Metropolitan Water Reclamation District of Greater Chicago

MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 21-12

THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S AMBIENT WATER QUALITY MONITORING DURING 2020

December 2021

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

THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S AMBIENT WATER QUALITY MONITORING DURING 2020

By

Heng Zhang
Assistant Director Monitoring Research

Thomas A. Minarik, Jr.
Principal Environmental Scientist

Monitoring and Research Department
Edward W. Podczerwinski, Director

December 2021

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
ALD	Analytical Laboratory Division
AWQM	Ambient Water Quality Monitoring
CAWS	Chicago Area Waterway System
District	Metropolitan Water Reclamation District of Greater Chicago
EM&R	Environmental Monitoring and Research
IAL	Indigenous Aquatic Life
ICR	Incidental Contact Recreation
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
NR	Non-Recreational
NCR	Non-Contact Recreation
PC	Primary Contact
QAPP	Quality Assurance Project Plan
SC	Secondary Contact
USEPA	United States Environmental Protection Agency
WRPs	Water Reclamation Plants

ACKNOWLEDGMENTS

Thanks are extended to the Pollution Control Technicians Barb Covic, Ryan Kirkland, and James Rivera, and Patrol Boat Operators John Jacob, and Kasey Iwasyk for their efforts collecting and transporting the samples during 2020. Additional thanks to the Senior Environmental Research Technician Paul Brinkman Lowe, and the Environmental Research Technicians LaTrina Jones, Patrick Kennedy, Omar Ortiz, Brian Schuetz, and Eileen Kivlin for their assistance. Special thanks to everyone of them for their dedication during the challenging days of the COVID-19 Pandemic.

Particular thanks are due to Ms. Laura Franklin, Administrative Specialist, for reviewing, editing, and preparing the report for publication.

DISCLAIMER

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

BACKGROUND

The Metropolitan Water Reclamation District of Greater Chicago (District) routinely collects and analyzes water samples from the District service area waterways. "Waterways" as used in this document will mean natural and modified rivers or streams, and man-made canals. This monitoring has been undertaken by the District to determine water quality on an ongoing basis and establish a historical record. A historical water quality database exists back to project inception in 1970.

The Illinois Pollution Control Board (IPCB) designates District service area waterways based on their recreational and aquatic life use potential. Recreational use designations in these waterways include: General Use, Primary Contact, Incidental Contact, Non-Contact, Non-Recreational, and Secondary Contact. Aquatic Life Uses are General Use, Chicago Area Waterway System (CAWS) Aquatic Life Use A, CAWS Aquatic Life Use B, and Indigenous Aquatic Life Use.

The IPCB has established separate water quality standards to support the designated uses for each waterway. Comprehensive assessments of the Ambient Water Quality Monitoring (AWQM) data from this project are made annually using all applicable water quality standards established by the IPCB.

The AWQM data is required to be sent to the Illinois Environmental Protection Agency (IEPA) annually to comply with District National Pollutant Discharge Elimination System permits and by the United States Environmental Protection Agency to comply with requirements for the Consent Decree. Additionally, the information collected from this project has been used, often in conjunction with data from other monitoring studies, to evaluate the impact of District operations and projects, including the water reclamation plants (WRPs), the pretreatment program, the flood and pollution control Tunnel and Reservoir Plan, the Sidestream Elevated Pool Aeration Stations, and the Instream Aeration Stations.

The AWQM data provide a broad surveillance of significant discharges to the waterways. The data also may have potential use for evaluation of other factors affecting water quality, including intermittent stormwater releases and release of pollutants from bottom sediment in the waterways. Another goal of this project is to coordinate the waterway monitoring performed by the District with the waterway monitoring performed by the IEPA's Bureau of Water. The District reviews key aspects of its program, including sampling locations, sampling frequency, sampling methods, parameters analyzed, and analytical capability, to determine how to best provide water quality data usable by both agencies.

MONITORING LOCATIONS

Locations and Descriptions

Monitoring in 2020 was conducted on 13 waterbodies at 29 sampling stations. The total number of river miles monitored is approximately 225. The following rivers, creeks, man-made channels, and a canal are monitored for water quality.

Des Plaines River System:

- Higgins Creek.
- Salt Creek.
- Des Plaines River.
- West Branch DuPage River.

Chicago River System:

- North Branch Chicago River.
- North Shore Channel.
- Chicago River.
- South Branch Chicago River.
- South Fork South Branch Chicago River.
- Chicago Sanitary and Ship Canal.

