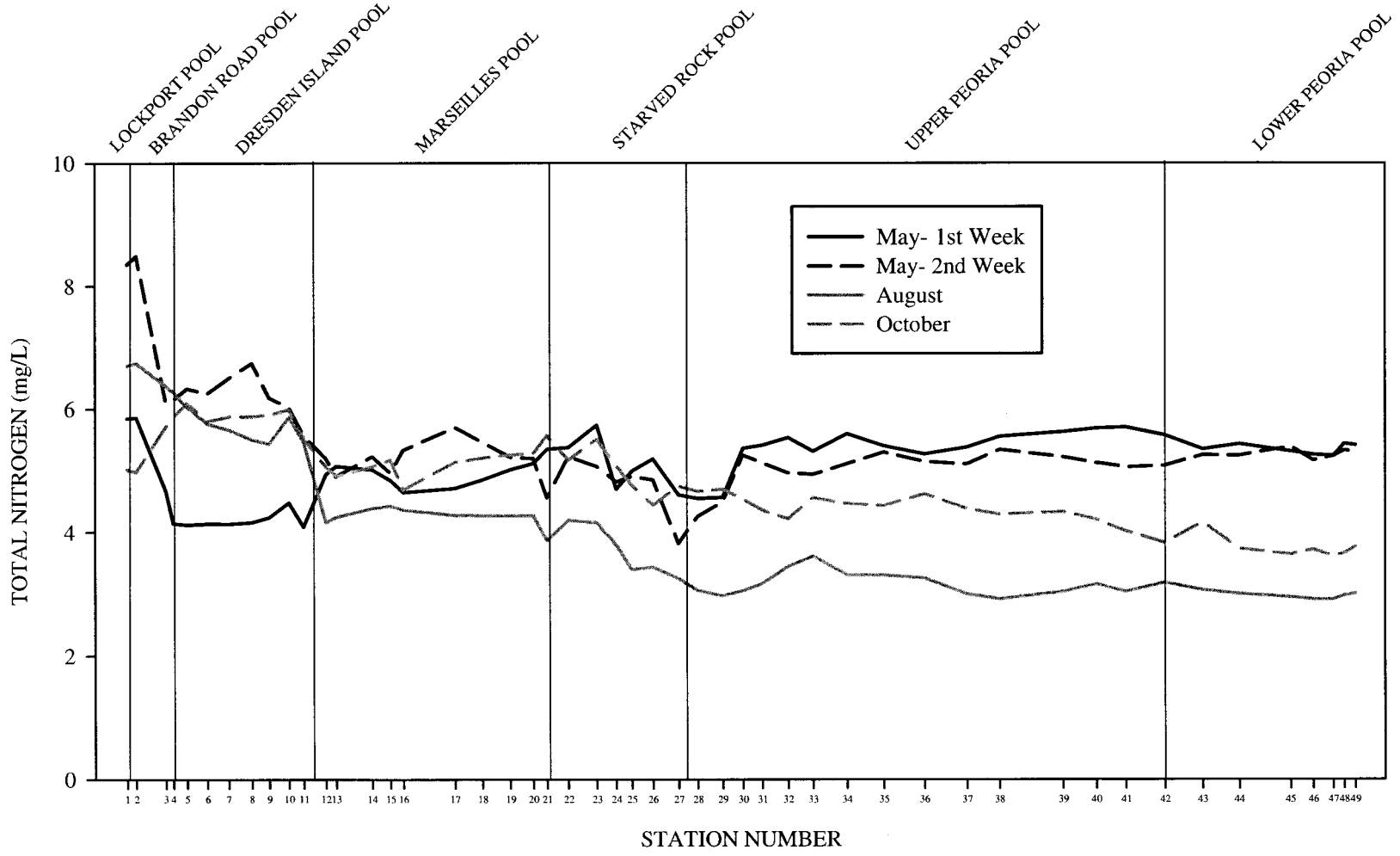


FIGURE 7: TOTAL PHOSPHORUS CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2009

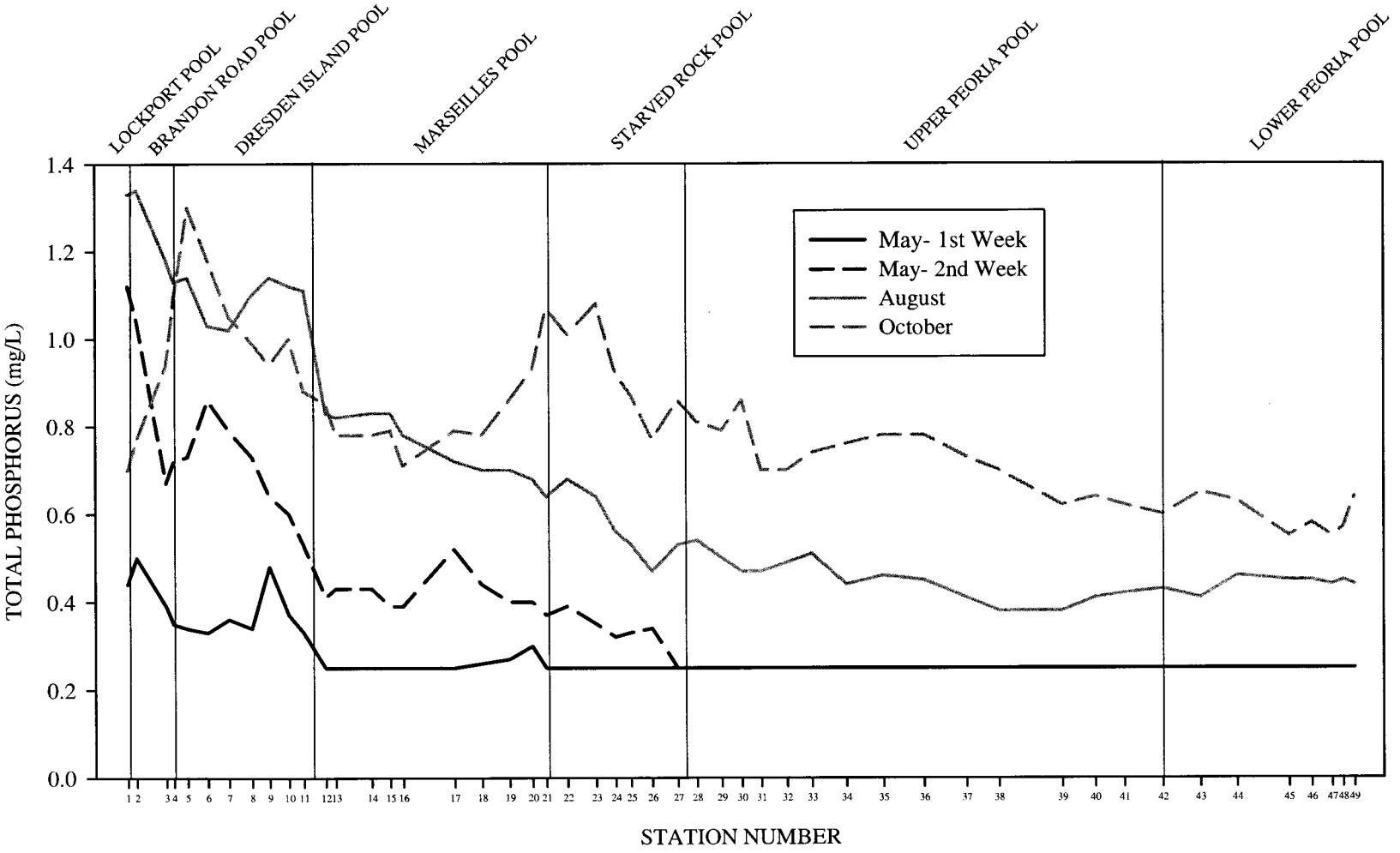


FIGURE 8: FECAL COLIFORM CONCENTRATION AT 49 STATIONS ALONG THE ILLINOIS WATERWAY FROM THE LOCKPORT LOCK TO THE PEORIA LOCK DURING MAY, AUGUST, AND OCTOBER 2009

