Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

MONITORING AND RESEARCH DEPARTMENT

REPORT NO. 19-27

TUNNEL AND RESERVOIR PLAN

MCCOOK RESERVOIR

ANNUAL GROUNDWATER MONITORING REPORT

FOR 2018

October 2019

Protecting Our Water Environment

Metropolitan Water Reclamation District of Greater Chicago

CECIL LUE-HING RESEARCH AND DEVELOPMENT COMPLEX
6001 WEST PERSHING ROAD CICERO, ILLINOIS 60804-4112

Edward W. Podczerwinski, P.E.
Director of Monitoring and Research

October 23, 2019

Mr. Richard P. Cobb, P.G.
Acting Division Manager
Division of Public Water Supplies
Bureau of Water
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794

Dear Mr. Cobb:

Subject: Transmittal of the Report "Tunnel and Reservoir Plan McCook Reservoir Annual Groundwater Monitoring Report for 2018"

Please find attached the report entitled "Tunnel and Reservoir Plan McCook Reservoir Annual Groundwater Monitoring Report for 2018." The report was prepared for transmittal to the Illinois Environmental Protection Agency (IEPA) in accordance with the Chicagoland Underflow Plan McCook Reservoir Groundwater Monitoring and Analysis Plan (MAP). The MAP was prepared by the United States Army Corps of Engineers, Chicago District, and approved by the IEPA on April 1, 2015, and sets the requirements for the McCook Reservoir Groundwater Monitoring.

If you have any questions or would like additional information, please contact Dr. Guanglong Tian at (708) 588-4201 or tiang@mwrd.org.

Very truly yours,

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

AC:BM:cm
Attachment
cc: Mr. B. O'Neil, USACE
Mr. E. Podczerwinski
Dr. C. O'Connor
Dr. H. Zhang

AC:GT:BM:cm

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TUNNEL AND RESERVOIR PLAN
MCCOOK RESERVOIR
ANNUAL GROUNDWATER MONITORING REPORT
FOR 2018

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October 2019

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LIST OF ABBREVIATLONS

CCD	Chicago City Datum
Class I	Illinois Class I Potable Resource Groundwater Standards
COD	chemical oxygen demand
CSF	Combined sewer flow
District	Metropolitan Water Reclamation District of Greater Chicago
IAC	Illinois Administrative Code
IEPA	Illinois Environmental Protection Agency
MAP	Monitoring and analysis plan
Reservoir	Chicagoland Underflow Plan McCook Reservoir
TARP	Tunnel and Reservoir Plan
TDS	total dissolved solids
TL	tolerance limit
TOC	total organic carbon
USACE	United States Army Corps of Engineers

ACKNOWLEDGMENT

The McCook Reservoir groundwater monitoring is conducted by the Monitoring and Research Department of the Metropolitan Water Reclamation District of Greater Chicago (District) under the Groundwater Monitoring and Analysis Plan prepared by the United States Army Corps of Engineers (USACE). Organic analyses were performed by TestAmerica Laboratories, Inc., inorganic analyses by the District's Analytical Laboratories Division, and fecal coliform analyses by the District's Analytical Bacteriology Laboratory. Samples for background data prior to 2018 were collected by Plexus Scientific Corporation, The Reese Group, and the USACE and analyzed by TestAmerica Laboratories, Inc. (organics and inorganics) and Arro Laboratory Inc. (fecal coliform). Special thanks to James Rivera, Regina Flowers, and Ryan Kirkland for collecting samples, Dr. Zainul Abedin for conducting statistical analyses of the background monitoring data, Benjamin O'Neil at the USACE for helping in background data collection and processing, and to Ms. Coleen Maurovich for typing and formatting this report.

DISCLAIMER

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

McCook Reservoir Site Description

The Chicagoland Underflow Plan McCook Reservoir (Reservoir), located within Lyons Township in western Cook County is part of the Tunnel and Reservoir Plan (TARP). The Reservoir was designed to reduce flooding in the Chicago area by providing storage of combined sewer flow (CSF) during storms. Reservoir construction has been divided into two phases. Phase I of the Reservoir is complete and has been in operation since January 2018. Phase II of the Reservoir is still under construction and is anticipated to begin operation in 2029. The Reservoir stores a mixture of sanitary sewage and storm flow when the capacity of the sewer systems has been exceeded. The CSF is conveyed to the Reservoir by the TARP tunnels until it can be treated at the Stickney Water Reclamation Plant.

The groundwater protection system surrounding the Reservoir is designed to prevent exfiltration of CSF from the Reservoir to groundwater during high-stage conditions and control seepage of groundwater into the Reservoir during low-stage conditions. The groundwater protection system consists of a double-row grout curtain that completely surrounds Phases I and II of the Reservoir to a depth of -320 ft Chicago City Datum. The grouted area has achieved permeabilities of less than 1 lugeon.

Groundwater Monitoring Program

A Groundwater Monitoring and Analysis Plan (MAP) (USACE, 2014), including seven groundwater monitoring wells around the perimeter of the Reservoir (Figure 1), was developed by the United States Army Corps of Engineers (USACE) in coordination with the District and approved by the Illinois Environmental Protection Agency (IEPA) to monitor groundwater conditions and the performance of the groundwater protection system.

The objectives of the monitoring program are:

- To characterize local background groundwater quality by measuring Routine, Organic, and Inorganic parameters prior to Reservoir operation.
- To assess potential exfiltration of CSF effluent into groundwater by measuring Routine parameters while the Reservoir is in high-stage operation.
- To determine potential migration of groundwater contaminants into the Reservoir system from the surrounding area by measuring Routine, Organic, and Inorganic parameters while the Reservoir is in low-stage operation.
- To evaluate long-term changes in groundwater quality associated with Reservoir operations.

To the point of compliance for groundwater quality, monitoring wells are installed 100 feet outside the grout curtain. However, due to physical constraints near the Reservoir where it would be impossible to install or access wells, some are located greater than 100 feet from the grout. In the summer of 2016, a USACE investigation discovered that wells G-04 and G-05 exhibited signs of a compromised annular seal. These wells were re-drilled during Fall 2017 and became operational for monitoring in November 2017.

FIGURE 1: MCCOOK RESERVOIR SITE AND MONITORING WELL LOCATLONS

Background Monitoring. Background monitoring began in the first quarter of 2016. Samples collected during the background monitoring program were analyzed for concentrations of organic and inorganic water contaminants and groundwater quality indicators based on Illinois Class I Potable Resource Groundwater standards constituents in 35 IAC 620.410 (Class I) and Illinois General Use Water Quality standards constituents in 35 IAC 302 B. Background monitoring results were used to determine upper tolerance limits (TL) in each well for all measured groundwater quality parameters to enable future assessment of groundwater protection system efficacy. A description of the approaches used to determine TL is presented in the Appendix with all background data and analytical parameters.

High-Stage/Fill Event Monitoring. High-stage monitoring is initiated when water elevation in the Reservoir exceeds -265 ft CCD. The initial high-stage/fill-event threshold of -280 ft CCD was increased to -265 ft CCD in January 2018 to reflect the Reservoir operating conditions. During high-stage monitoring, samples are collected every 14 days until the Reservoir water elevation falls below -265 ft CCD. The intent of the high-stage program is to monitor time-series data when the Reservoir is under large positive (outward) gradients that have the potential to exfiltrate CSF water. For the current Phase I of the Reservoir operation, during high-stage monitoring events, only wells G-01, G-02, G-03, G-04, and G-05 must be monitored. The measurements and analyses include: four Field and nine Routine Parameters as specified in Table 2 of the MAP.