Calumet River System:

- Grand Calumet River.
- Little Calumet River.
- Calumet-Sag Channel.

Figure 1 is a map showing the waterways in the Chicago metropolitan area and the current 2020 sampling locations.

A description of the 29 monitoring stations is provided in Tables 1, 2, and 3. Table 1 lists all current and discontinued sampling locations with their station identification number and IPCB use classifications. Table 2 shows the latitude and longitude of each sampling station. Table 3 shows the United States Geological Survey quadrant, township, range, section, and quarter section of each sampling station.

FIGURE 1: 2020 AMBIENT WATER QUALITY MONITORING PROGRAM
WATERWAY SAMPLE LOCATIONS

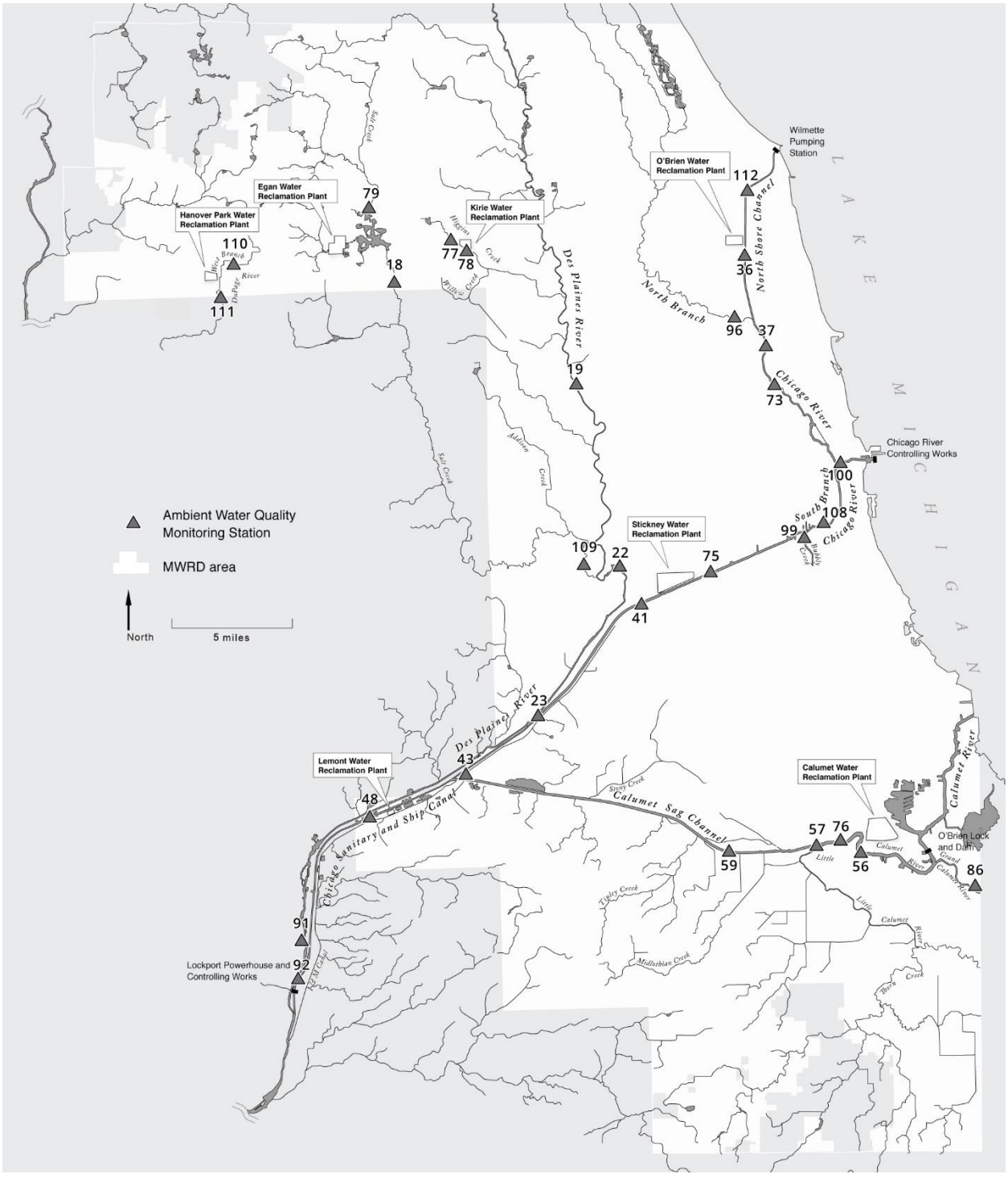

TABLE 1: CURRENT AND DISCONTINUED AMBIENT WATER QUALITY MONITORING SAMPLING LOCATIONS

Station	Location	IEPA Classification
	Chicago River System	
106	Dundee Road, West Fork North Branch of Chicago River	General Use
103	Golf Road, West Fork North Branch of Chicago River	General Use
31	Lake-Cook Road, Middle Fork North Branch of Chicago River	General Use
104	Glenview Road, Middle Fork North Branch of Chicago River	General Use
32	Lake-Cook Road, Skokie River	General Use
105	Frontage Road, Skokie River	General Use
34	Dempster Street, North Branch of Chicago River	General Use
96	Albany Avenue, North Branch of Chicago River*	General Use
35	Central Street, North Shore Channel	CAWS A/ICR
112	Dempster Street, North Shore Channel*	CAWS A/ICR
102	Oakton Street, North Shore Channel	CAWS A/ICR
36	Touhy Avenue, North Shore Channel*	CAWS A/PC
101	Foster Avenue, North Shore Channel	CAWS A/PC
37	Wilson Avenue, North Branch of Chicago River*	CAWS A/PC
73	Diversey Parkway, North Branch of Chicago River*	CAWS A/PC
46	Grand Avenue, North Branch of Chicago River	CAWS A/PC
74	Lake Shore Drive, Chicago River	General Use
100	Wells Street, Chicago River*	General Use
39	Madison Street, South Branch of Chicago River	CAWS A/PC
108	Loomis Street, South Branch of Chicago River*	CAWS A/PC
99	Archer Avenue, South Fork South Branch of Chicago River*	IAL/SC
40	Damen Avenue, Chicago Sanitary and Ship Canal	CAWS B/ICR
75	Cicero Avenue, Chicago Sanitary and Ship Canal*	CAWS B/ICR