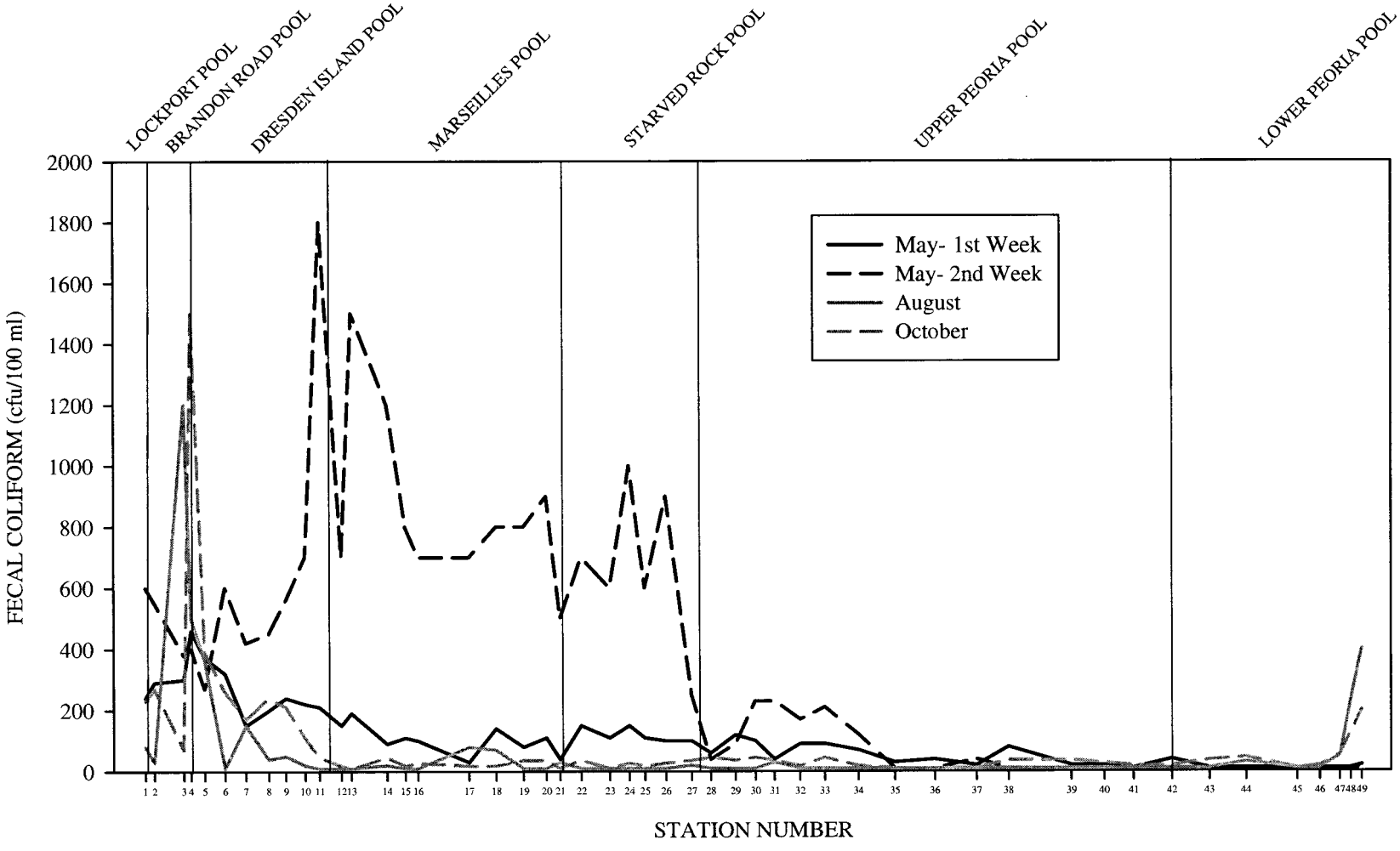


TABLE 6: SUMMARY OF METALS CONCENTRATIONS FROM THE LOCKPORT, BRANDON ROAD, DRESDEN ISLAND, MARSEILLES, STARVED ROCK, AND PEORIA POOLS OF THE ILLINOIS WATERWAY MAY, AUGUST, AND OCTOBER 2009

Navigational Pool	Constituents[a]	Range	Average
Lockport	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	<0.01 – 0.03	0.01
	Total Chromium	0.003 – 0.006	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.23 – 1.10	0.63
	Total Lead	All values <0.02	<0.02
	Total Manganese	0.016 – 0.043	0.029
	Total Mercury (µg/L)	<0.20 – <0.20	<0.20
	Total Nickel	All values <0.01	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	0.029 – 0.045	0.036
Brandon Road	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	<0.01 – 0.02	0.01
	Total Chromium	<0.003 – 0.006	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.30 – 1.43	0.71
	Total Lead	<0.02 – 0.03	0.02
	Total Manganese	0.019 – 0.055	0.034
	Total Mercury (µg/L)	All values <0.20	<0.20
	Total Nickel	All values <0.01	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	0.022 – 0.052	0.031
Dresden Island	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	All values <0.01	<0.01
	Total Chromium	<0.003 – 0.011	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.35 – 11.66	1.08
	Total Lead	<0.02 – 0.03	0.02
	Total Manganese	0.021 – 0.322	0.044
	Total Mercury (µg/L)	All values <0.20	<0.20
	Total Nickel	<0.01 – 0.01	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	0.021 – 0.052	0.029

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 2009

Navigational Pool	Constituents[a]	Range	Average
Marseilles	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	All values <0.01	<0.01
	Total Chromium	<0.003 – 0.008	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.35 – 6.56	1.71
	Total Lead	<0.02 – 0.03	0.02
	Total Manganese	0.023 – 0.174	0.063
	Total Mercury (µg/L)	<0.20 – <0.20	<0.20
	Total Nickel	All values <0.01	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	<0.015 – 0.038	0.021
Starved Rock	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	All values <0.01	<0.01
	Total Chromium	<0.003 – 0.005	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.44 – 3.37	1.36
	Total Lead	<0.02 – 0.02	0.02
	Total Manganese	0.028 – 0.100	0.057
	Total Mercury (µg/L)	All values <0.20	<0.20
	Total Nickel	<0.01 – 0.03	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	<0.015 – 0.038	0.021
Upper Peoria	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	All values <0.01	<0.01
	Total Chromium	<0.003 0.045	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.53 – 1.67	1.03
	Total Lead	<0.02 – 0.02	0.02
	Total Manganese	0.031 – 0.098	0.055
	Total Mercury (µg/L)	All values <0.20	<0.20
	Total Nickel	<0.01 – 0.02	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	<0.015 – 0.031	0.018

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 2009

Navigational Pool	Constituents[a]	Range	Average
Lower Peoria	Total Arsenic	All values <0.05	<0.05
	Total Cadmium	All values <0.01	<0.01
	Total Chromium	<0.003 – 0.008	0.004
	Total Copper	All values <0.01	<0.01
	Total Iron	0.69 – 3.36	1.33
	Total Lead	<0.02 – 0.02	0.02
	Total Manganese	0.036 – 0.126	0.069
	Total Mercury (µg/L)	All values <0.20	<0.20
	Total Nickel	All values <0.01	<0.01
	Total Silver	All values <0.003	<0.003
	Total Zinc	<0.015 – 0.035	0.019

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

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). 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 Indigenous Aquatic Life Use minimum DO standard is 4.0 mg/L. The Indigenous Aquatic Life Use Standard was consistently achieved during each of the sampling periods. The General Use minimum DO standard is 5.0 mg/L during March – July, and 3.5 mg/L during August – February, and it was achieved for all sampling periods throughout the sampling reach. The General Use DO standards also include a seven-day mean of minima and a 30-day mean of means, which cannot be assessed with the limited DO data that was collected for this study.

Fecal Coliform. During the second week of May sampling, FC exceeded the General Use Standard of 400 cfu/100 mL at Stations 9 - 26. The FC exceedances ranged from 500 to 1,800 cfu/100 mL. The Secondary Contact Use has no FC standard.

Total Mercury. The Water Quality Standard for the Protection of Human Health for total mercury in General Use waters is 0.012 µg/L. The total mercury values for all the stations and dates were less than the LOQ (0.20 µg/L), but 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 the Lockport and Brandon Road Pool stations generally contained the highest levels of TKN, NO3+NO2, TP, and cyanide. TKN and TP concentrations were relatively elevated in portions of the Dresden Island and Peoria Pools. Higher concentrations of phenols were detected between the Lockport and Dresden Island Pools and again in the Upper and Lower Peoria Pools.

The concentrations of 11 measured trace metals for the same 14 selected stations are presented in Table 8. Arsenic and mercury concentrations were below the LOQ at all of the sediment sampling stations, as was silver at all but one station (Number 12). Concentrations of

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 2009

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	43	10	101	2,595	14	3,981	3.129	0.110
2	Brandon Road	41	9	234	5,415	11	10,143	1.236	0.166
5	Dresden Island	74	17	13	584	3	926	0.188	0.058
8	Dresden Island	55	9	110	3,611	12	2,080	1.298	0.106
12	Marseilles	74	1	6	436	3	1,254	0.044	0.058
18	Marseilles	57	3	13	1,197	7	444	0.018	0.057
23	Starved Rock	83	1	2	20	2	120	<0.005	0.056
28	Peoria	68	2	3	466	2	492	0.050	0.058
32	Peoria	74	1	7	242	2	211	0.024	0.052
35	Peoria	61	3	45	805	6	757	0.351	0.069
38	Peoria	56	5	49	1,198	7	1,154	0.099	0.075
41	Peoria	38	8	52	2,821	10	1,706	0.292	0.117
44	Peoria	39	7	120	2,841	7	1,760	0.161	0.130
48	Peoria	59	3	12	910	5	448	0.059	0.079

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 2009

Station No.	Navigational Pool	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
		(mg/kg dry weight)										
1	Lockport	<25	7	96	103	22,654	132	390	<1.250	35	<1	569
2	Brandon Road	<25	7	82	119	31,236	148	773	<1.250	29	<1	593
5	Dresden Island	<25	<2	21	23	12,208	506	292	<1.250	13	<1	178
8	Dresden Island	<25	5	59	66	23,134	73	710	<1.250	30	<1	311
12	Marseilles	<25	<2	11	10	7,736	20	332	<1.250	6	1	71
18	Marseilles	<25	<2	8	5	11,071	13	307	<1.250	8	<1	46
23	Starved Rock	<25	<2	5	2	7,826	9	184	<1.250	6	<1	29
28	Peoria	<25	<2	8	10	7,762	14	237	<1.250	7	<1	48
32	Peoria	<25	<2	5	3	7,380	11	210	<1.250	6	<1	70
35	Peoria	<25	<2	11	11	9,977	26	292	<1.250	9	<1	99
38	Peoria	<25	<2	13	11	12,745	20	462	<1.250	12	<1	113
41	Peoria	<25	<2	24	27	18,088	34	555	<1.250	18	<1	166
44	Peoria	<25	<2	31	34	22,241	37	576	<1.250	21	<1	190
48	Peoria	<25	<2	10	9	11,819	16	341	<1.250	9	<1	61

chromium and nickel were highest in the Lockport Pool. The Brandon Road Pool contained the most elevated concentrations of copper, iron, manganese, and zinc. Lead concentration was highest in the Dresden Island Pool.

