

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 26-23

***TUNNEL AND RESERVOIR PLAN
DES PLAINES TUNNEL SYSTEM ANNUAL GROUNDWATER
MONITORING REPORT FOR 2025***

July 2026



Metropolitan Water Reclamation District of Greater Chicago

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July 21, 2026

Ms. Joey Logan-Pugh
Chief
Bureau of Water
Illinois Environmental Protection Agency
2520 W. Iles Ave.
P. O. Box 19276
Springfield, IL 62794-9276

Dear Ms. Logan-Pugh:

Subject: Tunnel and Reservoir Plan Des Plaines Tunnel System Annual Groundwater
Monitoring Report for 2025

The report entitled "Tunnel and Reservoir Plan Des Plaines Tunnel System Annual
Groundwater Monitoring Report for 2025" is attached.

Very truly yours,

Albert Cox, Ph.D.
Environmental Monitoring and Research Manager
Monitoring and Research Department

AC:lf
Attachment
cc: Mr. Ryan Bahr (USEPA Region 5 - WC15J)
Ms. A. Zimmer (IEPA)
Mr. E. Podczewinski
Dr. H. Zhang
cc w/o att: Mr. E. Staudacher
Ms. L. Oduocha

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**TUNNEL AND RESERVOIR PLAN
DES PLAINES TUNNEL SYSTEM
ANNUAL GROUNDWATER MONITORING REPORT
FOR 2025**

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LIST OF ABBREVIATIONS

Abbreviation	Definition
°C	degrees Celsius
CFU	colony forming units
Cl ⁻	chloride
District	Metropolitan Water Reclamation District of Greater Chicago
EC	electrical conductivity
FC	fecal coliform
IEPA	Illinois Environmental Protection Agency
L	liter
m	meter
mg	milligram
mL	milliliter
mS	millisiemens
NH ₃ -N	ammonia nitrogen
SO ₄ ²⁻	sulfate
TARP	Tunnel and Reservoir Plan
TDS	total dissolved solids
Temp.	temperature
TOC	total organic carbon

ANNUAL DATA FOR MONITORING WELLS

Introduction

The Des Plaines Tunnel System is located beneath the Des Plaines River. All groundwater monitoring wells are located along the 13A extension, south leg, middle leg, and north leg of the Des Plaines Tunnel System ([Figure 1](#)). The monitoring wells are sampled based on the modified groundwater monitoring program for the Metropolitan Water Reclamation District of Greater Chicago's (District's) Tunnel and Reservoir Plan (TARP) as briefly described below.