41	Harlem Avenue, Chicago Sanitary and Ship Canal*	CAWS B/ICR
42	Route 83, Chicago Sanitary and Ship Canal	CAWS B/ICR
48	Stephen Street, Chicago Sanitary and Ship Canal*	CAWS B/NR
92	Lockport Powerhouse Forebay*	CAWS B/NR
	Calumet River System	
49	Ewing Avenue, Calumet River	CAWS A/NCR
50	Wolf Lake, Burnham Avenue	General Use
55	130th Street, Calumet River	CAWS A/ICR
86	Burnham Avenue, Grand Calumet River*	CAWS A/ICR
56	Indiana Avenue, Little Calumet River*	CAWS A/PC
76	Halsted Street, Little Calumet River*	CAWS A/PC
52	Wentworth Avenue, Little Calumet River	General Use
54	Joe Orr Road, Thorn Creek	General Use
97	170th Street, Thorn Creek	General Use

TABLE 1 (Continued): CURRENT AND DISCOUNTINUED AMBIENT WATER QUALITY MONITORING SAMPLING LOCATIONS

Station	Location	IEPA Classification
57	Ashland, Little Calumet River*	General Use
58	Ashland Avenue, Calumet-Sag Channel	CAWS A/PC
59	Cicero Avenue, Calumet-Sag Channel*	CAWS A/PC
43	Route 83, Calumet-Sag Channel*	CAWS A/PC
	Des Plaines River System	
12	Lake-Cook Road, Buffalo Creek	General Use
13	Lake-Cook Road, Des Plaines River	General Use
17	Oakton Street, Des Plaines River	General Use
19	Belmont Avenue, Des Plaines River*	General Use
20	Roosevelt Road, Des Plaines River	General Use
22	Ogden Avenue, Des Plaines River*	General Use
23	Willow Springs Road, Des Plaines River*	General Use
29	Stephen Street, Des Plaines River	General Use
91	Material Service Road, Des Plaines River*	General Use
110	Springinsguth Road, West Branch of DuPage River*	General Use
89	Walnut Lane, West Branch of DuPage River	General Use
111	Arlington Drive, West Branch of DuPage River*	General Use
79	Higgins Road, Salt Creek*	General Use
80	Arlington Heights Road, Salt Creek	General Use
18	Devon Avenue, Salt Creek*	General Use
24	Wolf Road, Salt Creek	General Use
109	Brookfield Avenue, Salt Creek*	General Use
77	Elmhurst Road, Higgins Creek*	General Use
78	Wille Road, Higgins Creek*	General Use
	Fox River	
90	Route 19, Poplar Creek	General Use

* Sampling locations for the 2020 program.
PC = Primary Contact.
ICR = Incidental Contact Recreation.
NCR = Non-Contact Recreation.
NR = Non-Recreational.
SC = Secondary Contact.
IAL = Indigenous Aquatic Life.