APPENDIX AI

WATER QUALITY AT STATION 1 IN THE CHICAGO SANITARY AND SHIP CANAL DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AI-1: WATER QUALITY AT STATION 1 IN THE CHICAGO SANITARY AND SHIP CANAL DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	18.3	19.4	27.6	20.5
Total Suspended Solids	27	45	14	8
Turbidity (NTU)[b]	18	29	40	7
Conductivity (µS/cm)[b]	993	1,114	808	588
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	6.0	5.2	5.2	6.0
pH (units)[b]	6.9	7.1	6.9	7.2
Ammonia Nitrogen	0.28	0.56	0.74	0.27
Un-ionized Ammonia	0.001	0.003	0.004	0.002
Total Kjeldahl Nitrogen	1.14	1.95	1.21	0.75
Nitrite plus Nitrate Nitrogen	4.71	6.40	5.50	4.27
Total Nitrogen	5.85	8.35	6.71	5.02
Total Phosphorus	0.44	1.12	1.33	0.70
Chlorophyll *a* (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.005	0.003	<0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.79	1.10	0.39	0.23
Total Lead	0.023	<0.015	<0.015	<0.015
Total Manganese	0.034	0.043	0.022	0.016
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.040	0.045	0.029	0.029
Fecal Coliform (cfu/100 mL)	240	600	80	230
E.coli (cfu/100 mL)	60	No Data	20	50

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

APPENDIX AII

WATER QUALITY AT STATIONS 2 - 4 IN THE CHICAGO SANITARY AND SHIP CANAL AND DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AII-1: WATER QUALITY AT STATION 2 IN THE CHICAGO SANITARY AND SHIP CANAL DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	18.2	19.0	27.8	19.9
Total Suspended Solids	33	46	18	11
Turbidity (NTU)[b]	37	47	44	9
Conductivity (µS/cm)[b]	993	1,163	806	605
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	6.6	6.9	5.4	6.6
pH (units)[b]	6.6	7.1	6.9	7.2
Ammonia Nitrogen	0.29	0.56	0.76	0.25
Un-ionized Ammonia	<0.001	0.003	0.004	0.002
Total Kjeldahl Nitrogen	1.16	1.76	1.23	0.78
Nitrite plus Nitrate Nitrogen	4.70	6.73	5.52	4.20
Total Nitrogen	5.86	8.49	6.75	4.98
Total Phosphorus	0.50	1.04	1.34	0.77
Chlorophyll a (µg/L)	3	No Data	8	2
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	No Data	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.005	0.006	0.004	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.94	1.43	0.53	0.36
Total Lead	0.021	<0.015	<0.015	0.015
Total Manganese	0.040	0.055	0.025	0.019
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.035	0.052	0.032	0.031
Fecal Coliform (cfu/100 mL)	290	550	30	270
E.coli (cfu/100 mL)	150	No Data	10	70

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

TABLE AII-2: WATER QUALITY AT STATION 3 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.2	19.9	27.6	18.0
Total Suspended Solids	21	20	15	12
Turbidity (NTU)[b]	22	32	41	10
Conductivity (µS/cm)[b]	915	1,052	815	671
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.3	5.7	5.4	6.8
pH (units)[b]	6.9	7.3	7.0	7.3
Ammonia Nitrogen	0.18	0.31	0.40	0.30
Un-ionized Ammonia	<0.001	0.003	0.003	0.002
Total Kjeldahl Nitrogen	1.21	1.44	1.08	0.96
Nitrite plus Nitrate Nitrogen	3.46	4.68	5.30	4.75
Total Nitrogen	4.67	6.12	6.38	5.71
Total Phosphorus	0.39	0.67	1.18	0.94
Chlorophyll a (µg/L)	11	11	13	5
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.004	0.003	0.005
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.76	1.03	0.54	0.41
Total Lead	0.024	<0.015	<0.015	0.017
Total Manganese	0.033	0.049	0.029	0.023
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.026	0.031	0.029	0.029
Fecal Coliform (cfu/100 mL)	300	380	1,200	72
E.coli (cfu/100 mL)	50	No Data	280	470

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

TABLE AII-3: WATER QUALITY AT STATION 4 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	19.8	27.2	18.4
Total Suspended Solids	20	41	11	11
Turbidity (NTU)[b]	23	38	38	12
Conductivity (µS/cm)[b]	900	1,062	807	691
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.4	5.4	5.9	6.5
pH (units)[b]	6.7	7.3	7.1	7.2
Ammonia Nitrogen	0.16	0.35	0.29	0.47
Un-ionized Ammonia	<0.001	0.003	0.003	0.003
Total Kjeldahl Nitrogen	0.96	1.51	1.15	1.12
Nitrite plus Nitrate Nitrogen	3.18	4.64	5.13	4.74
Total Nitrogen	4.14	6.15	6.28	5.86
Total Phosphorus	0.35	0.72	1.13	1.09
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.004	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.76	1.09	0.30	0.38
Total Lead	0.025	<0.015	<0.015	<0.02
Total Manganese	0.033	0.052	0.023	0.025
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.023	0.037	0.022	0.027
Fecal Coliform (cfu/100 mL)	460	400	500	1500
E.coli (cfu/100 mL)	90	No Data	30	120

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

APPENDIX AIII

WATER QUALITY AT STATIONS 5 – 11 IN THE CHICAGO SANITARY AND SHIP CANAL, DES PLAINES RIVER, AND ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AIII-1: WATER QUALITY AT STATION 5 IN THE CHICAGO SANITARY AND SHIP CANAL DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.0	19.3	27.3	19.8
Total Suspended Solids	19	30	23	28
Turbidity (NTU)[b]	25	27	45	17
Conductivity (µS/cm)[b]	900	1,074	841	768
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.7	8.5	9.6	9.3
pH (units)[b]	6.8	7.4	7.4	7.7
Ammonia Nitrogen	0.16	0.27	0.18	0.46
Un-ionized Ammonia	<0.001	0.003	0.003	0.009
Total Kjeldahl Nitrogen	0.95	1.49	1.06	1.18
Nitrite plus Nitrate Nitrogen	3.17	4.85	4.98	4.92
Total Nitrogen	4.12	6.34	6.04	6.10
Total Phosphorus	0.34	0.73	1.14	1.30
Chlorophyll a (µg/L)	10	No Data	13	6
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.003	0.004	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.77	0.73	0.66	0.42
Total Lead	0.020	<0.015	<0.015	<0.015
Total Manganese	0.032	0.043	0.031	0.024
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.023	0.027	0.031	0.030
Fecal Coliform (cfu/100 mL)	370	270	360	390
E.coli (cfu/100 mL)	<10	No Data	30	54

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

TABLE AIII-2: WATER QUALITY AT STATION 6 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	18.1	20.4	31.1	23.9
Total Suspended Solids	19	36	15	12
Turbidity (NTU)[b]	25	44	43	11
Conductivity (µS/cm)[b]	902	1,086	832	759
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.7	8.3	8.2	8.3
pH (units)[b]	7.2	7.5	7.6	7.4
Ammonia Nitrogen	0.18	0.25	0.16	0.44
Un-ionized Ammonia	0.001	0.003	0.006	0.006
Total Kjeldahl Nitrogen	0.99	1.46	0.96	0.81
Nitrite plus Nitrate Nitrogen	3.15	4.79	4.80	5.00
Total Nitrogen	4.14	6.25	5.76	5.81
Total Phosphorus	0.33	0.86	1.03	1.18
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.004	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.80	1.18	0.43	0.36
Total Lead	0.021	<0.015	<0.015	<0.015
Total Manganese	0.032	0.054	0.037	0.023
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.022	0.036	0.024	0.029
Fecal Coliform (cfu/100 mL)	320	600	<10	260
E.coli (cfu/100 mL)	50	No Data	10	140

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

TABLE AIII-3: WATER QUALITY AT STATION 7 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	18.3	20.0	29.3	21.7
Total Suspended Solids	26	27	13	13
Turbidity (NTU)[b]	32	30	40	16
Conductivity (µS/cm)[b]	900	1,097	848	751
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.7	8.4	8.2	7.9
pH (units)[b]	7.3	7.5	7.5	7.5
Ammonia Nitrogen	0.20	0.26	0.15	0.14
Un-ionized Ammonia	0.001	0.003	0.004	0.002
Total Kjeldahl Nitrogen	1.04	1.33	0.87	0.73
Nitrite plus Nitrate Nitrogen	3.10	5.17	4.80	5.15
Total Nitrogen	4.14	6.50	5.67	5.88
Total Phosphorus	0.36	0.79	1.02	1.05
Chlorophyll a (µg/L)	7	13	21	6
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.004	0.003	0.005
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.03	1.02	0.35	0.43
Total Lead	0.017	<0.015	<0.015	<0.015
Total Manganese	0.042	0.048	0.025	0.023
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.025	0.035	0.021	0.029
Fecal Coliform (cfu/100 mL)	150	420	150	170
E.coli (cfu/100 mL)	80	No Data	30	100

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

TABLE AIII-4: WATER QUALITY AT STATION 8 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	18.1	19.7	29.3	21.0
Total Suspended Solids	22	31	14	14
Turbidity (NTU)[b]	28	28	42	12
Conductivity (µS/cm)[b]	891	1,072	853	753
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.3	8.5	8.1	8.1
pH (units)[b]	7.0	7.5	7.6	7.5
Ammonia Nitrogen	0.19	0.26	0.11	0.11
Un-ionized Ammonia	0.001	0.003	0.003	0.002
Total Kjeldahl Nitrogen	1.09	1.26	0.86	0.68
Nitrite plus Nitrate Nitrogen	3.07	5.49	4.64	5.20
Total Nitrogen	4.16	6.75	5.50	5.88
Total Phosphorus	0.34	0.73	1.10	0.99
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.003	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.79	0.84	0.36	0.49
Total Lead	0.021	<0.015	<0.015	<0.015
Total Manganese	0.037	0.040	0.025	0.026
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.034	0.025	0.021	0.028
Fecal Coliform (cfu/100 mL)	200	450	40	240
E.coli (cfu/100 mL)	90	No Data	10	45