Low-Stage Semiannual Monitoring. Low-stage monitoring is implemented on a semiannual basis to collect water quality data when the Reservoir is acting as a regional groundwater sink. Low-stage sampling requires that water elevation in the Reservoir is at or below the "wet bottom" elevation (-265 ft CCD). Low-stage samples can only be collected after a low-stage operation has been maintained for at least four days to ensure that monitoring results are characteristic of the regional groundwater and do not reflect re-infiltration of groundwater constituents that exfiltrated during high-stage operations. The first low-stage semiannual sampling occurs during the second quarter of each year (April-June), analyzing all eighty-one (81) Field, Routine, Organic, and Inorganic Parameters as specified in Tables 2, 3 and 4 of the MAP. The second low-stage semiannual sampling occurs during the fourth quarter of each year (October-December), analyzing only the Field and Routine Parameters. The two low-stage semiannual samplings require collecting samples from all seven wells.

This is the first report under the groundwater monitoring program for the Reservoir. It presents field activities and analytical results for groundwater monitoring during the first year of Reservoir operations, from January 17 – December 11, 2018. The Appendix containing the results of the background monitoring program and the methods used to develop upper TL for groundwater quality monitoring at the Reservoir is included in this report.

Monitoring Activities for 2018

During the first year (2018) of operation, the Reservoir experienced 14 high-stage events, three of which lasted for two to four weeks, requiring two samplings, and one of which lasted over six weeks, requiring four samplings. The Reservoir operated at high stage for a total of 233 days during 2018.

High-stage sampling events were conducted 20 times throughout 2018 (dates shown in Tables 1 - 5). Water samples were collected and immediately analyzed in the field for pH and electrical conductivity, and water temperature and elevation were recorded. Samples were packed in ice and transported to District laboratories for analysis of the nine Routine Parameters.

Frequent, and often prolonged, high-stage operations during the year limited the ability of sampling personnel to implement low-stage monitoring during the second quarter. The first low-stage monitoring sample collections were conducted during the third quarter of 2018. The first low-stage semiannual sampling began on August 28, 2018, after the Reservoir had been at low-stage for over four days. However, only well G-01 was sampled before a rainfall event caused the Reservoir to enter high-stage operation, and this sampling event was suspended.

The low-stage semiannual sampling was reinitiated on September 16, 2018, and continued through September 20, 2018. All seven wells were sampled. Water sample pH, electrical conductivity, temperature, and elevation were recorded in the field. Water samples were packed in ice and shipped to TestAmerica Laboratories, Inc. for analysis of organic constituents in accordance with requirements specified in the MAP. Inadvertently, all samples were sent to the contract laboratory for analysis of Organic Parameters before aliquots could be taken to the District's laboratories for analysis of Routine and Inorganic Parameters.

The second semiannual sampling was conducted from November 16 –20, 2018, following at least four days of low-stage operation at the Reservoir. All seven wells were sampled. Field parameters for each water sample were assessed. Water samples were packed in ice and brought to the District's laboratories for analysis of Routine parameters.

Analytical Results for 2018

High-Stage/Fill Event Monitoring. All analytical results for all 20 high-stage samples collected from wells G-01, G-02, G-03, G-04, and G-05 are reported in Tables 1 – 5, respectively. Analytical results that exceed Class I standards are shown in bold text in each table. Analytical results were compared to upper TL based on the background monitoring data.

Groundwater pH was only outside the range for Class I standards in one sample at well G-02 and one sample at well G-04; however, it never exceeded the upper TL in any well and was lower than the lower TL only in well G-04. Chloride concentration exceeded Class I standards for all samples at wells G-01 and G-03, but it never exceeded upper TL in any well. Sulfate exceeded Class I standards only in well G-05 for most samples, but never exceeded the upper TL at this well. The TDS exceeded Class I standards for most samples at wells G-01 and G-03 and for two samples at well G-04 and six samples at well G-05. The TDS exceeded the upper TL in five samples at well G-04 and six samples at well G-05. Fecal coliform was detected twice at well G-01, twice at well G-04, and once at well G-05 at levels of 1 – 34 CFU/100mL.

There were a few exceedances of upper TL for parameters that do not have established limits under Class I standards. The TOC exceeded the upper TL for three samples at well G-01 and one sample at well G-02. The COD exceeded the upper TL for one sample at well G-01, for four samples at well G-02 and for two samples at well G-04. Ammonia exceeded the upper TL at

TABLE 1: ANALYSIS OF GROUNDWATER SAMPLED FROM MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING HIGH-STAGE OPERATION IN 2018

Fill Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
			mS/m	mg/L								CFU/100mL	°C	ft CCD
	Class I Std[1]	**6.5-9.0**	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	Upper TL[3]	5.3-8.1	586	3,845	2.7	40	1280	730	0.13	2.8	1,607	<1	15.7	-106
1	01/17/18	6.7	358	**1,918**	1.6	32	**567**	374	0.14	2.8	926	<1	12.9	-115
2	02/14/18	6.9	287	**1,702**	1.9	26	**486**	299	0.25	4.5	818	<1	13.2	-117
2 DUP[4]	02/14/18	6.9	287	**1,722**	2.1	27	**484**	291	0.26	4.4	832	<1	13.2	-117
3	03/05/18	6.7	268	**1,568**	2.4	27	**455**	303	0.31	4.8	864	<1	13.1	-112
4	03/28/18	6.9	270	**1,174**	3.6	41	**450**	330	0.27	4.9	790	<1	13.6	-113
5-1	04/23/18	6.8	298	**1,674**	1.9	31	**468**	359	0.29	4.4	888	<1	13.6	-117
5-2	05/07/18	6.9	274	**1,668**	2.5	<15	**481**	345	0.27	4.3	868	<1	14.2	-115
5-2 DUP	05/07/18	6.9	274	**1,698**	2.4	<15	**479**	339	0.25	4.2	875	<1	14.2	-115
5-3	05/22/18	7.0	167	**1,664**	2.1	19	**466**	341	0.23	4.4	877	<1	13.4	-115
5-4	06/06/18	6.9	270	**1,692**	2.3	30	**434**	345	0.24	4.7	863	<1	13.4	-112
6-1	06/12/18	6.8	278	**1,938**	4.6	32	**444**	334	0.27	4.3	794	<1	13.5	-112
6-2	06/25/18	7.0	174	**1,746**	2.8	24	**485**	347	0.24	4.7	888	<1	13.4	-113
7	07/10/18	6.6	170	**1,564**	2.6	38	**470**	336	0.26	4.7	856	<1	13.7	-113
7 DUP	07/10/18	6.6	170	**1,474**	2.5	33	**468**	332	0.29	4.7	867	<1	13.7	-113
8	07/24/18	6.6	170	**1,712**	2.3	40	**461**	328	0.30	4.5	854	<1	13.8	-119
9	08/08/18	6.7	259	**1,670**	2.2	27	**444**	314	ND[5]	4.4	865	34	13.7	-112
10	08/21/18	6.6	267	**1,826**	1.9	32	**486**	337	0.25	4.6	629	<1	13.5	-114
11	08/30/18	6.6	262	**1,788**	2.2	21	**469**	302	0.28	4.6	812	5	13.6	-114
12-1	10/02/18	6.8	257	**1,676**	2.0	32	**483**	338	0.24	4.5	868	<1	13.4	-113
12-1 DUP	10/02/18	6.8	257	**1,664**	1.9	22	**484**	261	0.25	4.6	881	<1	13.4	-113
12-2	10/17/18	6.8	265	**1,598**	1.9	27	**468**	337	0.27	4.9	901	<1	13.4	-113
13	11/07/18	6.9	260	**1,574**	2.5	31	**457**	306	0.24	3.7	849	<1	13.5	-112
14-1	11/29/18	6.8	264	**1,698**	2.0	31	**467**	307	0.27	4.3	897	<1	13.2	-113
14-2	12/11/18	6.9	204	**1,636**	2.3	31	**459**	303	0.23	4.4	819	<1	13.2	-114
14-2 DUP	12/11/18	6.9	204	**1,612**	2.2	27	**452**	299	0.23	4.5	833	<1	13.2	-114

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]No Standard established by 35 IAC Part 620.410.
[3]For pH, upper and lower tolerance limits are shown.
[4]Duplicate sample.
[5]No Data reportable. Samples thermally compromised due to cooler malfunction.