TABLE 2: LATITUDE AND LONGITUDE OF CURRENT SAMPLING LOCATIONS

Station	Description	North Latitude	West Longitude
96	North Branch Chicago River @ Albany Ave.	41° 58.475'	87° 42.375'
112	North Shore Channel @ Dempster St.	42° 02.460'	87° 42.583'
36	North Shore Channel @ Touhy Ave.	42° 00.690'	87° 42.600'
37	North Branch Chicago River @ Wilson Ave.	41° 57.891'	87° 41.834'
73	North Branch Chicago River @ Diversey Ave.	41° 55.920'	87° 40.940'
100	Chicago River Main Stem @ Wells St.	41° 53.259'	87° 38.045'
108	South Branch Chicago River @ Loomis St.	41° 50.752'	87° 39.642'
99	South Fork, South Branch Chicago River @ Archer Ave.	41° 50.331'	87° 39.849'
75	Chicago Sanitary & Ship Canal @ Cicero Ave.	41° 49.169'	87° 44.616'
41	Chicago Sanitary & Ship Canal @ Harlem Ave.	41° 48.263'	87° 48.104'
48	Chicago Sanitary & Ship Canal @ Stephen St.	41° 40.750'	88° 00.683'
92	Chicago Sanitary & Ship Canal @ Lockport Powerhouse Forebay	41° 34.256'	88° 04.704'
86	Grand Calumet River @ Burnham Ave.	41° 37.870'	87° 32.352'
56	Little Calumet River @ Indiana Ave.	41° 39.136'	87° 35.828'
76	Little Calumet River @ Halsted St.	41° 39.440'	87° 38.476'
57	Little Calumet River @ Ashland Ave.	41° 39.099'	87° 39.633'
59	Calumet-Sag Channel @ Cicero Ave.	41° 39.282'	87° 44.284'
43	Calumet-Sag Channel @ Route 83	41° 41.790'	87° 56.480'
19	Des Plaines @ Belmont Ave.	41° 56.236'	87° 50.975'
22	Des Plaines River @ Ogden Ave.	41° 49.256'	87° 48.654'
23	Des Plaines River @ Willow Springs Rd.	41° 44.135'	87° 52.901'
91	Des Plaines River @ Material Service Rd.	41° 35.794'	88° 04.112'
110	West Branch DuPage River @ Springinsguth Rd.	42° 00.495'	88° 07.142'
111	West Branch DuPage River @ Arlington Drive	41° 58.500'	88° 08.316'
79	Salt Creek @ Higgins Rd.	42° 01.880'	88° 00.679'
18	Salt Creek @ Devon Ave.	41° 59.546'	87° 59.924'
109	Salt Creek @ Brookfield Ave.	41° 49.370'	87° 50.494'
77	Higgins Creek @ Elmhurst Rd.	42° 01.287'	87° 56.436'
78	Higgins Creek @ Wille Rd.	42° 01.120'	87° 56.201'

TABLE 3: QUADRANT, TOWNSHIP, AND RANGE OF CURRENT SAMPLING LOCATIONS[1]