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

TABLE AIII-5: WATER QUALITY AT STATION 9 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	18.3	19.4	28.8	20.2
Total Suspended Solids	78	26	18	11
Turbidity (NTU)[b]	33	30	45	11
Conductivity (µS/cm)[b]	901	1,027	871	789
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.2	8.4	8.5	9.1
pH (units)[b]	7.3	7.6	7.7	7.7
Ammonia Nitrogen	0.20	0.23	0.11	<0.10
Un-ionized Ammonia	0.001	0.004	0.004	0.002
Total Kjeldahl Nitrogen	1.19	1.23	0.83	0.56
Nitrite plus Nitrate Nitrogen	3.05	4.95	4.61	5.35
Total Nitrogen	4.24	6.18	5.44	5.91
Total Phosphorus	0.48	0.64	1.14	0.94
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.007	0.003	0.003	0.011
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.74	0.85	0.47	0.37
Total Lead	0.027	<0.015	<0.015	0.016
Total Manganese	0.058	0.041	0.031	0.021
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.041	0.031	0.027	0.024
Fecal Coliform (cfu/100 mL)	240	560	50	210
E.coli (cfu/100 mL)	40	No Data	<10	18

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

TABLE AIII-6: WATER QUALITY AT STATION 10 IN THE DES PLAINES RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.5	18.6	28.2	19.6
Total Suspended Solids	27	36	25	13
Turbidity (NTU)[b]	29	50	48	16
Conductivity (µS/cm)[b]	927	992	882	795
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.2	8.3	7.1	8.1
pH (units)[b]	7.7	7.5	7.7	7.9
Ammonia Nitrogen	0.19	0.23	0.17	0.37
Un-ionized Ammonia	0.003	0.003	0.006	0.012
Total Kjeldahl Nitrogen	1.14	1.31	1.13	0.80
Nitrite plus Nitrate Nitrogen	3.34	4.71	4.74	5.20
Total Nitrogen	4.48	6.02	5.87	6.00
Total Phosphorus	0.37	0.60	1.12	1.00
Chlorophyll a (µg/L)	9	13	16	6
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.005	0.003	0.004	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.97	1.16	0.58	0.40
Total Lead	0.021	<0.015	<0.015	<0.015
Total Manganese	0.042	0.042	0.030	0.022
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.026	0.027	0.029	0.028
Fecal Coliform (cfu/100 mL)	220	700	20	110
E.coli (cfu/100 mL)	<10	No Data	<10	45

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

TABLE AIII-7: WATER QUALITY AT STATION 11 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.1	17.6	27.6	18.4
Total Suspended Solids	22	245	15	11
Turbidity (NTU)[b]	40	488	54	14
Conductivity (µS/cm)[b]	765	555	854	792
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.2	8.5	7.3	8.2
pH (units)[b]	7.9	7.6	7.6	8.0
Ammonia Nitrogen	0.21	0.17	<0.10	0.28
Un-ionized Ammonia	0.005	0.002	0.003	0.010
Total Kjeldahl Nitrogen	0.80	1.99	0.94	0.65
Nitrite plus Nitrate Nitrogen	3.29	3.58	4.53	4.88
Total Nitrogen	4.09	5.57	5.47	5.53
Total Phosphorus	0.33	0.53	1.11	0.88
Chlorophyll a (µg/L)	8	13	28	8
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.011	0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.77	11.66	0.39	0.35
Total Lead	0.017	<0.015	<0.015	<0.015
Total Manganese	0.041	0.322	0.031	0.022
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.026	0.052	0.027	0.024
Fecal Coliform (cfu/100 mL)	210	1,800	<10	45
E.coli (cfu/100 mL)	10	No Data	<10	18

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

APPENDIX IV

WATER QUALITY AT STATIONS 12 – 21 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AIV-1: WATER QUALITY AT STATION 12 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	16.8	28.0	17.8
Total Suspended Solids	40	128	13	11
Turbidity (NTU)[b]	48	129	40	17
Conductivity (µS/cm)[b]	716	640	780	777
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.3	9.6	8.0	9.2
pH (units)[b]	7.8	7.7	7.8	8.1
Ammonia Nitrogen	0.17	0.18	0.12	0.24
Un-ionized Ammonia	0.003	0.003	0.005	0.010
Total Kjeldahl Nitrogen	0.97	1.62	0.84	0.56
Nitrite plus Nitrate Nitrogen	3.97	3.58	3.32	4.51
Total Nitrogen	4.94	5.20	4.16	5.07
Total Phosphorus	0.25	0.41	0.83	0.85
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.006	<0.003	<0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.51	4.93	0.38	0.37
Total Lead	0.023	<0.015	<0.015	<0.02
Total Manganese	0.059	0.174	0.041	0.024
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.017	0.029	0.017	0.023
Fecal Coliform (cfu/100 mL)	150	700	10	18
E.coli (cfu/100 mL)	<10	No Data	<10	10

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

TABLE AIV-2: WATER QUALITY AT STATION 13 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	16.6	27.9	17.6
Total Suspended Solids	36	114	17	11
Turbidity (NTU)[b]	46	122	43	13
Conductivity (µS/cm)[b]	692	616	782	770
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.3	9.7	7.7	9.2
pH (units)[b]	7.8	7.8	7.8	8.1
Ammonia Nitrogen	0.15	0.18	0.31	0.13
Un-ionized Ammonia	0.003	0.004	0.014	0.006
Total Kjeldahl Nitrogen	1.04	1.39	0.84	0.61
Nitrite plus Nitrate Nitrogen	4.03	3.52	3.40	4.30
Total Nitrogen	5.07	4.91	4.24	4.91
Total Phosphorus	<0.25	0.43	0.82	0.78
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.005	0.005	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.40	4.36	0.49	0.35
Total Lead	0.020	<0.015	<0.015	0.016
Total Manganese	0.054	0.149	0.046	0.023
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.015	0.028	0.019	0.021
Fecal Coliform (cfu/100 mL)	190	1,500	<10	10
E.coli (cfu/100 mL)	<10	No Data	<10	36

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

TABLE AIV-3: WATER QUALITY AT STATION 14 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.6	16.7	27.8	17.9
Total Suspended Solids	36	101	17	12
Turbidity (NTU)[b]	45	129	39	15
Conductivity (µS/cm)[b]	708	643	778	771
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.2	9.5	7.4	9.0
pH (units)[b]	7.8	7.7	7.8	8.1
Ammonia Nitrogen	0.15	0.19	0.29	0.19
Un-ionized Ammonia	0.003	0.003	0.013	0.008
Total Kjeldahl Nitrogen	1.05	1.46	0.90	0.59
Nitrite plus Nitrate Nitrogen	3.97	3.77	3.49	4.48
Total Nitrogen	5.02	5.23	4.39	5.07
Total Phosphorus	0.25	0.43	0.83	0.78
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.006	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.40	4.52	0.49	0.41
Total Lead	0.025	<0.015	<0.015	0.015
Total Manganese	0.054	0.138	0.046	0.026
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.016	0.032	0.018	0.019
Fecal Coliform (cfu/100 mL)	90	1,200	20	45
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AIV-4: WATER QUALITY AT STATION 15 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.6	16.6	27.5	18.1
Total Suspended Solids	38	106	19	12
Turbidity (NTU)[b]	47	138	43	15
Conductivity (µS/cm)[b]	699	632	784	772
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.2	9.5	7.4	8.9
pH (units)[b]	7.6	7.8	7.8	8.1
Ammonia Nitrogen	0.14	0.14	0.21	0.23
Un-ionized Ammonia	0.002	0.003	0.009	0.010
Total Kjeldahl Nitrogen	0.81	1.33	0.84	0.63
Nitrite plus Nitrate Nitrogen	4.03	3.63	3.59	4.54
Total Nitrogen	4.84	4.96	4.43	5.17
Total Phosphorus	0.25	0.39	0.83	0.79
Chlorophyll a (µg/L)	5	10	20	8
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.007	<0.003	0.008
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.43	4.11	0.52	0.46
Total Lead	0.021	<0.015	<0.015	0.019
Total Manganese	0.055	0.130	0.047	0.028
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.017	0.027	0.018	0.021
Fecal Coliform (cfu/100 mL)	110	800	10	18
E.coli (cfu/100 mL)	<10	No Data	<10	18

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

TABLE AIV-5: WATER QUALITY AT STATION 16 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	16.8	27.3	17.9
Total Suspended Solids	43	141	13	12
Turbidity (NTU)[b]	50	154	40	15
Conductivity (µS/cm)[b]	678	634	783	765
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.1	9.4	7.6	8.8
pH (units)[b]	7.7	7.8	7.8	8.2
Ammonia Nitrogen	0.20	0.15	0.15	0.13
Un-ionized Ammonia	0.003	0.003	0.006	0.007
Total Kjeldahl Nitrogen	0.51	1.30	0.71	0.49
Nitrite plus Nitrate Nitrogen	4.14	4.03	3.65	4.20
Total Nitrogen	4.65	5.33	4.36	4.69
Total Phosphorus	0.25	0.39	0.78	0.71
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.006	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.64	4.25	0.35	0.40
Total Lead	0.020	<0.015	<0.015	0.019
Total Manganese	0.056	0.126	0.038	0.027
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.016	0.031	0.016	0.018
Fecal Coliform (cfu/100 mL)	100	700	10	27
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AIV-6: WATER QUALITY AT STATION 17 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	17.4	27.3	18.1
Total Suspended Solids	43	116	19	13
Turbidity (NTU)[b]	48	154	42	15
Conductivity (µS/cm)[b]	673	722	762	763
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.0	9.1	8.3	8.8
pH (units)[b]	7.6	7.7	7.9	8.1
Ammonia Nitrogen	0.14	0.13	<0.10	0.15
Un-ionized Ammonia	0.002	0.002	0.003	0.007
Total Kjeldahl Nitrogen	0.18	1.46	0.82	0.51
Nitrite plus Nitrate Nitrogen	4.53	4.24	3.46	4.63
Total Nitrogen	4.71	5.70	4.28	5.14
Total Phosphorus	<0.25	0.52	0.72	0.79
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.007	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.74	4.30	0.49	0.44
Total Lead	0.024	<0.015	<0.015	0.017
Total Manganese	0.054	0.113	0.044	0.029
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.015	0.036	0.018	0.020
Fecal Coliform (cfu/100 mL)	30	700	80	18
E.coli (cfu/100 mL)	<10	No Data	<10	10