TABLE 2: ANALYSIS OF GROUNDWATER SAMPLED FROM MONITORING WELL G-02 AT THE MCCOOK RESERVOIR SITE DURING HIGH-STAGE OPERATION IN 2018

Fill Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
			mS/m	mg/L								CFU/100mL	°C	ft CCD
	Class I Std[1]	**6.5-9.0**	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	Upper TL[3]	5.7-8.1	182	1,214	4.3	31	383	207	0.68	2.2	791	<1	17.3	-69
1	01/17/18	6.7	152	932	2.8	22	180	134	0.27	1.9	605	<1	12.6	-77
1 DUP[4]	01/17/18	6.7	152	938	2.3	21	181	132	0.26	1.9	587	<1	12.6	-77
2	02/14/18	6.9	154	942	2.6	19	182	151	0.10	1.8	606	<1	12.6	-77
3	03/05/18	6.8	153	902	3.2	43	178	177	0.20	1.9	641	<1	13.0	-76
4	03/28/18	6.9	156	874	2.5	19	175	178	0.14	1.8	606	<1	13.3	-80
5-1	04/23/18	7.0	154	928	2.7	33	175	181	0.48	1.8	614	<1	13.0	-44
5-2	05/07/18	6.9	149	978	2.8	17	183	178	0.17	1.7	615	<1	14.1	-114
5-3	05/22/18	7.0	92	944	2.5	35	176	172	0.19	1.8	581	<1	14.5	-84
5-3 DUP	05/22/18	7.0	92	940	2.5	56	177	169	0.32	1.8	605	<1	14.5	-84
5-4	06/06/18	7.0	145	1,002	2.4	<15	172	194	0.12	1.8	615	<1	13.2	-84
6-1	06/12/18	7.1	149	1,108	2.7	<15	172	189	<0.10	1.8	592	<1	13.4	-83
6-2	06/25/18	7.0	93	992	3.5	83	176	181	0.43	1.8	809	<1	14.1	-85
7	07/10/18	**6.4**	90	954	2.8	24	172	187	<0.10	1.9	601	<1	14.9	-106
8	07/24/18	6.8	93	1,064	3.2	31	174	195	0.34	1.8	591	<1	14.4	-115
8 DUP	07/24/18	6.8	93	1,048	2.8	31	170	161	0.35	1.8	605	<1	14.4	-115
9	08/08/18	6.7	144	1,026	2.7	<15	168	180	ND[5]	1.7	629	<1	14.9	-82
10	08/21/18	6.7	149	1,124	7.1	21	172	195	0.13	1.7	583	<1	13.8	-84
11	08/29/18	6.6	129	1,030	2.6	20	170	ND[5]	0.18	1.6	542	<1	14.4	-86
12-1	10/02/18	6.8	145	956	2.6	28	173	163	0.31	2.8	634	<1	14.4	-84
12-2	10/17/18	6.8	149	908	2.6	27	173	167	0.39	2.0	683	<1	14.4	-82
12-2 DUP	10/17/18	6.8	149	900	2.6	26	173	167	0.33	1.8	672	<1	14.4	-82
13	11/07/18	6.8	151	908	1.8	28	174	179	0.27	1.8	658	<1	13.8	-81
14-1	11/29/18	6.9	116	954	2.8	22	175	167	0.12	1.7	650	<1	12.9	-83
14-2	12/11/18	6.9	117	950	2.6	21	177	167	0.25	1.9	586	<1	13.2	-80

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]No Standard established by 35 IAC Part 620.410.
[3]For pH, upper and lower tolerance limits are shown.
[4]Duplicate sample.
[5]No Data reportable. Samples thermally compromised due to cooler malfunction.

TABLE 3: ANALYSIS OF GROUNDWATER SAMPLED FROM MONITORING WELL G-03 AT THE MCCOOK RESERVOIR SITE DURING HIGH-STAGE OPERATION IN 2018

Fill Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
			mS/m	mg/L								CFU/100 mL	°C	ft CCD
	Class I Std[1]	**6.5-9.0**	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	Upper TL[3]	5.7-8.4	312	1,826	19.3	93	618	167	0.24	32	570	<1	18.3	-95
1	01/18/18	NC[4]	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
2	02/15/18	7.1	250	**1,280**	11.1	63	**429**	143	0.12	25.6	459	<1	13.6	-104
3	03/06/18	7.3	256	1,194	11.7	58	**387**	163	0.12	22.7	476	<1	13.1	-102
3 DUP[5]	03/06/18	7.3	256	1,196	11.7	63	**388**	163	0.12	23.1	474	<1	13.1	-102
4	03/30/18	7.0	251	**1,304**	13.1	70	**419**	175	0.10	28.7	510	<1	14.2	-106
5-1	04/23/18	6.8	257	**1,376**	14.2	77	**420**	183	<0.10	28.6	536	<1	13.9	-91
5-2	05/07/18	7.0	211	**1,254**	11.8	41	**397**	156	0.11	26.4	490	<1	14.1	-97
5-3	05/21/18	7.0	102	1,188	11.4	53	**360**	157	<0.10	23.8	444	<1	13.9	-100
5-4	06/06/18	7.0	215	**1,238**	10.4	67	**369**	165	<0.10	24.9	477	<1	13.9	-105
5-4 DUP	06/06/18	7.0	215	**1,258**	10.6	56	**366**	178	<0.10	24.9	482	<1	13.9	-105
6-1	06/12/18	6.9	200	**1,520**	11.2	41	**351**	143	0.11	24.4	447	<1	13.9	-116
6-2	06/25/18	7.0	118	**1,266**	11.1	49	**371**	164	<0.10	24.6	488	<1	13.9	-92
7	07/09/18	7.0	199	**1,228**	11.2	37	**377**	160	<0.10	25.0	460	<1	14.2	-104
8	07/25/18	6.9	210	**1,328**	10.9	ND[6]	**372**	134	0.24	25.0	480	<1	14.2	-106
9	08/09/18	6.9	163	**1,298**	10.1	49	**357**	166	ND[7]	22.8	476	<1	14.3	-114
9 DUP	08/09/18	6.9	163	**1,236**	9.9	49	**355**	163	ND[7]	23.6	471	<1	14.3	-114
10	08/21/18	6.8	187	**1,396**	5.9	54	**368**	165	0.14	23.6	467	<1	14.2	-110
11	08/29/18	6.6	190	**1,364**	9.9	69	**374**	ND[7]	<0.10	24.4	478	<1	14.3	-109
12-1	10/02/18	6.9	229	**1,256**	10.7	58	**391**	143	0.11	23.9	505	<1	14.1	-109
12-2	10/18/18	6.6	206	1,112	9.7	52	**380**	148	<0.10	22.9	643	<1	14.3	-106
13	11/08/18	7.0	172	1,152	8.9	53	**381**	149	0.10	21.7	464	<1	14.1	-90
13 DUP	11/08/18	7.0	172	1,154	8.9	63	**380**	148	<0.10	21.9	452	<1	14.1	-90
14-1	11/29/18	7.1	170	**1,226**	10.9	62	**391**	140	0.12	21.9	509	<1	13.7	-108
14-2	12/12/18	7.0	170	**1,206**	9.7	50	**376**	142	0.16	23.4	441	<1	13.7	-108

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]No Standard established by 35 IAC Part 620.410.
[3]For pH, upper and lower tolerance limits are shown.
[4]Samples could not be collected for Fill Event 1 due to equipment malfunction.
[5]Duplicate sample.
[6]No Data reportable. Sample lost during handling.
[7]No Data reportable. Samples thermally compromised due to cooler malfunction.