Station	Description	Quadrant	TWP	Range	Sec.	¼ Sec.
96	North Branch Chicago River @ Albany Avenue	Chicago Loop	40N	13E	12	SW
112	North Shore Channel @ Dempster Street	Evanston	41N	13E	14	SE
36	North Shore Channel @ Touhy Avenue	Evanston	42N	13E	26	SE
37	North Branch Chicago River @ Wilson Avenue	Chicago Loop	40N	13E	13	NE
73	North Branch Chicago River @ Diversey Avenue	Chicago Loop	40N	14E	30	SW
100	Chicago River Main Stem @ Wells Street	Chicago Loop	39N	14E	9	SW
108	South Branch Chicago River @ Loomis Street	Englewood	39N	14E	28	NW
99	South Fork, South Branch Chicago River @ Archer Avenue	Englewood	39N	14E	29	SW
75	Chicago Sanitary & Ship Canal @ Cicero Avenue	Englewood	38N	13E	3	NW
41	Chicago Sanitary & Ship Canal @ Harlem Avenue	Berwyn	38N	12E	7	NW
48	Chicago Sanitary & Ship Canal @ Stephen Street	Romeoville	37N	11E	20	NW
92	Chicago Sanitary & Ship Canal @ Lockport Powerhouse	Joliet	36N	10E	27	SW
86	Grand Calumet River @ Burnham Avenue	Lake Calumet	36N	15E	5	SW
56	Little Calumet River @ Indiana Avenue	Lake Calumet	37N	14E	34	SW
76	Little Calumet River @ Halsted Street	Blue Island	37N	14E	33	NW
57	Little Calumet River @ Ashland Avenue	Blue Island	37N	14E	32	SW
59	Calumet-Sag Channel @ Cicero Avenue	Blue Island	37N	13E	34	NW
43	Calumet-Sag Channel @ Route 83	Calumet-Sag Bridge	37N	11E	14	SE
19	Des Plaines @ Belmont Avenue	River Forest	40N	12E	22	SE
22	Des Plaines River @ Ogden Avenue	Berwyn	38N	12E	1	NE
23	Des Plaines River @ Willow Springs Road	Calumet-Sag Bridge	38N	12E	33	SW
91	Des Plaines River @ Material Service Road	Joliet	36N	10E	22	SW
110	West Branch DuPage River @ Springinsguth Road	Streamwood	41N	10E	26	SW
111	West Branch DuPage River @ Arlington Drive	West Chicago	40N	10E	6	SE
79	Salt Creek @ Higgins Road	Palatine	41N	11E	20	NW
18	Salt Creek @ Devon Avenue	Elmhurst	41N	11E	33	SW
109	Salt Creek @ Brookfield Avenue	Berwyn	39N	12E	35	SW
77	Higgins Creek @ Elmhurst Road	Arlington Hts.	41N	11E	25	NW
78	Higgins Creek @ Wille Road	Arlington Hts.	41N	11E	25	NW

[1] Information from the Bureau of Land Management Public Land Survey System
TWP = Township.
Sec. = One square mile section of the 36-square-mile TWP Range.
¼ Sec. = The subdivided quarter section of a section.

MONITORING METHODS AND FREQUENCY

Sampling Methods

Manual sampling from a bridge or boat is conducted on each Monday of the month. When a Monday is a District paid holiday the sampling will be performed on the following Tuesday. Two person teams, each comprised of Pollution Control Technicians or available trained Aquatic Ecology Section personnel, perform the sampling under the direction of the Environmental Monitoring Manager defined in the Quality Assurance Project Plan (QAPP) for this program.

The eleven locations on the Des Plaines River System are sampled on the first Monday of each month. The five most northern sampling locations on the Chicago River System are sampled on the second Monday of each month. The remaining six locations on the Chicago River System are sampled on the third Monday of each month. The six sampling locations on the Calumet River System are sampled on the fourth Monday of each month. The Lockport sampling location on the powerhouse forebay catwalk is sampled weekly.

The surface water grab samples are collected using a stainless-steel bucket. Before the samples are collected using the stainless-steel bucket, a calibrated dissolved oxygen probe is lowered into the waterway to a depth of three feet on the upstream side of the bridge at the most central location of the waterway and a field measurement is taken and recorded on the sample collection sheet. The bucket is then lowered into the waterway at the same location as the dissolved oxygen probe. The sampling time is recorded on the sample collection sheet. The bucket is submerged, filled, and then raised to the top of the bridge. The water temperature and pH are measured immediately from the stainless-steel bucket using a calibrated pH/temperature probe and recorded on the sample collection sheet. The contents of the bucket are then discarded and the bucket is lowered and refilled as necessary to acclimate the bucket and provide sample for the individual sample aliquots. The sterile sample container for bacterial analysis is filled separately using a special sampling device in the waterway to prevent contact of the sample with non-sterile surfaces.

There are exceptions to sampling from bridges. Stephen Street (Station 48) is sampled from the District's Pollution Control Boat in the center of the waterway, since the bridge no longer exists. Water samples are also routinely collected from the boat for safety reasons at Cicero Avenue (Station 75) and Harlem Avenue (Station 41) on the Chicago Sanitary and Ship Canal, Route 83 on the Cal-Sag Channel (Station 43), and Ashland Avenue on the Little Calumet River (Station 57). Occasionally, other stations may also be sampled by boat for logistical reasons, including bridge construction or coordination with other special sampling activities.