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

TABLE AIV-7: WATER QUALITY AT STATION 18 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.9	17.4	27.2	17.9
Total Suspended Solids	42	113	15	11
Turbidity (NTU)[b]	48	106	43	16
Conductivity (µS/cm)[b]	709	722	766	761
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.0	9.1	8.8	8.7
pH (units)[b]	7.6	7.8	8.0	8.1
Ammonia Nitrogen	0.14	0.12	<0.10	0.16
Un-ionized Ammonia	0.002	0.003	0.002	0.007
Total Kjeldahl Nitrogen	0.61	1.17	0.79	0.54
Nitrite plus Nitrate Nitrogen	4.24	4.29	3.48	4.67
Total Nitrogen	4.85	5.46	4.27	5.21
Total Phosphorus	0.26	0.44	0.70	0.78
Chlorophyll a (µg/L)	8	15	44	12
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.007	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.54	4.10	0.51	0.36
Total Lead	0.021	<0.015	<0.015	0.017
Total Manganese	0.055	0.105	0.045	0.026
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.017	0.036	0.018	0.019
Fecal Coliform (cfu/100 mL)	140	800	70	18
E.coli (cfu/100 mL)	<10	No Data	20	<10

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

TABLE AIV-8: WATER QUALITY AT STATION 19 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	17.5	27.2	17.9
Total Suspended Solids	45	95	31	12
Turbidity (NTU)[b]	45	117	45	15
Conductivity (µS/cm)[b]	692	748	765	755
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.0	9.1	10.2	8.7
pH (units)[b]	7.2	7.8	8.1	8.1
Ammonia Nitrogen	0.19	0.10	<0.10	0.19
Un-ionized Ammonia	0.001	0.002	0.002	0.008
Total Kjeldahl Nitrogen	0.61	1.14	0.93	0.69
Nitrite plus Nitrate Nitrogen	4.40	4.08	3.34	4.57
Total Nitrogen	5.01	5.22	4.27	5.26
Total Phosphorus	0.27	0.40	0.70	0.86
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.005	<0.003	0.007
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.67	3.19	0.75	0.42
Total Lead	0.019	<0.015	<0.015	<0.015
Total Manganese	0.056	0.088	0.055	0.029
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.016	0.031	0.019	0.018
Fecal Coliform (cfu/100 mL)	80	800	<10	36
E.coli (cfu/100 mL)	10	No Data	20	<10

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

TABLE AIV-9: WATER QUALITY AT STATION 20 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	17.3	27.0	18.1
Total Suspended Solids	43	88	28	11
Turbidity (NTU)[b]	47	109	53	15
Conductivity (µS/cm)[b]	688	746	773	764
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.9	9.0	10.4	8.7
pH (units)[b]	7.5	7.9	8.2	8.1
Ammonia Nitrogen	<0.10	0.11	<0.10	0.22
Un-ionized Ammonia	0.001	0.003	0.003	0.010
Total Kjeldahl Nitrogen	0.70	1.20	1.06	0.76
Nitrite plus Nitrate Nitrogen	4.42	4.00	3.21	4.52
Total Nitrogen	5.12	5.20	4.27	5.28
Total Phosphorus	0.30	0.40	0.68	0.93
Chlorophyll a (µg/L)	8	15	79	12
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.005	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.61	3.04	0.73	0.38
Total Lead	0.022	<0.015	<0.015	0.018
Total Manganese	0.056	0.085	0.054	0.028
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.016	0.026	0.018	0.016
Fecal Coliform (cfu/100 mL)	110	900	10	36
E.coli (cfu/100 mL)	10	No Data	<10	<10

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

TABLE AIV-10: WATER QUALITY AT STATION 21 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	17.1	26.7	18.1
Total Suspended Solids	19	197	28	13
Turbidity (NTU)[b]	26	117	63	17
Conductivity (µS/cm)[b]	660	708	786	807
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.9	8.8	11.0	8.5
pH (units)[b]	7.5	8.0	8.3	8.2
Ammonia Nitrogen	<0.10	0.11	<0.10	0.13
Un-ionized Ammonia	0.001	0.004	0.007	0.007
Total Kjeldahl Nitrogen	0.68	1.43	0.98	0.74
Nitrite plus Nitrate Nitrogen	4.67	3.13	2.89	4.83
Total Nitrogen	5.35	4.56	3.87	5.57
Total Phosphorus	<0.25	0.37	0.64	1.07
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	0.008	0.004	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.94	6.56	1.25	0.51
Total Lead	0.019	<0.015	<0.015	0.016
Total Manganese	0.033	0.146	0.068	0.029
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.038	0.025	0.021
Fecal Coliform (cfu/100 mL)	40	500	30	10
E.coli (cfu/100 mL)	20	No Data	<10	<10

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

APPENDIX V

WATER QUALITY AT STATIONS 22 – 27 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AV-1: WATER QUALITY AT STATION 22 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.0	17.2	27.0	18.0
Total Suspended Solids	48	95	37	23
Turbidity (NTU)[b]	50	117	141	21
Conductivity (µS/cm)[b]	681	761	780	790
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.1	9.3	10.9	9.0
pH (units)[b]	6.3	7.9	8.3	8.2
Ammonia Nitrogen	0.21	0.11	<0.10	0.21
Un-ionized Ammonia	<0.001	0.003	0.005	0.011
Total Kjeldahl Nitrogen	0.87	1.26	1.09	0.67
Nitrite plus Nitrate Nitrogen	4.51	3.97	3.11	4.50
Total Nitrogen	5.38	5.23	4.20	5.17
Total Phosphorus	<0.25	0.39	0.68	1.01
Chlorophyll a (µg/L)	8	17	91	15
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.005	0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.59	3.26	0.91	0.71
Total Lead	0.021	<0.015	<0.015	0.021
Total Manganese	0.058	0.093	0.061	0.037
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.021	0.030	0.020	0.020
Fecal Coliform (cfu/100 mL)	150	700	<10	36
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AV-2: WATER QUALITY AT STATION 23 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.0	17.3	26.8	18.0
Total Suspended Solids	47	88	25	25
Turbidity (NTU)[b]	50	114	46	25
Conductivity (µS/cm)[b]	682	767	784	796
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.1	9.3	11.1	8.7
pH (units)[b]	6.3	7.9	8.2	8.1
Ammonia Nitrogen	0.10	0.10	<0.10	0.22
Un-ionized Ammonia	<0.001	0.003	0.001	0.010
Total Kjeldahl Nitrogen	1.28	1.14	1.10	0.81
Nitrite plus Nitrate Nitrogen	4.46	3.93	3.06	4.70
Total Nitrogen	5.74	5.07	4.16	5.51
Total Phosphorus	<0.25	0.35	0.64	1.08
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.004	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.64	2.70	0.70	0.63
Total Lead	0.021	<0.015	<0.015	<0.015
Total Manganese	0.058	0.080	0.050	0.036
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.018	0.026	0.028	0.020
Fecal Coliform (cfu/100 mL)	110	600	10	10
E.coli (cfu/100 mL)	<10	No Data	10	18

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

TABLE AV-3: WATER QUALITY AT STATION 24 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	17.1	26.2	17.2
Total Suspended Solids	51	91	24	14
Turbidity (NTU)[b]	43	117	50	20
Conductivity (µS/cm)[b]	695	750	781	830
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.2	9.2	10.6	8.8
pH (units)[b]	7.0	8.0	8.1	8.3
Ammonia Nitrogen	<0.10	<0.10	<0.10	0.15
Un-ionized Ammonia	<0.001	0.003	0.002	0.010
Total Kjeldahl Nitrogen	1.01	1.10	1.13	0.78
Nitrite plus Nitrate Nitrogen	3.69	3.72	2.67	4.30
Total Nitrogen	4.70	4.82	3.80	5.08
Total Phosphorus	<0.25	0.32	0.56	0.92
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.005	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.52	3.31	0.46	0.44
Total Lead	0.021	<0.015	<0.015	0.019
Total Manganese	0.068	0.098	0.042	0.029
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.025	<0.02	0.019
Fecal Coliform (cfu/100 mL)	150	1,000	10	27
E.coli (cfu/100 mL)	<10	No Data	10	10

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

TABLE AV-4: WATER QUALITY AT STATION 25 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.3	17.4	26.0	16.9
Total Suspended Solids	54	83	28	16
Turbidity (NTU)[b]	42	105	50	18
Conductivity (µS/cm)[b]	693	772	777	832
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.1	9.2	10.5	8.9
pH (units)[b]	7.2	8.0	8.1	8.3
Ammonia Nitrogen	0.19	<0.10	<0.10	0.14
Un-ionized Ammonia	0.001	0.003	0.002	0.009
Total Kjeldahl Nitrogen	1.15	1.12	0.87	0.59
Nitrite plus Nitrate Nitrogen	3.84	3.79	2.53	4.19
Total Nitrogen	4.99	4.91	3.40	4.78
Total Phosphorus	<0.25	0.33	0.53	0.87
Chlorophyll a (µg/L)	15	14	106	13
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.004	<0.003	0.005
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.43	2.68	0.62	0.49
Total Lead	0.020	<0.015	<0.015	0.017
Total Manganese	0.064	0.083	0.051	0.030
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.016	0.024	0.016	0.017
Fecal Coliform (cfu/100 mL)	110	600	10	18
E.coli (cfu/100 mL)	30	No Data	<10	36