TABLE 4: ANALYSIS OF GROUNDWATER SAMPLED FROM MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING HIGH-STAGE OPERATION IN 2018

Fill Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
			mS/m	mg/L								CFU/100 mL	°C	ft CCD
	Class I Std[1]	**6.5-9.0**	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	Upper TL[3]	6.3-9.2	179	1,100	8.1	30	213	584	0.11	18.6	746	<1	17.0	-34
1	01/18/18	7.1	172	1,062	4.8	29	145	282	0.10	9.7	619	<1	15.5	-35
2	02/15/18	7.1	175	1,072	4.7	26	151	253	0.10	10	637	<1	13.4	-35
3	03/06/18	7.2	171	970	4.8	22	140	265	0.12	11	662	<1	13.8	-29
4	03/29/18	7.1	172	1,012	5.2	26	145	299	<0.10	10	629	<1	14.6	-36
4 DUP[4]	03/29/18	7.1	172	1,016	4.6	25	146	283	<0.10	10	628	<1	14.6	-36
5-1	04/26/18	7.0	166	1,026	5.1	22	146	310	0.14	10	626	<1	15.3	-34
5-2	05/08/18	7.0	167	1,036	4.6	19	146	309	0.12	9.6	636	<1	16.1	-33
5-3	05/21/18	8.0	148	1,056	4.0	<15	148	290	<0.10	10	591	<1	14.4	-30
5-4	06/07/18	7.1	137	1,124	4.1	32	142	310	<0.10	10	610	<1	15.6	-40
6-1	06/13/18	7.0	148	**1,384**	4.2	23	140	295	<0.10	9.4	624	<1	15.8	-35
6-1 DUP	06/13/18	7.0	148	**1,384**	4.2	26	142	297	<0.10	9.4	612	<1	15.8	-35
6-2	06/27/18	7.4	88	1,084	5.4	28	138	304	<0.10	9.8	644	2	15.2	-22
7	07/09/18	7.0	134	1,026	4.6	22	143	309	<0.10	9.9	616	1	15.3	-30
8	07/25/18	7.0	158	**1,216**	4.8	16	168	299	0.17	11	642	<1	15.4	-33
9	08/09/18	6.8	146	1,160	4.9	19	143	295	ND[5]	9.5	638	<1	15.9	-65
10	08/20/18	**6.2**	157	1,052	4.5	17	147	306	<0.10	10	663	<1	15.0	-33
10 DUP	08/20/18	**6.2**	157	1,048	4.5	21	147	310	<0.10	10	647	<1	15.0	-33
11	08/30/18	6.7	129	1,142	4.5	26	142	276	<0.10	9.7	547	<1	15.4	-35
12-1	10/02/18	6.8	172	1,074	4.5	20	147	300	<0.10	10	632	<1	14.6	-36
12-2	10/18/18	6.9	143	1,048	4.4	19	141	303	<0.10	9.8	508	<1	14.8	-38
13	11/08/18	6.9	157	1,032	4.1	18	150	297	<0.10	10	622	<1	14.7	-36
14-1	11/30/18	6.8	136	1,072	4.7	23	153	294	<0.10	10	668	<1	14.2	-30
14-2	12/12/18	6.9	131	1,076	4.4	33	153	286	0.12	10	651	<1	14.0	-33

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]No Standard established by 35 IAC Part 620.410.
[3]For pH, upper and lower tolerance limits are shown.
[4]Duplicate sample.
[5]No Data reportable. Samples thermally compromised due to cooler malfunction.

TABLE 5: ANALYSIS OF GROUNDWATER SAMPLED FROM MONITORING WELL G-05 AT THE MCCOOK RESERVOIR SITE DURING HIGH-STAGE OPERATION IN 2018

Fill Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
			mS/m	mg/L								CFU/100mL	°C	ft CCD
	Class I Std[1]	**6.5-9.0**	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	Upper TL[3]	6.3-9.4	219	1,200	29.8	102	159	499	0.32	6.6	738	<1	15.3	-38
1	01/18/18	7.2	177	**1,204**	12.8	52	115	**427**	0.20	7.1	731	<1	14.2	-27
2	02/15/18	7.2	180	1,104	6.2	33	119	371	0.12	5.8	675	<1	13.4	-36
3	03/06/18	7.1	179	1,100	7.4	82	120	362	0.14	6.0	652	<1	13.4	-16
4	03/29/18	7.1	177	1,112	7.9	35	120	**416**	0.12	6.2	637	<1	13.8	-34
5-1	04/26/18	7.0	171	1,136	7.3	33	119	**437**	<0.10	6.8	742	<1	14.6	-38
5-1 DUP[4]	04/26/18	7.0	171	1,138	8.7	29	117	**439**	<0.10	7.0	743	<1	14.6	-38
5-2	05/08/18	7.0	167	1,160	6.7	21	120	**431**	0.14	6.9	746	<1	14.7	-37
5-3	05/21/18	7.0	208	1,180	10.3	44	118	**434**	0.15	6.8	736	<1	14.6	-34
5-4	06/07/18	7.6	160	**1,230**	4.7	55	114	**461**	0.11	6.8	739	<1	15.0	-39
6-1	06/13/18	7.0	130	**1,458**	12.3	51	118	**421**	0.19	6.6	704	<1	15.3	-37
6-2	06/27/18	6.8	77	**1,258**	3.0	18	120	**435**	0.11	6.6	746	<1	14.5	-25
6-2 DUP	06/27/18	6.8	77	**1,244**	3.1	16	120	**438**	<0.10	6.7	717	<1	14.5	-25
7	07/09/18	7.7	152	1,166	6.1	25	119	**437**	<0.10	6.9	705	<1	14.9	-37
8	07/25/18	7.1	147	**1,270**	5.7	29	119	**464**	0.28	6.7	693	<1	15.3	-35
9	08/09/18	6.8	143	1,118	7.5	30	120	**425**	ND[5]	6.6	764	<1	14.9	-37
10	08/20/18	6.7	154	1,170	8.3	32	122	**451**	0.17	6.4	757	<1	14.7	-40
11	08/30/18	6.7	149	**1,306**	7.2	28	120	**403**	0.17	6.5	629	1	14.7	-37
11 DUP	08/30/18	6.7	149	ND[6]	7.4	28	124	400	0.14	6.3	687	<1	14.7	-37
12-1	10/02/18	6.8	170	1,196	5.4	22	123	**451**	0.13	6.5	751	<1	14.3	-36
12-2	10/18/18	6.8	133	1,144	4.5	18	120	**447**	<0.10	6.5	634	<1	14.7	-39
13	11/08/18	6.9	156	1,122	3.4	<15	127	**424**	0.12	6.8	729	<1	14.3	-37
14-1	11/30/18	6.8	132	1,148	3.6	16	130	**424**	0.12	6.5	777	<1	13.8	-36
14-1 DUP	11/30/18	6.8	132	1,150	3.7	16	130	**424**	0.11	6.4	777	<1	13.8	-36
14-2	12/12/18	6.9	131	1,172	3.0	16	130	398	0.17	6.5	745	<1	13.9	-37

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]No Standard established by 35 IAC Part 620.410.
[3]For pH, upper and lower tolerance limits are shown.
[4]Duplicate sample.
[5]No Data reportable. Samples thermally compromised due to cooler malfunction.
[6]No Data reportable. Analysis inadvertently canceled.

well G-01 in all samples except one, at well G-02 in one sample, and at well G-05 in nine samples. Total phosphorus exceeded the upper TL in all samples at well G-01 and five samples at well G-04. Hardness exceeded the upper TL for one sample each at wells G-02 and G-03, and for nine samples at well G-05. Water elevation exceeded the upper TL on at least one occasion in every well except, G-01.