The AWQM program utilizes a QAPP, which is published on the District website (https://mwrd.org/sites/default/files/documents/2019%20AWQM%20QAPP%20FINAL_4.1.19.pdf), that addresses how to conduct the monitoring of the waterways in a manner that will efficiently utilize available resources and produce water quality data that will meet or exceed the measurement quality objectives for all intended uses of the data. Specific details and procedures regarding the entire AWQM program can be found in the QAPP. The QAPP is reviewed annually and updated as needed. The last update to the QAPP was in 2019.

Analytical Methods

The list of parameters that are analyzed and the analytical methods used are shown in Table 4. Column 1 of Table 4 gives the analytes to be measured, column 2 shows the method to be used by the laboratory, and column 3 displays the method reference. Except for chlorophyll *a*, all methods used to qualify parameters are USEPA approved methods listed in 40 CFR Parts 136, 141, and 145. Approved USEPA methods are not available for the determination of chlorophyll *a*.

All the parameters are analyzed by the District Analytical Laboratory Division (ALD) except for those measured in the field (dissolved oxygen, temperature, and pH), fecal coliform, and chlorophyll *a*. Fecal coliform is measured by the District Microbiology Section, and chlorophyll *a* by the District Aquatic Ecology Section.

Sampling Frequency

All 29 sampling locations are scheduled to be sampled monthly, except Lockport Powerhouse and Lock (Station 92), which is sampled weekly. The sampling frequency for each parameter group is shown in Appendix II. This schedule provides sampling through seasonal changes and a sufficient number of samples to adequately characterize water quality annually and to identify long-term trends over many years. Monthly sampling may also detect an abrupt degradation of water quality, allowing the opportunity for the District to respond appropriately.

Water quality samples are collected weekly at the Lockport Powerhouse and Lock because this facility controls the release of water from the Chicago Sanitary and Ship Canal, which contains, at that location, the combined flow from the Chicago and Calumet River Systems. The treated wastewater from four District WRPs covering most of the District's service area flows through the Lockport Powerhouse and Lock.

Some planned sampling may be cancelled due to road/bridge closures or if weather conditions are determined to be dangerous such as: extreme heat, extreme cold, icy conditions, excessive fog, or any other conditions determined by the Environmental Monitoring Manager.

TABLE 4: PARAMETERS ANALYZED AND ANALYTICAL METHOD

Parameter	Method	Method Reference
Dissolved oxygen	Electrode	SM 4500-O H
Temperature	Electrode	SM 2550 B
pH	Electrode	SM 4500-H^+ B
Ammonia nitrogen	Colorimetric	EPA 350.1R.2.0
Ammonia nitrogen, un-ionized[1]	Calculation	
Nitrate and nitrite nitrogen	Colorimetric	EPA 353.2 R.2.0
Kjeldahl nitrogen	Colorimetric	EPA 351.2 R.2.0
Phosphorus, total	Colorimetric	EPA 365.4
Sulfate	Ion Chromatography	EPA 300.0
Total dissolved solids	Gravimetric	SM 2540 C
Suspended solids	Gravimetric	SM 2540 D
Volatile suspended solids	Gravimetric	SM 2540 E
Alkalinity	Titration	SM 2320 B
Chloride	Ion Chromatography	EPA 300.0
Fluoride	Ion Chromatography	EPA 300.0
Organic carbon, total	UV-Oxidation	SM 5310 C
Phenol	Colorimetric	EPA 420.2
Cyanide, total	Colorimetric	EPA Kelada-01
Cyanide, chlorine amenable	Colorimetric	SM 4500-CN G
Barium, total	ICP-MS	EPA 200.8
Boron, total	ICP-MS	EPA 200.8
Calcium, total	ICP-OES	EPA 200.7
Chromium, trivalent[2]	ICP-MS	EPA 200.8
Chromium, hexavalent	Colorimetric	EPA 218.6
Magnesium, total	ICP-OES	EPA 200.7
Manganese, total	ICP-MS	EPA 200.8
Mercury, low-level, total; General Use	Cold vapor AFS	EPA 1631 E
Selenium, total	ICP-MS	EPA 200.8
Silver, total	ICP-MS	EPA 200.8
Arsenic, dissolved	ICP-MS	EPA 200.8
Cadmium, dissolved	ICP-MS	EPA 200.8
Chromium, dissolved	ICP-MS	EPA 200.8
Copper, dissolved	ICP-MS	EPA 200.8
Iron, dissolved	ICP-MS	EPA 200.8
Lead, dissolved	ICP-MS	EPA 200.8
Nickel, dissolved	ICP-MS	EPA 200.8
Silver, dissolved	ICP-MS	EPA 200.8
Zinc, dissolved	ICP-MS	EPA 200.8
Fecal coliform	Membrane	SM 9222 D
n-Hexane extractable materials	Gravimetric	EPA 1664, Rev. A
Chlorophyll *a*	Colorimetric	SM 10200 H