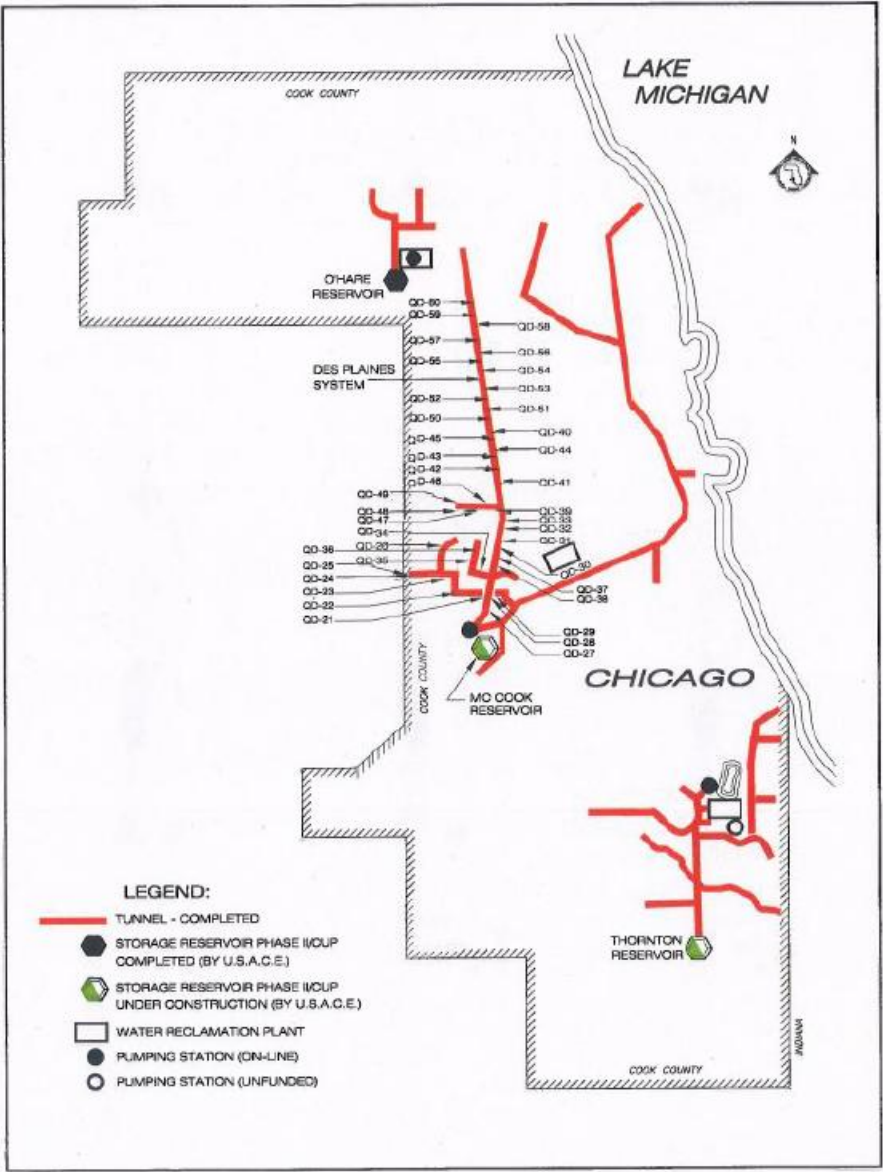
Modified Groundwater Monitoring Program

In a letter dated May 14, 2021, the Illinois Environmental Protection Agency (IEPA) approved a modified TARP groundwater monitoring program for the District's Calumet, Mainstream, Des Plaines, and Upper Des Plaines tunnel systems effective January 2021. The modification of the TARP groundwater monitoring program was based on the key findings from a three-year fill event-based groundwater monitoring study conducted by the District from 2017 to 2019 and was submitted to the IEPA in a report dated July 30, 2020.

Under the modified monitoring program, nine fill event-based monitoring wells in the Des Plaines Tunnel System (QD-27, QD-29, QD-30, QD-31, QD-33, QD-34, QD-36, QD-46, and QD-54) are sampled for two tunnel fill events per year, usually following storm events. Fecal coliforms (FC) in these wells were detected in 10 percent or more of samples collected during the period 1995–2013. In addition, well QD-57, previously sampled annually, is monitored according to this schedule. Fecal coliforms were detected in this well in all samples collected during 2017–2019. The criterion that triggers event sampling is that the level of water in the TARP Mainstream tunnels reaches -150 feet relative to the Chicago City Datum at the intersection of State and Madison Streets (579.48 feet above mean sea level). The fill event-based monitoring wells are sampled in two groups. At each fill event, the first group of wells (QD-29, QD-30, QD-54, and QD-57) is sampled during the first week of the fill event, and the second group of wells (QD-27, QD-31, QD-33, QD-34, QD-36, and QD-46) is sampled during the second week of the fill event. For the first fill event, samples are analyzed for all parameters including pH, temperature (Temp.), electrical conductivity (EC), total dissolved solids (TDS), hardness, ammonia nitrogen (NH₃-N), total organic carbon (TOC), chloride (Cl⁻), sulfate (SO₄²⁻), and FC. For the second fill event, samples are analyzed for FC only. Groundwater elevations in the monitoring wells are measured during each sampling event. If no fill event occurs by April 30 or October 31, a sampling event is conducted as a substitute for the fill event sampling representing the periods January – June and July – December, respectively.

The other 30 wells associated with the Des Plaines Tunnel System, referred to as annual monitoring wells, are sampled once per year. These wells had FC detected in less than 10 percent of samples during the period 1995–2013.

FIGURE 1: MAP OF MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM



Summary of Monitoring Well Data

During the first half of 2025, there were no tunnel fill events. To substitute for the fill event sampling, the ten fill event-based monitoring wells were sampled during the period from May 8 to June 5, 2025. In the second half of the year, two tunnel fill events occurred, on July 12, 2025, and August 13, 2025. Sampling of the ten fill event-based monitoring wells was conducted during the period from July 17 to July 23, 2025. Because the May/June and July sampling events occurred close together, an additional sampling for the fill event-based monitoring wells was conducted from November 5 to November 25, 2025, for FC testing. The groundwater analytical data and physical parameters for fill event-based monitoring wells are presented in [Table 1](#).