Low-Stage Semiannual Monitoring. All field and routine measurements and TL for low-stage semiannual sampling are reported in Table 6. All organic and radioactive parameter measurements are reported in Table 7, and all associated upper TL for parameters in Table 7 are listed in Table 8. Analytical results that exceed the Class I standards are shown in bold text in Tables 6 and 7. Analytical results were compared to upper TL based on the background monitoring data.

Groundwater pH at low stage was lower than Class I standards at wells G-05 and G-06 during the second semiannual sample, but was within the range of tolerance intervals at all wells. Chloride concentrations exceeded Class I standards in all samples at well G-01 and in the second semiannual samples at wells G-03 and G-07, but it never exceeded the upper TL in any well. Sulfate concentration exceeded Class I standards only in the second semiannual sample at wells G-05 and G-07, but it never exceeded the upper TL in any well. The TDS exceeded Class I standards at wells G-01, G-03 and G-07, but it never exceeded the upper TL in any well. Ammonia exceeded the upper TL only at well G-01. Total phosphorus exceeded the upper TL only at wells G-01 and G-04. Hardness exceeded the upper TL only at well G-05. Fecal coliform was not detected in any sample. Groundwater elevation exceeded the upper TL only in the second semiannual sample at well G-05.

There were a few detections of organic parameters in groundwater. Cis-1,2-Dichloroethene was detected in wells G-06 and G-07 but did not exceed Class I standards or upper TL for those wells. Trichloroethene exceeded the upper TL at well G-07 but did not exceed Class I standards. Vinyl chloride exceeded Class I standards in wells G-05 and G-06, but it did not exceed the upper TL for those wells. Radioactive parameters did not exceed Class I standards or upper TL for any well.

TABLE 6: ANALYSIS OF ROUTINE PARAMETERS IN GROUNDWATER SAMPLED FROM EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING LOW-STAGE SEMIANNUAL SAMPLING IN 2018

Well	Sampling Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
				mS/m	mg/L								CFU/100mL	°C	ft CCD
		Class I Std[1]	6.5-9.0	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
G-01		Upper TL[3]	5.3-8.1	586	3,845	2.7	40	1,280	730	0.13	2.8	1,607	<1	15.7	-106
	1	08/28/2018[4]	6.6	256	**1,672**	2.0	23	**453**	ND[6]	0.25	4.7	801	<1	14.1	-114
	1 DUP[5]	08/28/2018[4]	6.6	256	**1,690**	2.0	26	**451**	ND[6]	0.27	4.6	824	<1	14.1	-114
	1	09/20/2018	6.8	266	NA[7]	NA	NA	NA	NA	NA	NA	NA	NA	13.9	-114
	2	11/16/2018	6.8	260	**1,626**	1.9	18	**439**	289	0.34	4.4	853	<1	13.4	-113
G-02		Upper TL	5.7-8.1	182	1,214	4.3	31	383	207	0.68	2.2	791	<1	17.3	-69
	1	09/17/2018	6.8	148	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.5	-83
	2	11/19/2018	6.8	118	912	2.4	17	177	176	0.17	1.8	624	<1	13.3	-81
G-03		Upper TL	5.7-8.4	312	1,826	19.3	93	618	167	0.24	32	570	<1	18.3	-95
	1	09/17/2018	6.9	182	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.5	-103
	2	11/16/2018	6.9	233	**1,282**	9.9	55	396	145	ND[8]	ND[8]	504	<1	14.4	-108
G-04		Upper TL	6.3-9.2	179	1,100	8.1	30	213	584	0.11	18.6	746	<1	17.0	-34
	1	09/18/2018	6.8	147	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.4	-36
	2	11/20/2018	7.5	138	1,030	4.2	23	144	286	0.16	9.5	634	<1	14.8	-36
	2 DUP	11/20/2018	7.5	138	1,034	4.6	26	142	280	<0.10	9.3	636	<1	14.8	-36
G-05		Upper TL	6.3-9.4	219	1,200	29.8	102	159	499	0.32	6.6	738	<1	15.3	-38
	1	09/18/2018	7.6	146	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.7	-38
	2	11/20/2018	**6.4**	137	1,122	3.6	<15	125	**417**	0.14	6.1	**760**	<1	13.9	-36

TABLE 6 (Continued): ANALYSIS OF ROUTINE PARAMETERS IN GROUNDWATER SAMPLED FROM EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING LOW-STAGE SEMIANNUAL SAMPLING IN 2018

Well	Sampling Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
				mS/m	mg/L								CFU/100mL	°C	ft CCD
		Class I Std[1]	**6.5-9.0**	**NS[2]**	**1,200**	**NS**	**NS**	**200**	**400**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
G-06		Upper TL	6.0-7.9	176	1,324	3.8	17	147	392	0.081	3.7	804	<1	16.2	-13
	1	9/19/2018	6.8	136	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.1	-17
	2	11/16/2018	**6.1**	147	950	2.4	<15	116	252	ND[8]	ND[8]	662	<1	12.7	-16
G-07		Upper TL	5.8-7.8	536	2,856	12.2	62	558	610	4.3	192	1,430	<1	20.3	-3
	1	9/19/2018	6.8	333	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.0	-6
	2	11/19/2018	6.7	313	**1,940**	11.3	56	**372**	**583**	2.0	180[9]	1,144	<1	13.1	-4

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]No Standard established by 35 IAC Part 620.410.
[3]For pH, upper and lower tolerance limits are shown.
[4]Initial low-stage sampling interrupted by high-stage operation.
[5]Duplicte sample.
[6]Analyses canceled because samples were not thermally preserved.
[7]Low-stage samples in September were inadvertently submitted to contract lab without retaining sample for Routine and Inorganic analyses.
[8]Tests canceled because aliquots were not received at analytical facility.
[9]McCook Reservoir site was previously unpaved biosolids lagoons. Elevated NH_3-N may reflect infiltration or drilling through old biosolids lagoon sediments.

TABLE 7: ANALYSIS OF ORGANIC AND RADIOACTIVE PARAMETERS IN GROUNDWATER SAMPLED FROM EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING LOW-STAGE SEMIANNUAL SAMPLING IN 2018

Parameter	Unit	Class I Std[1]	Max RL[2]	G-01	G-01 DUP	G-02	G-03	G-04	G-05	G-06	G-07
HERBICIDES											
2,4-D	mg/L	0.07	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Silvex (2,4,5-TP)	"	0.05	0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Atrazine	"	0.003	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Dalapon	"	0.2	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Simazine	"	0.004	0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
PCBs, Total	"	0.00005	0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
PESTICIDES											
Alachlor	"	0.002	0.00200	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Aldicarb	"	0.003	0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Carbofuran	"	0.04	0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Chlordane (technical)	"	0.002	0.000400	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Endrin	"	0.002	0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
gamma-BHC (Lindane)	"	0.0002	0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Heptachlor	"	0.0004	0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Heptachlor epoxide	"	0.0002	0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Methoxychlor	"	0.04	0.000400	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toxaphene	"	0.003	0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
VOCs											
1,1,1-Trichloroethane	"	0.2	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1,2-Trichloroethane	"	0.005	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloroethene	"	0.007	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dichloroethane	"	0.005	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dichloropropane	"	0.005	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dibromo-3-Chloropropane	"	0.0002	0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018
Ethylene Dibromide	"	0.00005	0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018	<0.000018
Benzene	"	0.005	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Carbon tetrachloride	"	0.005	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