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

TABLE AV-5: WATER QUALITY AT STATION 26 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	16.8	26.2	16.9
Total Suspended Solids	52	94	30	15
Turbidity (NTU)[b]	45	136	49	16
Conductivity (µS/cm)[b]	688	752	760	830
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	10.0	9.3	13.7	8.4
pH (units)[b]	6.9	8.0	8.2	8.4
Ammonia Nitrogen	0.19	<0.10	<0.10	<0.10
Un-ionized Ammonia	<0.001	0.003	0.008	0.007
Total Kjeldahl Nitrogen	1.01	1.20	1.44	0.50
Nitrite plus Nitrate Nitrogen	4.18	3.65	2.00	3.94
Total Nitrogen	5.19	4.85	3.44	4.44
Total Phosphorus	0.25	0.34	0.47	0.77
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.005	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.58	3.37	0.54	0.44
Total Lead	0.020	<0.015	<0.015	0.016
Total Manganese	0.060	0.100	0.047	0.029
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.015	0.038	<0.02	0.015
Fecal Coliform (cfu/100 mL)	100	900	10	27
E.coli (cfu/100 mL)	<10	No Data	10	<10

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

TABLE AV-6: WATER QUALITY AT STATION 27 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	16.8	25.9	15.4
Total Suspended Solids	46	44	32	17
Turbidity (NTU)[b]	30	40	54	19
Conductivity (µS/cm)[b]	691	753	764	837
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.8	9.4	12.2	8.6
pH (units)[b]	7.7	8.1	8.6	8.2
Ammonia Nitrogen	<0.10	<0.10	<0.10	0.18
Un-ionized Ammonia	0.001	0.002	0.006	0.008
Total Kjeldahl Nitrogen	1.34	0.84	1.28	0.82
Nitrite plus Nitrate Nitrogen	3.26	2.98	1.97	3.93
Total Nitrogen	4.60	3.82	3.25	4.75
Total Phosphorus	<0.25	<0.25	0.53	0.86
Chlorophyll a (µg/L)	19	22	129	16
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.28	1.13	0.66	0.46
Total Lead	0.021	<0.015	<0.015	<0.015
Total Manganese	0.064	0.061	0.056	0.028
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	0.03	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.018	0.020	0.015
Fecal Coliform (cfu/100 mL)	100	250	20	36
E.coli (cfu/100 mL)	10	No Data	<10	10

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

APPENDIX VI

WATER QUALITY AT STATIONS 28 – 41 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AVI-1: WATER QUALITY AT STATION 28 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	16.9	25.7	15.2
Total Suspended Solids	43	38	46	23
Turbidity (NTU)[b]	43	40	65	25
Conductivity (µS/cm)[b]	688	753	751	831
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.8	9.4	11.9	9.0
pH (units)[b]	7.4	8.1	8.8	8.2
Ammonia Nitrogen	<0.10	<0.10	<0.10	0.23
Un-ionized Ammonia	0.001	0.001	<0.001	0.010
Total Kjeldahl Nitrogen	0.87	0.90	1.33	0.85
Nitrite plus Nitrate Nitrogen	3.68	3.36	1.73	3.81
Total Nitrogen	4.55	4.26	3.06	4.66
Total Phosphorus	<0.25	<0.25	0.54	0.81
Chlorophyll a (µg/L)	11	25	119	17
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	<0.003	<0.003	0.045
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.27	1.07	1.05	0.84
Total Lead	0.021	<0.015	<0.015	0.019
Total Manganese	0.054	0.056	0.070	0.038
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	0.02
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.017	0.023	0.016
Fecal Coliform (cfu/100 mL)	60	40	<10	45
E.coli (cfu/100 mL)	10	No Data	<10	27

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

TABLE AVI-2: WATER QUALITY AT STATION 29 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	16.8	25.7	15.3
Total Suspended Solids	42	34	41	33
Turbidity (NTU)[b]	37	35	60	26
Conductivity (µS/cm)[b]	690	762	750	836
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.8	9.3	11.7	9.0
pH (units)[b]	7.4	8.1	8.7	8.3
Ammonia Nitrogen	<0.10	<0.10	<0.10	0.15
Un-ionized Ammonia	0.001	0.001	0.005	0.008
Total Kjeldahl Nitrogen	0.86	0.98	1.24	0.99
Nitrite plus Nitrate Nitrogen	3.70	3.51	1.73	3.71
Total Nitrogen	4.56	4.49	2.97	4.70
Total Phosphorus	<0.25	<0.25	0.50	0.79
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.31	1.01	0.87	0.79
Total Lead	0.023	<0.015	<0.015	0.018
Total Manganese	0.058	0.054	0.062	0.039
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.019	0.017	0.017
Fecal Coliform (cfu/100 mL)	120	90	<10	36
E.coli (cfu/100 mL)	30	No Data	<10	18

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

TABLE AVI-3: WATER QUALITY AT STATION 30 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.4	16.6	25.5	15.3
Total Suspended Solids	36	52	68	53
Turbidity (NTU)[b]	42	48	59	29
Conductivity (µS/cm)[b]	678	750	755	835
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.9	9.3	11.8	8.9
pH (units)[b]	7.5	8.1	8.7	8.2
Ammonia Nitrogen	0.10	<0.10	<0.10	0.15
Un-ionized Ammonia	0.001	0.002	0.002	0.007
Total Kjeldahl Nitrogen	0.85	1.09	1.28	0.93
Nitrite plus Nitrate Nitrogen	4.51	4.16	1.78	3.61
Total Nitrogen	5.36	5.25	3.06	4.54
Total Phosphorus	<0.25	<0.25	0.47	0.86
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	0.003	<0.003	0.006
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.17	1.33	0.83	1.61
Total Lead	0.018	<0.015	<0.015	0.019
Total Manganese	0.050	0.058	0.062	0.067
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.018	0.018	0.024
Fecal Coliform (cfu/100 mL)	100	230	10	45
E.coli (cfu/100 mL)	10	No Data	<10	<10

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

TABLE AVI-4: WATER QUALITY AT STATION 31 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.5	16.8	25.4	15.3
Total Suspended Solids	38	36	47	25
Turbidity (NTU)[b]	33	40	68	22
Conductivity (µS/cm)[b]	681	754	764	839
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.8	9.2	11.5	8.9
pH (units)[b]	7.4	8.1	8.7	8.2
Ammonia Nitrogen	<0.10	<0.10	<0.10	0.18
Un-ionized Ammonia	0.001	0.003	0.005	0.008
Total Kjeldahl Nitrogen	1.04	1.01	1.26	0.81
Nitrite plus Nitrate Nitrogen	4.37	4.11	1.91	3.55
Total Nitrogen	5.41	5.12	3.17	4.36
Total Phosphorus	<0.25	<0.25	0.47	0.70
Chlorophyll a (µg/L)	12	21	104	20
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.27	1.06	1.32	0.66
Total Lead	0.019	<0.015	<0.015	<0.015
Total Manganese	0.055	0.054	0.080	0.035
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.019	0.026	0.017
Fecal Coliform (cfu/100 mL)	40	230	30	36
E.coli (cfu/100 mL)	40	No Data	<10	10

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

TABLE AVI-5: WATER QUALITY AT STATION 32 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.7	17.0	25.6	15.4
Total Suspended Solids	38	31	50	20
Turbidity (NTU)[b]	37	32	72	22
Conductivity (µS/cm)[b]	682	758	775	836
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.7	9.3	11.8	9.0
pH (units)[b]	7.1	8.1	8.6	8.2
Ammonia Nitrogen	0.11	<0.10	<0.10	0.10
Un-ionized Ammonia	<0.001	0.004	0.008	0.005
Total Kjeldahl Nitrogen	1.16	1.03	1.49	0.65
Nitrite plus Nitrate Nitrogen	4.38	3.93	1.96	3.57
Total Nitrogen	5.54	4.96	3.45	4.22
Total Phosphorus	<0.25	<0.25	0.49	0.70
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.004	<0.003	0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.34	0.85	1.34	0.56
Total Lead	0.018	<0.015	<0.015	0.020
Total Manganese	0.055	0.046	0.079	0.033
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.022	0.024	0.018
Fecal Coliform (cfu/100 mL)	90	170	<10	18
E.coli (cfu/100 mL)	10	No Data	<10	18

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

TABLE AVI-6: WATER QUALITY AT STATION 33 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	17.1	25.2	15.7
Total Suspended Solids	35	31	66	22
Turbidity (NTU)[b]	33	36	64	23
Conductivity (µS/cm)[b]	681	761	775	830
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.7	9.5	11.5	8.9
pH (units)[b]	7.3	8.1	8.5	8.2
Ammonia Nitrogen	0.11	0.14	<0.10	0.10
Un-ionized Ammonia	0.001	0.006	0.008	0.005
Total Kjeldahl Nitrogen	0.91	1.00	1.60	0.89
Nitrite plus Nitrate Nitrogen	4.40	3.94	2.01	3.67
Total Nitrogen	5.31	4.94	3.61	4.56
Total Phosphorus	<0.25	<0.25	0.51	0.74
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.05	0.84	1.67	0.68
Total Lead	<0.015	<0.015	<0.015	<0.015
Total Manganese	0.043	0.046	0.088	0.036
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.015	0.031	0.017
Fecal Coliform (cfu/100 mL)	90	210	10	45
E.coli (cfu/100 mL)	40	No Data	<10	<10