All fill event-based monitored wells showed undetectable levels of FC (<1 CFU/100 mL) during the first sampling events. Wells QD-31, QD-33, and QD-57 showed detectable levels of FC in the second sampling event (July) in response to the tunnel fill event. However, FC in most of the monitored wells returned to undetectable levels at the third sampling event. Additionally, wells QD-27, QD-34, and QD-36 showed detectable levels of FC only during the third sampling event.

The analytical data for groundwater from the 30 wells sampled once per year are presented in [Table 2](#). Fecal coliforms in all the annual monitoring wells were undetectable (<1 CFU/100 mL) except for well QD-52.

TABLE 1: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER SAMPLED FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2025¹

Well	Sampled Date	pH	EC mS/m	TDS	TOC	Cl ⁻	SO ₄ ²⁻ mg/L	NH ₃ -N	Hardness	Temp. °C	Water Elevation ² feet	Fecal Coliform CFU/100 mL	Recharge Time hours
QD-27	05/08/25	7.5	217	1,406	14.0	488	43	28.6	457	13.2	-163	<1	<48
	07/23/25	7.6	211	1,362	14.0	466	28	27.5	371	14.0	-165	<1	<48
	11/12/25	7.4	198	—	—	—	—	—	—	13.1	-167	6	<48
QD-29	05/08/25	7.3	122	970	<5	140	204	0.6	526	13.6	-62	<1	<4
	07/17/25	7.1	121	960	<5	129	210	0.6	532	13.8	-63	<1	<4
	11/05/25	7.3	168	—	—	—	—	—	—	13.9	-46	<1	<4
QD-30	05/08/25	7.4	95	730	<5	92	152	<0.3	391	13.3	-72	<1	<48
	07/23/25	7.3	93	448	<5	96	183	<0.3	425	13.4	-70	<1	<48
	11/12/25	7.5	114	—	—	—	—	—	—	12.2	-72	<1	<48
QD-31	05/08/25	7.6	121	930	<5	126	171	<0.3	204	12.4	-192	<1	<4
	07/23/25	7.6	116	866	<5	125	163	<0.3	181	13.0	-191	1,400	<4
	11/12/25	7.5	114	—	—	—	—	—	—	12.2	-194	<1	<4
QD-33	05/08/25	8.5	216	1,594	<5	349	197	<0.3	26	12.7	-191	<1	<48
	07/23/25	8.9	215	1,508	<5	339	192	<0.3	19	13.4	-189	4	<48
	11/12/25	8.4	178	—	—	—	—	—	—	12.4	-196	<1	<48
QD-34	05/21/25	7.0	119	946	<5	131	221	0.4	578	13.5	-47	<1	<4
	07/21/25	7.0	121	988	<5	130	216	0.4	552	13.9	-51	<1	<4
	11/12/25	7.0	136	—	—	—	—	—	—	13.7	-46	1	<4

TABLE 1(Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER SAMPLED FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2025¹

Well	Sampled Date	pH	EC mS/m	TDS	TOC	Cl ⁻	SO ₄ ²⁻ mg/L	NH ₃ -N	Hardness	Temp. °C	Water Elevation ² feet	Fecal Coliform CFU/100 mL	Recharge Time hours
QD-36	05/21/25	6.9	124	1,022	<5	126	257	0.3	647	12.1	-60	<1	<4
	07/21/25	7.0	123	1,030	<5	127	256	0.3	593	12.8	-63	<1	<4
	11/05/25	6.9	125	—	—	—	—	—	—	12.8	-61	4	<4
QD-46	05/21/25	7.7	70	564	<5	12	133	2.0	98	12.5	-135	<1	<4
	07/21/25	7.8	74	564	<5	12	129	<0.3	92	13.0	-128	<1	<4
	11/06/25	7.8	73	—	—	—	—	—	—	12.9	-142	<1	<4
QD-54	06/05/25	9.3	54	436	<5	21	144	<0.3	32	13.1	-44	<1	<48
	07/17/25	9.3	53	758	<5	22	146	<0.3	33	13.2	-43	<1	<48
	11/25/25	8.8	57	—	—	—	—	—	—	12.3	-41	<1	<48
QD-57	06/05/25	NS ³	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<48
	07/22/25	8.7	46	352	<5	13	46	<0.3	19	12.3	-119	2	<48
	11/25/25	8.6	43	338	6.0	13	47	0.3	16	11.1	-121	<1	<48

¹Chemistry parameters were analyzed for the first two sampling events.