TABLE 7 (Continued): ANALYSIS OF ORGANIC AND RADIOACTIVE PARAMETERS IN GROUNDWATER SAMPLED FROM EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING LOW-STAGE SEMIANNUAL SAMPLING IN 2018

Parameter	Unit	Class I Std[1]	Max RL[2]	G-01	G-01 DUP	G-02	G-03	G-04	G-05	G-06	G-07
VOCs continued											
Chlorobenzene	mg/L	0.1	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
cis-1,2-Dichloroethene	"	0.07	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0058	0.0020
Ethylbenzene	"	0.7	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylene Chloride	"	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Methyl tert-butyl ether	"	0.07	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Styrene	"	0.1	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Tetrachloroethene	"	0.005	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	"	1	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
trans-1,2-Dichloroethene	"	0.1	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Trichloroethene	"	0.005	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00330
Vinyl chloride	"	0.002	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	**0.0052**	**0.1500**	<0.0010
Xylenes, Total	"	10	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
SVOCs											
1,2,4-Trichlorobenzene	"	0.07	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dichlorobenzene	"	0.6	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,4-Dichlorobenzene	"	0.075	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Benzo[a]pyrene	"	0.0002	0.00016	<0.00016	<0.00016	<0.00016	<0.00016	<0.00016	<0.00016	<0.00016	<0.00016
Bis(2-ethylhexyl) phthalate	"	0.006	0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081
Hexachlorocyclopentadiene	"	0.05	0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Pentachlorophenol	"	0.001	0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Phenolics, Total	"	0.1	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
RADIOACTIVES											
Ra-226	pCi/L	20	0.18	1.64	1.59	1.14	1.33	1.33	1.27	1.51	2.34
Ra-228	"	20	0.74	1.17	1.08	1.01	1.64	1.15	0.99	0.81	2.47

[1]Illinois Administrative Code Title 35 Part 620.410 Class I Standards. **Bold text indicates exceedance.**
[2]Maximum Lab Reporting Limit for analyses of an analyte at all monitoring wells

TABLE 8: UPPER TOLERANCE LIMITS FOR ORGANIC AND RADIOACTIVE PARAMETERS AT THE MCCOOK RESERVOIR SITE ESTABLISHED BY BACKGROUND MONITORING PRIOR TO OPERATION IN JANUARY 2018

Parameter	Units	G-01	G-02	G-03	G-04	G-05	G-06	G-07
HERBICIDES								
2,4-D	mg/L	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Silvex (2,4,5-TP)	"	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Atrazine	"	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Dalapon	"	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Simazine	"	0.001	0.001	0.001	0.001	0.001	0.001	0.001
PCBs, Total	"	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
PESTICIDES								
Alachlor	"	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Aldicarb	"	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Carbofuran	"	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Chlordane (technical)	"	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Endrin	"	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
gamma-BHC (Lindane)	"	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Heptachlor	"	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
Heptachlor epoxide	"	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Methoxychlor	"	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Toxaphene	"	0.001	0.001	0.001	0.001	0.001	0.001	0.001
VOCs								
1,1,1-Trichloroethane	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
1,1,2-Trichloroethane	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
1,1-Dichloroethene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
1,2-Dichloroethane	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
1,2-Dichloropropane	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
1,2-Dibromo-3-Chloropropane	"	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
1,2-Dibromoethane	"	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025
Benzene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.00057	0.0025
Carbon tetrachloride	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025

TABLE 8 (Continued): UPPER TOLERANCE LIMITS FOR ORGANIC AND RADIOACTIVE PARAMETERS AT THE MCCOOK RESERVOIR SITE ESTABLISHED BY BACKGROUND MONITORING PRIOR TO OPERATION IN JANUARY 2018

Parameter	Units	G-01	G-02	G-03	G-04	G-05	G-06	G-07
VOCs continued								
Chlorobenzene	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	0.001
cis-1,2-Dichloroethene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0130	0.0029
Ethylbenzene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Methylene Chloride	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Methyl tert-butyl ether	"	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Styrene	"	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Tetrachloroethene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Toluene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
trans-1,2-Dichloroethene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Trichloroethene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0011
Vinyl chloride	"	0.001	0.001	0.001	0.001	0.0052	0.203	0.001
Xylenes, Total	"	0.0025	0.0025	0.0025	0.0025	0.0022	0.0025	0.0025
SVOCs								
1,2,4-Trichlorobenzene	"	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025	0.000025
1,2-Dichlorobenzene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
1,4-Dichlorobenzene	"	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Benzo[a]pyrene	"	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Bis(2-ethylhexyl) phthalate	"	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Hexachlorocyclopentadiene	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Pentachlorophenol	"	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Phenolics, Total	"	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
RADIOACTIVES								
Ra-226	pCi/L	2.78	2.33	2.58	1.89	1.60	2.24	3.75
Ra-228	"	3.19	1.51	4.12	3.08	1.65	1.89	4.64

REFERENCES

Illinois Administrative Code title 35, § 620.410 Groundwater Quality Standards for Class I: Potable Resource Groundwater (Amended at 36 Ill. Reg. 15206, effective October 5, 2012).

United States Army Corps of Engineers (USACE). 2014. Chicago Underflow Plan McCook Reservoir Lyons Township, Illinois. Groundwater Monitoring and Analysis Plan. Amended July 2014. Approved by IEPA April 2015.

APPENDIX A: BACKGROUND MONITORING PROGRAM REPORT

APPENDIX A: BACKGROUND MONITORING PROGRAM REPORT

Detailed guidelines for the treatment of data collected during the background monitoring program from February 2016 – December 2017 can be found in the Groundwater Monitoring and Analysis Plan (MAP) for the Chicago Underflow Plan McCook Reservoir (Reservoir), (USACE 2014). This Appendix briefly describes the implementation of those guidelines.

Ten independent groundwater samples were collected at each of wells G-01, G-02, G-03, G-06, and G-07 between February 2016 and December 2017. However, the initial data for wells G-04 and G-05 were discarded after USACE discovered that the annular seals at these two wells were compromised. These wells were re-drilled, and samples were collected during November and December 2017. A total of eight background samples were collected at the re-drilled well G-04, and five at the re-drilled well G-05.

Background data were statistically analyzed for all 81 fields, routine, inorganic, and organic parameters listed in the MAP for each well individually to develop an upper tolerance limit[1] (TL) that will allow the Metropolitan Water Reclamation District of Greater Chicago to assess whether Reservoir operation is impacting groundwater quality in the Reservoir area. Outlier values were first removed using methods described in Dixon (1953). Following outlier removal, the data were classified and processed in one of four ways based on the proportion of samples that showed no detection, i.e. below laboratory reporting limit (Figure A1). For purposes of statistical treatment, non-detect values were treated as equal to the lab reporting limit for the chemical analysis.