TABLE 4 (Continued): PARAMETERS ANALYZED AND ANALYTICAL METHOD

Parameter	Method	Method Reference
BETX (benzene, ethyl benzene, toluene, xylenes)	Purge and trap GC/MS	EPA 624
Organic Priority Pollutants		
Volatile organic compounds	Purge and trap GC/MS	EPA 624
Base/neutral and acid-extractable compounds	GC/MS	EPA 625
Pesticides	GC/ECD	EPA 608
PCBs	GC/ECD	EPA 608

[1]Calculated from pH, temperature, and ammonia nitrogen.
[2]Trivalent chromium measured as total chromium.
SM = Standard Methods

MONITORING ACTIVITY IN 2020

Sample Events

The AWQM sample teams prepared the needed bottles, equipment, chain of custody, and labels for each week that AWQM sampling was scheduled. The total number of sample events scheduled for 2020 was 374. During these 374 sampling events there were 7 instances where the AWQM location was not sampled. Additionally, in December of 2020 the ALD did not accept AWQM samples during the last 2 weeks of the year due to staff shortages around the Christmas and New Year Holidays. A total of 14 AWQM sample events were not planned during those 2 weeks. Each sample location missed in 2020 and the reason is shown in Table 5.

Pandemic Issues

During the COVID-19 pandemic, the AWQM program carried on with very minimal disruption. Only one weekly sample event for the Lockport location was missed during the week of March 16, 2020. On that date, the District issued a stay at home order for nearly all staff including those in the Environmental Monitoring and Research Division (EM&RD) and it took a week to determine if and how to carry out the sampling for the AWQM program. The monthly sample locations that were scheduled during the week of March 16, 2020, were rescheduled for the following week. Safety protocols and procedures were developed immediately following COVID-19 safety guidelines and applied to keep staff safe during the AWQM sampling. The safety measures included wearing masks, maintaining social distancing whenever possible, washing or disinfecting hands and equipment often, and utilizing multiple vehicles to maintain the social distancing when traveling to and from each sample location. No incident of COVID-19 infection occurred during the implementation of this program in 2020.

Analytical Results

Specific details on the processing of the samples and the respective laboratory handling procedures are also described in the QAPP. Once the analyses are completed and the results are authorized by an Environmental Chemist, the final results are released. The ALD provide monthly reports to EM&R that include these results. Each year the AWQM results are posted on the District's website in an excel spreadsheet file. The water quality data files can be located at https://mwrd.org/chicago-area-waterways-water-quality-monitoring. Additionally, the public can access some of this water quality data through the District's GeoHub. After visiting https://gispub.mwrd.org/awqa/ and selecting the Water Quality tab the visitor can select a parameter and view the yearly statistics. The yearly statistics can then be downloaded to a csv file if selected.

TABLE 5: 2020 AMBIENT SAMPLE LOCATIONS NOT SAMPLED

Date	Locations	Reason Not Sampled
1/21/2020	WW42, WW48	Pollution control boat unavailable for sampling
1/27/2020	WW43	Pollution control boat unavailable for sampling
3/16/2020	WW92	COVID-19 Stay at home order
8/10/2020	WW92	No access due to construction equipment
9/21/2020	WW92	No access due to construction equipment
9/28/2020	WW92	No access due to construction equipment
10/5/2020	WW18	No access due to construction on bridge
12/21/2020	WW100, WW108, WW99, WW75, WW41, WW48, WW92	Analytical Laboratory Division not accepting samples
12/28/2020	WW86, WW56, WW76, WW59, WW43, WW57, WW92	Analytical Laboratory Division not accepting samples