²Relative to the Chicago City Datum at the intersection of State and Madison Streets (579.48 feet above mean sea level).

³No sample was collected at well QD-57 on June 5, 2025, because fallen trees due to storm events blocked the access road to the well.

TABLE 2: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER SAMPLED FROM ANNUAL MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2025

Well	Sample Date	pH	EC mS/m	TDS	TOC	Cl-	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp. °C	Water Elevation ¹ feet	Fecal Coliform CFU/100 mL
							mg/L					
QD-21	11/28/25	7.0	147	1,068	26	250	231	<0.3	657	13.4	-33	<1
QD-22	11/28/25	7.0	128	972	20	177	213	0.3	672	13.4	-13	<1
QD-23	NS ²	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
QD-25	01/29/25	7.2	95	738	<5	141	152	0.6	502	12.5	16	<1
QD-25	01/29/25	7.0	191	1,514	<5	468	265	0.7	749	11.4	32	<1
QD-26	04/24/25	7.3	64	488	<5	9	98	<0.3	401	13.0	0	<1
QD-28	10/09/25	7.4	103	738	<5	164	137	1.3	440	13.5	-78	<1
QD-32	04/24/25	8.8	258	1,920	<5	566	242	<0.3	27	12.8	-218	<1
QD-35	10/09/25	7.1	117	958	<5	102	268	0.3	657	13.7	-58	<1
QD-37	03/27/25	8.4	156	1,160	<5	254	260	<0.3	179	13.6	-181	<1
QD-38	03/27/25	8.0	98	760	<5	170	95	0.4	235	12.7	-212	<1
QD-39	03/27/25	8.3	99	780	5.1	28	96	<0.3	22	11.9	-139	<1
QD-40	04/03/25	9.3	97	736	<5	16	350	<0.3	22	14.0	-112	<1
QD-41	04/03/25	7.6	79	652	<5	12	310	<0.3	364	12.7	-132	<1
QD-42	04/03/25	7.5	89	706	<5	18	281	0.3	360	12.4	-94	<1
QD-43	07/10/25	7.3	82	686	<5	43	197	0.3	377	12.9	-126	<1
QD-44	07/10/25	7.6	74	610	<5	20	189	0.4	277	11.9	-9	<1
QD-45	07/10/25	8.5	73	546	<5	19	199	0.4	91	12.6	7	<1
QD-47	08/07/25	7.5	65	538	<5	14	145	<0.3	241	14.6	11	<1
QD-48	08/07/25	9.0	54	386	<5	6	218	<0.3	179	16.1	-180	<1
QD-49	10/02/25	8.0	69	516	<5	13	214	<0.3	202	15.2	-184	<1
QD-50	09/25/25	9.7	87	664	<5	12	260	<0.3	6	13.3	-182	<1
QD-51	09/25/25	9.3	71	576	<5	12	120	<0.3	5	12.7	-110	<1
QD-52	09/25/25	9.0	64	490	<5	16	135	<0.3	14	13.8	-114	<1

TABLE 2 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER SAMPLED FROM ANNUAL MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2025

Well	Sample Date	pH	EC mS/m	TDS	TOC	Cl-	SO ₄ ²⁻	NH ₃ -N	Hardness	Temp. °C	Water Elevation ¹ feet	Fecal Coliform CFU/100 mL
				-----mg/L-----								
QD-53	10/02/25	9.1	80	552	<5	19	171	<0.3	9	14.6	-152	1
QD-55	10/02/25	8.3	57	372	<5	14	159	0.4	99	13.0	-138	<1
QD-56	10/02/25	8.4	39	256	<5	10	8	<0.3	42	12.6	-74	<1
QD-58	12/04/25	8.0	34	256	<5	NDR ³	NDR	<0.3	117	10.9	-111	<1
QD-59	12/04/25	8.6	40	270	<5	58	8	<0.3	183	11.4	-38	<1
QD-60	12/04/25	7.9	49	348	<5	43	88	0.4	228	11.7	-88	<1

¹Relative to the Chicago City Datum at the intersection of State and Madison Streets (579.48 feet above mean sea level).

²No sample was collected from well QD-23 due to well pump malfunction.

³No data reported due to quality assurance/quality control failure.