Class A datasets contained 15 percent or fewer non-detect measurements. These were tested for normality using Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling, and Jarque-Bera tests. If any test yielded a non-significant result at $\alpha = 0.05$, the data were considered normal and an upper TL was determined using the following equation described in the MAP, which was formulated based on USEPA guidance (USEPA, 1989; 1992):

$$Upper\ TL = \bar{x} + t_{(n-1,1-\alpha)} \times s \times \sqrt{1+\frac{1}{n}}$$

Where $\bar{x}$ = the arithmetic mean of measurements in the dataset,

n is the number of measurements in the dataset,

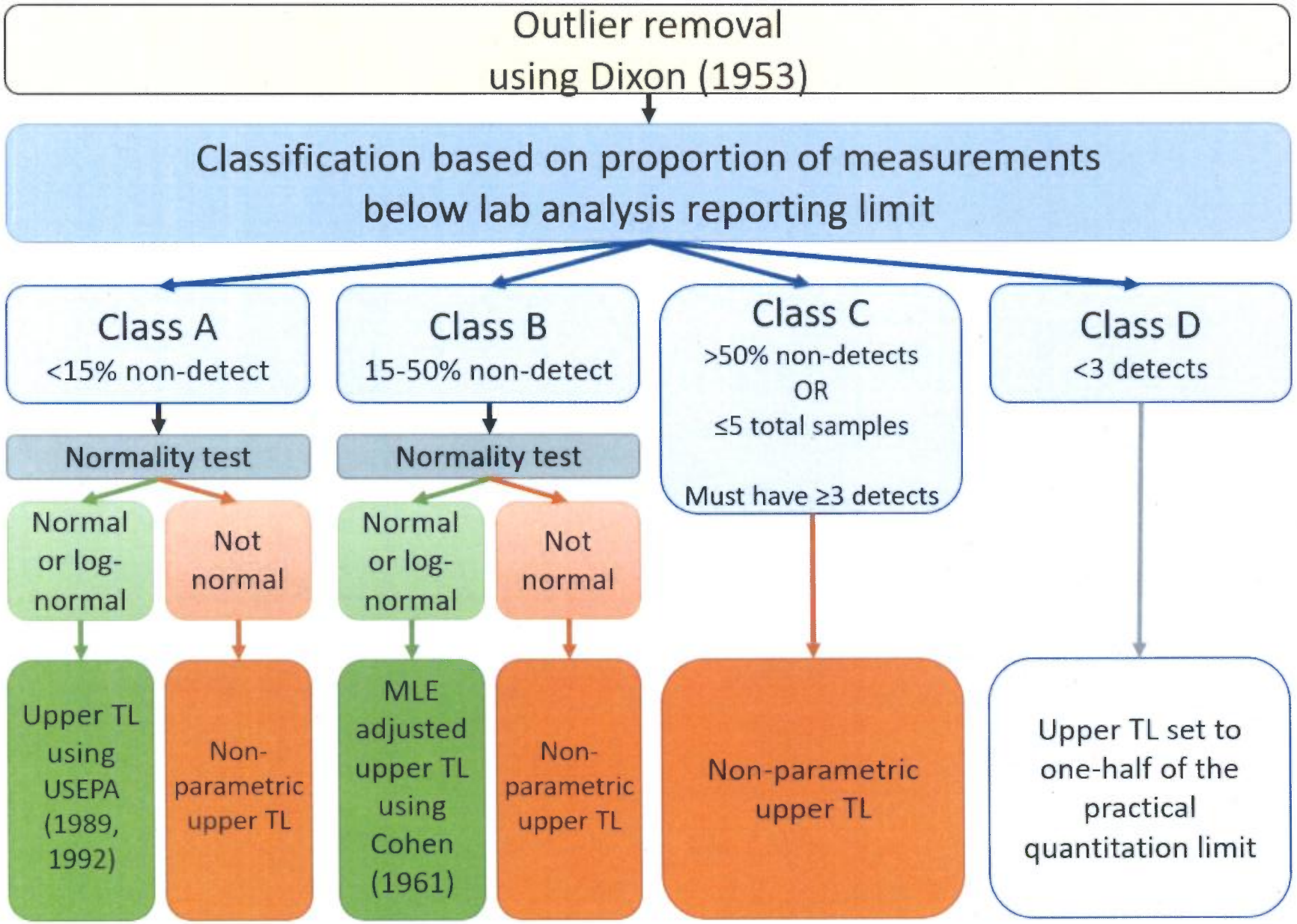
α is a false positive rate for each individual test and a value of 0.01 has been used,

$t_{(n-1,1-\alpha)}$ is the one-sided (1-α)th upper percentile of the t-distribution with n-1 degrees of freedom,

s is the standard deviation of measurements in the dataset.

[1] We applied all the procedures described in the Tolerance Interval Methods and Tolerance Interval Calculations sections of the MAP. For clarity, we have referred to this as an upper tolerance limit (TL) because it is the upper value of the interval that is used to establish critical concentration levels of each parameter, except pH, for monitoring potential changes in groundwater quality associated with Reservoir operation.

FIGURE A-1: BACKGROUND DATA PROCESSING WORKFLOW FOR DETERMINING UPPER TOLERANCE LIMITS



Non-normal data were log-transformed and tested for normality again. If any test yielded a non-significant result at $\alpha = 0.05$, the data were considered log-normal and an upper TL was determined using the equation above with log-transformed data and the result was returned to non-log format by taking the antilog. If data were not normal or log-normal, the upper TL was determined using a non-parametric method (Young and Mathew, 2014) as implemented in the tolerance package (Young, 2010) for the R statistical environment (R Core Team, 2019).

Class B datasets contained 15 - 50 percent non-detect measurements. These were tested for normality as described above. Upper TL for normal or log-normal datasets were determined using maximum likelihood estimation methods for left-censored data (Cohen, 1961). Upper TL for datasets that were not normal or log-normal were determined using a non-parametric method, as above.

Class C datasets contained more than 50 percent non-detect measurements but included at least three measurements that were detected above the lab reporting limit. In addition, any dataset containing five or fewer total measurements (all parameters in well G-05 and field parameters in well G-04) with at least three measurements that were detected above the lab reporting limit were considered Class C. Normality was not tested for these data, and upper TL were determined using a non-parametric method, as above.

Class D datasets had fewer than three measurements detected above the lab reporting limit. The upper TL for these were set to a value equal to one-half of the practical quantitation limit for the analyte as determined by the MAP.

A lower TL was also determined for pH based on background data. The pH in wells G-01, G-02, G-03, G-06, and G-07 during background monitoring were normally distributed. The lower TL were calculated for each well using the following equation based on the methods described in the MAP with variables as described above:

$$Lower\ TL = \bar{x} - t_{(n-1,1-\alpha)} \times s \times \sqrt{1+\frac{1}{n}}$$

Five or fewer total measurements were recorded for pH in wells G-04 and G-05, so the lower TL were determined using a non-parametric method, as above.

Table A-1 lists the Class of each parameter in each well for purposes of determining upper TL. Table A-2 shows normality test results for all Class A and Class B datasets. Table A-3 shows the analytical results of the background monitoring program and determined upper TL for field and routine parameters in each of the seven monitoring wells. Tables A-4 – A-10 show the analytical results of the background monitoring program and determined upper TL for inorganic and radioactive parameters in monitoring wells G-01 – G-07, respectively. Tables A-11 – A-17 show the analytical results of the background monitoring program and determined upper TL for organic parameters in monitoring wells G-01 – G-07, respectively.

TABLE A-1: DATA ANALYSIS CLASS FOR DETERMINING UPPER TOLERANCE LIMIT OF GROUNDWATER PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE

Parameter	G-01	G-02	G-03	G-04	G-05	G-06	G-07
Field							
pH	A	A	A	C	C	A	A
EC	A	A	A	C	C	A	A
Temperature	A	A	A	C	C	A	A
Elevation	A	A	A	C	C	A	A
Routine							
TDS	A	A	A	A	C	A	A
TOC	A	A	A	A	C	A	A
COD	A	A	A	A	C	B	A
Cl^-	A	A	A	A	C	A	A
SO_4^{2-}	A	A	A	A	C	A	A
Total P	C	A	A	A	C	C	A
NH_3-N	A	A	A	A	C	A	A
Hardness	A	A	A	A	C	A	A
FC	D	D	D	D	D	D	D
Inorganic							
Antimony	D	D	D	D	D	D	D
Arsenic	C	D	B	B	C	D	A
Barium	A	A	A	A	C	A	A
Beryllium	D	D	D	D	D	D	D
Boron	A	A	A	A	C	A	A
Cadmium	D	D	D	D	D	D	D
Chromium	C	A	A	D	D	D	D
Cobalt	D	B	A	D	D	D	A
Copper	B	B	B	B	C	B	A
Cyanide	D	D	D	D	D	D	D
Fluoride	D	D	B	A	C	B	D
Iron	B	A	A	A	C	A	A
Lead	D	D	A	B	D	D	D
Manganese	A	A	A	A	C	A	A
Mercury	D	D	D	D	D	D	D
Nickel	C	A	A	A	C	D	A
Nitrate-N	B	D	D	D	D	D	D
Selenium	D	D	D	D	D	D	D
Silver	D	D	D	D	D	D	D
Thallium	D	D	D	D	D	D	D
Zinc	D	D	D	C	C	B	D