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

TABLE AVI-7: WATER QUALITY AT STATION 34 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.9	17.3	25.2	15.6
Total Suspended Solids	33	54	38	23
Turbidity (NTU)[b]	30	29	58	22
Conductivity (µS/cm)[b]	677	762	775	828
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.8	9.5	11.6	9.1
pH (units)[b]	7.4	8.1	8.4	8.2
Ammonia Nitrogen	0.12	<0.10	<0.10	0.10
Un-ionized Ammonia	0.001	0.001	0.003	0.005
Total Kjeldahl Nitrogen	1.02	1.05	1.25	0.77
Nitrite plus Nitrate Nitrogen	4.58	4.06	2.06	3.69
Total Nitrogen	5.60	5.11	3.31	4.46
Total Phosphorus	<0.25	<0.25	0.44	0.76
Chlorophyll a (µg/L)	14	28	83	21
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	0.003	0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.28	1.21	1.59	0.64
Total Lead	0.018	<0.015	<0.015	0.022
Total Manganese	0.054	0.060	0.088	0.035
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.019	0.026	0.018
Fecal Coliform (cfu/100 mL)	70	120	10	18
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AVI-8: WATER QUALITY AT STATION 35 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.0	17.1	25.8	15.9
Total Suspended Solids	33	34	37	23
Turbidity (NTU)[b]	22	33	72	24
Conductivity (µS/cm)[b]	672	754	770	828
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.7	9.5	11.6	9.0
pH (units)[b]	6.8	8.1	8.4	8.2
Ammonia Nitrogen	0.10	<0.10	<0.10	<0.10
Un-ionized Ammonia	<0.001	0.002	0.003	0.003
Total Kjeldahl Nitrogen	0.87	1.05	1.32	0.74
Nitrite plus Nitrate Nitrogen	4.53	4.25	1.99	3.69
Total Nitrogen	5.40	5.30	3.31	4.43
Total Phosphorus	<0.25	<0.25	0.46	0.78
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	<0.003	0.003
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.80	0.93	1.27	0.61
Total Lead	0.018	<0.015	<0.015	<0.015
Total Manganese	0.039	0.054	0.078	0.037
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.017	0.023	0.019
Fecal Coliform (cfu/100 mL)	30	10	<10	10
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AVI-9: WATER QUALITY AT STATION 36 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.9	17.0	26.0	16.0
Total Suspended Solids	28	20	48	46
Turbidity (NTU)[b]	25	28	42	25
Conductivity (µS/cm)[b]	668	755	770	826
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.5	9.3	9.8	9.1
pH (units)[b]	7.2	8.0	8.7	8.0
Ammonia Nitrogen	0.10	<0.10	<0.10	<0.10
Un-ionized Ammonia	0.001	0.001	0.017	0.002
Total Kjeldahl Nitrogen	0.77	0.93	1.34	0.96
Nitrite plus Nitrate Nitrogen	4.50	4.21	1.92	3.66
Total Nitrogen	5.27	5.14	3.26	4.62
Total Phosphorus	<0.25	<0.25	0.45	0.78
Chlorophyll a (µg/L)	11	24	73	25
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.87	0.82	1.31	1.07
Total Lead	0.022	<0.015	<0.015	<0.015
Total Manganese	0.040	0.051	0.084	0.048
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.018	0.021	0.022
Fecal Coliform (cfu/100 mL)	40	<10	10	10
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AVI-10: WATER QUALITY AT STATION 37 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.9	17.4	26.1	16.0
Total Suspended Solids	12	25	50	28
Turbidity (NTU)[b]	25	43	45	27
Conductivity (µS/cm)[b]	662	744	755	821
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.6	9.4	9.8	8.8
pH (units)[b]	7.2	8.1	8.6	8.2
Ammonia Nitrogen	0.15	<0.10	<0.10	0.16
Un-ionized Ammonia	0.001	0.001	0.016	0.008
Total Kjeldahl Nitrogen	0.85	0.92	1.17	0.81
Nitrite plus Nitrate Nitrogen	4.53	4.18	1.83	3.57
Total Nitrogen	5.38	5.10	3.00	4.38
Total Phosphorus	<0.25	<0.25	0.41	0.73
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	<0.003	0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.53	0.85	1.45	0.77
Total Lead	0.016	<0.015	<0.015	0.020
Total Manganese	0.031	0.052	0.084	0.043
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	<0.015	0.024	0.017
Fecal Coliform (cfu/100 mL)	20	40	10	10
E.coli (cfu/100 mL)	<10	No Data	<10	10

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

TABLE AVI-11: WATER QUALITY AT STATION 38 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.6	17.2	25.8	15.5
Total Suspended Solids	20	29	38	35
Turbidity (NTU)[b]	25	42	48	40
Conductivity (µS/cm)[b]	646	731	734	814
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.2	9.0	8.3	8.8
pH (units)[b]	7.3	8.1	8.5	8.1
Ammonia Nitrogen	0.12	<0.10	0.10	0.14
Un-ionized Ammonia	0.001	0.001	0.017	0.005
Total Kjeldahl Nitrogen	0.95	1.12	1.18	0.91
Nitrite plus Nitrate Nitrogen	4.60	4.22	1.74	3.38
Total Nitrogen	5.55	5.34	2.92	4.29
Total Phosphorus	<0.25	<0.25	0.38	0.70
Chlorophyll a (µg/L)	11	22	58	21
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	<0.003	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.79	1.00	1.03	1.10
Total Lead	0.019	<0.015	<0.015	0.019
Total Manganese	0.038	0.056	0.074	0.046
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.022	0.018	0.019
Fecal Coliform (cfu/100 mL)	80	10	10	36
E.coli (cfu/100 mL)	<10	No Data	10	<10

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

TABLE AVI-12: WATER QUALITY AT STATION 39 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.9	17.3	26.1	15.5
Total Suspended Solids	17	32	30	36
Turbidity (NTU)[b]	24	38	37	47
Conductivity (µS/cm)[b]	633	725	750	807
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.3	9.0	8.7	8.8
pH (units)[b]	7.3	8.0	8.5	8.1
Ammonia Nitrogen	0.10	<0.10	0.18	0.12
Un-ionized Ammonia	0.001	0.001	0.031	0.004
Total Kjeldahl Nitrogen	0.95	0.95	1.11	1.11
Nitrite plus Nitrate Nitrogen	4.68	4.27	1.93	3.22
Total Nitrogen	5.63	5.22	3.04	4.33
Total Phosphorus	<0.25	<0.25	0.38	0.62
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.75	1.02	0.82	1.21
Total Lead	0.018	<0.015	<0.015	0.017
Total Manganese	0.037	0.056	0.073	0.046
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.021	0.016	0.017
Fecal Coliform (cfu/100 mL)	20	<10	10	36
E.coli (cfu/100 mL)	<10	No Data	<10	10

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

TABLE AVI-13: WATER QUALITY AT STATION 40 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.0	17.5	26.0	15.5
Total Suspended Solids	17	25	34	30
Turbidity (NTU)[b]	26	36	43	46
Conductivity (µS/cm)[b]	625	715	740	810
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.2	9.0	7.9	8.4
pH (units)[b]	7.5	8.1	8.4	8.1
Ammonia Nitrogen	0.12	<0.10	0.18	0.15
Un-ionized Ammonia	0.001	0.001	0.025	0.005
Total Kjeldahl Nitrogen	0.85	0.76	1.26	0.89
Nitrite plus Nitrate Nitrogen	4.84	4.36	1.90	3.32
Total Nitrogen	5.69	5.12	3.16	4.21
Total Phosphorus	<0.25	<0.25	0.41	0.64
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	<0.003	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.60	0.82	1.21	1.24
Total Lead	0.017	<0.015	<0.015	0.021
Total Manganese	0.033	0.047	0.098	0.054
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.016	0.016	0.017
Fecal Coliform (cfu/100 mL)	20	20	<10	27
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AVI-14: WATER QUALITY AT STATION 41 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.7	17.6	26.4	15.8
Total Suspended Solids	20	24	32	30
Turbidity (NTU)[b]	24	32	46	44
Conductivity (µS/cm)[b]	623	710	739	805
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.3	9.0	7.8	8.5
pH (units)[b]	7.6	8.1	8.5	8.1
Ammonia Nitrogen	0.11	<0.10	0.16	0.13
Un-ionized Ammonia	0.001	0.002	0.028	0.005
Total Kjeldahl Nitrogen	0.90	0.71	1.17	0.79
Nitrite plus Nitrate Nitrogen	4.80	4.35	1.87	3.23
Total Nitrogen	5.70	5.06	3.04	4.02
Total Phosphorus	<0.25	<0.25	0.42	0.62
Chlorophyll a (µg/L)	12	22	46	21
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	<0.003	<0.003	0.013
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.80	0.90	1.12	1.24
Total Lead	0.023	<0.015	<0.015	0.017
Total Manganese	0.037	0.046	0.094	0.052
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.015	0.016	0.017
Fecal Coliform (cfu/100 mL)	10	<10	<10	18
E.coli (cfu/100 mL)	<10	No Data	<10	18

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

APPENDIX VII

WATER QUALITY AT STATIONS 42 – 49 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