APPENDIX A

AMBIENT WATER QUALITY MONITORING

TABLE A-1: AMBIENT WATER QUALITY MONITORING PARAMETER SAMPLING FREQUENCY

Station	Description	General Sampling[1]	n-Hexane Extractable Materials	BETX[2]	OPPs[3]
96	Albany Avenue, North Branch Chicago River	Monthly 2nd Mon.		Bimonthly	Semiannually
112	Dempster Street, North Shore Channel	Monthly 2nd Mon.		Bimonthly	Semiannually
36	Touhy Avenue, North Shore Channel	Monthly 2nd Mon.		Bimonthly	Semiannually
37	Wilson Avenue, North Branch Chicago River	Monthly 2nd Mon.		Bimonthly	Semiannually
73	Diversey Parkway, North Branch Chicago River	Monthly 2nd Mon.		Bimonthly	Semiannually
100	Wells Street, Chicago River	Monthly 3rd Mon.		Bimonthly	Semiannually
108	Loomis Street, South Branch Chicago River	Monthly 3rd Mon.		Bimonthly	Semiannually
99	Archer Avenue, South Fork South Branch Chicago River	Monthly 3rd Mon.	Monthly 3rd Mon.	Bimonthly	Semiannually
75	Cicero Avenue, Chicago Sanitary & Ship Canal	Monthly 3rd Mon.		Bimonthly	Semiannually
41	Harlem Avenue, Chicago Sanitary & Ship Canal	Monthly 3rd Mon.		Bimonthly	Semiannually
48	Stephen Street, Chicago Sanitary & Ship Canal	Monthly 3rd Mon.		Bimonthly	Semiannually
92	Lockport Powerhouse Chicago Sanitary & Ship Canal	Weekly Every Mon.		Bimonthly	Semiannually

TABLE A-1 (Continued): AMBIENT WATER QUALITY MONITORING PARAMETER SAMPLING FREQUENCY

Station	Description	General Sampling[1]	n-Hexane Extractable Materials	BETX[2]	OPPs[3]
86	Burnham Avenue, Grand Calumet River	Monthly 4th Mon.		Bimonthly	Semiannually
56	Indiana Avenue, Little Calumet River	Monthly 4th Mon.		Bimonthly	Semiannually
76	Halsted Street, Little Calumet River	Monthly 4th Mon.		Bimonthly	Semiannually
57	Ashland Avenue, Little Calumet River	Monthly 4th Mon.		Bimonthly	Semiannually
59	Cicero Avenue, Calumet-Sag Channel	Monthly 4th Mon.		Bimonthly	Semiannually
43	Route 83, Calumet-Sag Channel	Monthly 4th Mon.		Bimonthly	Semiannually
19	Belmont Avenue, Des Plaines River	Monthly 1st Mon.		Bimonthly	Semiannually
22	Ogden Avenue, Des Plaines River	Monthly 1st Mon.		Bimonthly	Semiannually
23	Willow Springs Road, Des Plaines River	Monthly 1st Mon.		Bimonthly	Semiannually
91	Material Service Road, Des Plaines River	Monthly 1st Mon.		Bimonthly	Semiannually
110	Springinsguth Road, West Branch DuPage River	Monthly 1st Mon.		Bimonthly	Semiannually
111	Arlington Drive, West Branch DuPage River	Monthly 1st Mon.		Bimonthly	Semiannually
79	Higgins Road, Salt Creek	Monthly 1st Mon.		Bimonthly	Semiannually

TABLE A-1 (Continued): AMBIENT WATER QUALITY MONITORING PARAMETER SAMPLING FREQUENCY

Station	Description	General Sampling[1]	n-Hexane Extractable Materials	BETX[2]	OPPs[3]
18	Devon Avenue, Salt Creek	Monthly 1st Mon.		Bimonthly	Semiannually
109	Brookfield Avenue, Salt Creek	Monthly 1st Mon.		Bimonthly	Semiannually
77	Elmhurst Road, Higgins Creek	Monthly 1st Mon.		Bimonthly	Semiannually
78	Wille Road, Higgins Creek	Monthly 1st Mon.		Bimonthly	Semiannually

[1]The parameters included in the general sampling performed monthly include temperature, pH, dissolved oxygen, fecal coliform, total metals, soluble metals, hexavalent chromium, ammonia nitrogen, combined nitrate and nitrite nitrogen, Kjeldahl nitrogen, total phosphorus, total cyanide, cyanide amenable to chlorination, phenol, alkalinity, chloride, fluoride, turbidity, total dissolved solids, total suspended solids, total organic carbon, and chlorophyll *a*. General sampling excluded oil and grease, *E. coli*, BETX, and priority organics.
[2]BETX = benzene, ethyl benzene, toluene, and xylenes.
[3]OPPs = organic priority pollutants