TABLE AVII-1: WATER QUALITY AT STATION 42 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.9	17.6	25.7	16.1
Total Suspended Solids	22	24	35	35
Turbidity (NTU)[b]	25	32	55	47
Conductivity (µS/cm)[b]	617	704	746	801
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.1	8.9	6.5	8.3
pH (units)[b]	7.6	8.0	8.2	8.2
Ammonia Nitrogen	0.12	<0.10	0.24	0.15
Un-ionized Ammonia	0.002	0.001	0.022	0.007
Total Kjeldahl Nitrogen	0.80	0.71	1.23	0.82
Nitrite plus Nitrate Nitrogen	4.77	4.37	1.95	3.01
Total Nitrogen	5.57	5.08	3.18	3.83
Total Phosphorus	<0.25	<0.25	0.43	0.60
Chlorophyll a (µg/L)	13	22	51	20
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	<0.003	<0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.79	0.82	1.12	1.21
Total Lead	0.016	<0.015	<0.015	0.017
Total Manganese	0.036	0.046	0.101	0.051
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	<0.015	0.016	0.017
Fecal Coliform (cfu/100 mL)	40	10	<10	18
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AVII-2: WATER QUALITY AT STATION 43 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	16.8	17.8	25.4	14.9
Total Suspended Solids	34	20	41	83
Turbidity (NTU)[b]	42	28	55	72
Conductivity (µS/cm)[b]	613	693	742	805
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.4	8.9	6.0	8.1
pH (units)[b]	7.0	8.0	8.5	8.2
Ammonia Nitrogen	<0.10	<0.10	0.31	0.12
Un-ionized Ammonia	<0.001	0.001	0.051	0.005
Total Kjeldahl Nitrogen	0.72	0.81	1.18	0.93
Nitrite plus Nitrate Nitrogen	4.63	4.44	1.89	3.23
Total Nitrogen	5.35	5.25	3.07	4.16
Total Phosphorus	<0.25	<0.25	0.41	0.65
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	<0.003	0.006
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	1.20	0.70	1.27	2.54
Total Lead	0.022	<0.015	<0.015	0.021
Total Manganese	0.053	0.040	0.105	0.088
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	0.025	0.015	0.016	0.028
Fecal Coliform (cfu/100 mL)	10	<10	<10	36
E.coli (cfu/100 mL)	<10	No Data	<10	<10

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

TABLE AVII-3: WATER QUALITY AT STATION 44 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.7	17.8	25.4	14.8
Total Suspended Solids	19	26	53	85
Turbidity (NTU)[b]	26	35	89	88
Conductivity (µS/cm)[b]	616	688	754	804
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.0	8.6	6.3	8.2
pH (units)[b]	6.9	8.0	8.5	8.2
Ammonia Nitrogen	<0.10	<0.10	0.20	0.15
Un-ionized Ammonia	<0.001	0.002	0.033	0.006
Total Kjeldahl Nitrogen	0.80	0.69	1.08	0.86
Nitrite plus Nitrate Nitrogen	4.64	4.56	1.92	2.87
Total Nitrogen	5.44	5.25	3.00	3.73
Total Phosphorus	<0.25	<0.25	0.46	0.63
Chlorophyll a (µg/L)	26	19	43	21
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.006
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.69	0.87	2.01	2.60
Total Lead	0.021	<0.015	<0.015	0.024
Total Manganese	0.038	0.045	0.126	0.090
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.021	0.021	0.026
Fecal Coliform (cfu/100 mL)	<10	<10	30	45
E.coli (cfu/100 mL)	10	No Data	<10	10

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

TABLE AVII-4: WATER QUALITY AT STATION 45 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.6	17.8	25.3	14.2
Total Suspended Solids	22	24	41	52
Turbidity (NTU)[b]	29	30	68	61
Conductivity (µS/cm)[b]	613	679	749	820
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.8	9.3	7.6	8.6
pH (units)[b]	6.7	8.1	8.5	8.3
Ammonia Nitrogen	<0.10	<0.10	0.18	<0.10
Un-ionized Ammonia	<0.001	0.002	0.029	0.005
Total Kjeldahl Nitrogen	0.67	0.86	1.15	0.76
Nitrite plus Nitrate Nitrogen	4.65	4.53	1.80	2.88
Total Nitrogen	5.32	5.39	2.95	3.64
Total Phosphorus	<0.25	<0.25	0.45	0.55
Chlorophyll a (µg/L)	12	21	53	18
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.83	0.78	1.64	1.65
Total Lead	0.018	<0.015	<0.015	0.018
Total Manganese	0.041	0.040	0.119	0.062
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.035	0.019	0.021
Fecal Coliform (cfu/100 mL)	<10	<10	10	<10
E.coli (cfu/100 mL)	<10	No Data	<10	10

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

TABLE AVII-5: WATER QUALITY AT STATION 46 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.3	17.7	25.4	14.4
Total Suspended Solids	22	21	48	61
Turbidity (NTU)[b]	28	30	69	60
Conductivity (µS/cm)[b]	609	677	745	820
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.8	9.1	7.8	8.7
pH (units)[b]	6.6	8.0	8.5	8.3
Ammonia Nitrogen	<0.10	<0.10	0.17	<0.10
Un-ionized Ammonia	<0.001	0.001	0.028	0.004
Total Kjeldahl Nitrogen	0.74	0.66	1.12	0.81
Nitrite plus Nitrate Nitrogen	4.52	4.51	1.80	2.91
Total Nitrogen	5.26	5.17	2.92	3.72
Total Phosphorus	<0.25	<0.25	0.45	0.58
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.005
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.88	0.74	1.74	1.83
Total Lead	0.020	<0.015	<0.015	0.016
Total Manganese	0.040	0.039	0.126	0.069
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	<0.015	0.018	0.021
Fecal Coliform (cfu/100 mL)	<10	<10	<10	18
E.coli (cfu/100 mL)	10	No Data	10	<10

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

TABLE AVII-6: WATER QUALITY AT STATION 47 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.4	17.7	25.5	14.8
Total Suspended Solids	24	23	47	46
Turbidity (NTU)[b]	28	32	72	55
Conductivity (µS/cm)[b]	609	677	748	828
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.7	9.0	6.9	8.5
pH (units)[b]	6.6	8.0	8.3	8.3
Ammonia Nitrogen	<0.10	<0.10	0.30	<0.10
Un-ionized Ammonia	<0.001	0.001	0.033	0.004
Total Kjeldahl Nitrogen	0.64	0.71	1.09	0.76
Nitrite plus Nitrate Nitrogen	4.60	4.53	1.83	2.85
Total Nitrogen	5.24	5.24	2.92	3.61
Total Phosphorus	<0.25	<0.25	0.44	0.55
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.004
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.87	0.80	1.70	1.56
Total Lead	0.018	<0.015	<0.015	0.018
Total Manganese	0.042	0.041	0.119	0.064
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	<0.015	0.019	0.018
Fecal Coliform (cfu/100 mL)	<10	<10	50	54
E.coli (cfu/100 mL)	10	No Data	20	18

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

TABLE AVII-7: WATER QUALITY AT STATION 48 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.4	17.8	25.6	14.7
Total Suspended Solids	24	25	43	52
Turbidity (NTU)[b]	28	32	66	60
Conductivity (µS/cm)[b]	610	678	754	826
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	9.0	8.9	7.1	8.6
pH (units)[b]	7.2	8.0	8.3	8.3
Ammonia Nitrogen	<0.10	<0.10	0.24	<0.10
Un-ionized Ammonia	<0.001	0.001	0.027	0.004
Total Kjeldahl Nitrogen	0.83	0.80	1.14	0.81
Nitrite plus Nitrate Nitrogen	4.61	4.53	1.84	2.85
Total Nitrogen	5.44	5.33	2.98	3.66
Total Phosphorus	<0.25	<0.25	0.45	0.57
Chlorophyll a (µg/L)	15	16	44	21
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	<0.003	<0.003	0.003	0.005
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.88	0.81	1.50	1.88
Total Lead	0.016	<0.015	<0.015	<0.015
Total Manganese	0.040	0.041	0.114	0.070
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.017	0.017	0.021
Fecal Coliform (cfu/100 mL)	10	10	230	126
E.coli (cfu/100 mL)	<10	No Data	130	27

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

TABLE AVII-8: WATER QUALITY AT STATION 49 IN THE ILLINOIS RIVER DURING MAY, AUGUST, AND OCTOBER 2009

Constituents[a]	May (1st week)	May (2nd week)	August	October
Water Temperature (°C)[b]	17.5	17.7	25.6	14.6
Total Suspended Solids	26	23	45	99
Turbidity (NTU)[b]	28	30	62	96
Conductivity (µS/cm)[b]	612	676	755	830
Five-Day BOD	<10	No Data	<10	<10
Dissolved Oxygen[b]	8.6	8.9	7.0	8.6
pH (units)[b]	7.0	8.0	8.3	8.3
Ammonia Nitrogen	<0.10	<0.10	0.12	<0.10
Un-ionized Ammonia	<0.001	0.001	0.013	0.005
Total Kjeldahl Nitrogen	0.77	0.79	1.16	0.95
Nitrite plus Nitrate Nitrogen	4.65	4.50	1.85	2.82
Total Nitrogen	5.42	5.29	3.01	3.77
Total Phosphorus	<0.25	<0.25	0.44	0.64
Chlorophyll a (µg/L)	No Data	No Data	No Data	No Data
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Phenols	<0.01	<0.01	<0.01	<0.01
Total Arsenic	<0.05	<0.05	<0.05	<0.05
Total Cadmium	<0.01	<0.01	<0.01	<0.01
Total Chromium	0.003	<0.003	0.003	0.008
Total Copper	<0.01	<0.01	<0.01	<0.01
Total Iron	0.95	0.82	1.48	3.36
Total Lead	0.021	<0.015	<0.015	0.015
Total Manganese	0.043	0.041	0.114	0.116
Total Mercury (µg/L)	<0.20	<0.20	<0.20	<0.20
Total Nickel	<0.01	<0.01	<0.01	<0.01
Total Silver	<0.003	<0.003	<0.003	<0.003
Total Zinc	<0.015	0.016	0.016	0.031
Fecal Coliform (cfu/100 mL)	20	<10	400	200
E.coli (cfu/100 mL)	<10	No Data	130	36

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