TABLE A-1 (Continued): DATA ANALYSIS CLASS FOR DETERMINING UPPER TOLERANCE LIMIT OF GROUNDWATER PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE

Parameter	G-01	G-02	G-03	G-04	G-05	G-06	G-07
Radioactive							
Radium-226	B	A	A	A	C	A	A
Radium-228	A	B	A	A	C	C	A
Herbicides							
2,4-D	D	D	D	D	D	D	D
Silvex (2,4,5-TP)	D	D	D	D	D	D	D
Atrazine	D	D	D	D	D	D	D
Dalapon	D	D	D	D	D	D	D
Simazine	D	D	D	D	D	D	D
PCBs, Total	D	D	D	D	D	D	D
Pesticides							
Alachlor	D	D	D	D	D	D	D
Aldicarb	D	D	D	D	D	D	D
Carbofuran	D	D	D	D	D	D	D
Chlordane (technical)	D	D	D	D	D	D	D
Endrin	D	D	D	D	D	D	D
gamma-BHC (Lindane)	D	D	D	D	D	D	D
Heptachlor	D	D	D	D	D	D	D
Heptachlor epoxide	D	D	D	D	D	D	D
Methoxychlor	D	D	D	D	D	D	D
Toxaphene	D	D	D	D	D	D	D
VOCs							
1,1,1-Trichloroethane	D	D	D	D	D	D	D
1,1,2-Trichloroethane	D	D	D	D	D	D	D
1,1-Dichloroethene	D	D	D	D	D	D	D
1,2-Dichloroethane	D	D	D	D	D	D	D
1,2-Dichloropropane	D	D	D	D	D	D	D
1,2-Dibromo-3-Chloropropane	D	D	D	D	D	D	D
Ethylene Dibromide	D	D	D	D	D	D	D
Benzene	D	D	D	D	D	C	D
Carbon tetrachloride	D	D	D	D	D	D	D
Chlorobenzene	D	D	D	D	D	D	D
cis-1,2-Dichloroethene	D	D	D	D	D	A	A
Ethylbenzene	D	D	D	D	D	D	D
Methylene Chloride	D	D	D	D	D	D	D

TABLE A-1 (Continued): DATA ANALYSIS CLASS FOR DETERMINING UPPER TOLERANCE LIMIT OF GROUNDWATER PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE

Parameter	G-01	G-02	G-03	G-04	G-05	G-06	G-07
VOCs (Continued)							
Methyl tert-butyl ether	D	D	D	D	D	D	D
Styrene	D	D	D	D	D	D	D
Tetrachloroethene	D	D	D	D	D	D	D
Toluene	D	D	D	D	C	D	D
trans-1,2-Dichloroethene	D	D	D	D	D	D	D
Trichloroethene	D	D	D	D	D	D	A
Vinyl chloride	D	D	D	D	C	A	D
Xylenes, Total	D	D	D	D	C	D	D
SVOCs	D	D	D	D	D	D	D
1,2,4-Trichlorobenzene	D	D	D	D	D	D	D
1,2-Dichlorobenzene	D	D	D	D	D	D	D
1,4-Dichlorobenzene	D	D	D	D	D	D	D
Benzo[a]pyrene	D	D	D	D	D	D	D
Bis(2-ethylhexyl) phthalate	D	D	D	D	D	D	D
Hexachlorocyclopentadiene	D	D	D	D	D	D	D
Pentachlorophenol	D	D	D	D	D	D	D
Phenolics, Total Recoverable	D	D	D	D	D	D	D

TABLE A-2: NORMALITY TEST PROBABILITY VALUES FOR APPLICABLE PARAMETERS (CLASS A AND CLASS B) IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	G-01	G-02	G-03	G-04	G-05	G-06	G-07
Field							
pH	>0.05	>0.05	>0.05	NA	NA	>0.05	>0.05
EC	>0.05	>0.05	**0.034**[1]	NA	NA	**0.0078**[1]	>0.05
Temperature	>0.05	>0.05	>0.05	NA	NA	>0.05	>0.05
Elevation	>0.05	>0.05	>0.05	NA	NA	>0.05	>0.05
Routine							
TDS	>0.05	>0.05	>0.05	**0.0081**[1]	NA	>0.05	>0.05
TOC	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
COD	>0.05	>0.05	>0.05	>0.05	NA	>0.05[1]	>0.05
Cl^-	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
SO_4^{2-}	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
Total P	NA[2]	>0.05	>0.05	>0.05	NA	NA	>0.05
NH_3-N	>0.05	>0.05	>0.05	>0.05	NA	**0.024**[1]	>0.05
Hardness	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
Inorganic							
Arsenic	NA	NA	>0.05[1]	>0.05	NA	NA	>0.05
Barium	>0.05	>0.05[1]	>0.05	>0.05	NA	>0.05	>0.05
Boron	>0.05	>0.05[1]	>0.05	**0.035**[1]	NA	>0.05	>0.05
Chromium	NA	>0.05	>0.05	NA	NA	NA	NA
Cobalt	NA	>0.05[1]	>0.05	NA	NA	NA	>0.05
Copper	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
Fluoride	NA	NA	**0.037**[1]	>0.05	NA	>0.05	NA
Iron	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
Lead	NA	NA	>0.05	>0.05	NA	NA	NA
Manganese	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
Nickel	NA	>0.05[1]	>0.05	>0.05	NA	NA	>0.05
Nitrate-N	>0.05	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	>0.05[1]	NA
Radioactive							
Radium-226	>0.05	>0.05	>0.05	>0.05	NA	>0.05	>0.05
Radium-228	>0.05	>0.05	>0.05	>0.05	NA	NA	>0.05
Organic							
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	>0.05	>0.05
Vinyl chloride	NA	NA	NA	NA	NA	>0.05	NA

Bold text indicates a significant normality test result.

[1]Normality test result for log-transformed data shown.

[2]Normality not assessed because fewer than half of measurements were detected at the lab reporting limit.

TABLE A-3: ANALYSIS OF GROUNDWATER FIELD AND ROUTINE PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Well	Sampling Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
				mS/m	mg/L								CFU/100mL	°C	ft CCD
G-01	1	03/02/2016	6.9	530	3,200	1.1	35	1,100	670	0.12	2.2	1,500	<10[1]	11.3	-117
	2	05/24/2016	8.6	512	3,500	1.4	29	1,100	630	0.11	1.9	1,400	<10	13.3	-110
	3	03/01/2017	6.8	397	2,600	1.6	21	800	510	0.062	1.3	1,200	<1	12.7	-118
	4	05/23/2017	6.9	396	2,400	1.8	17	850	530	<0.10	1.8	1,200	<1	13.3	-114
	5	06/27/2017	5.8	380	2,300	2.0	19	680	470	<0.050	1.7	1,100	<1	13.8	-112
	6	08/08/2017	7.0	420	2,700	1.7	21	920	530	<0.050	1.5	1,200	<1	12.5	-112
	7	09/12/2017	6.7	448	2,800	1.6	<20	920	540	<0.050	1.5	1,300	<1	13.2	-113
	8	11/01/2017	6.1	388	2,500	2.1	22	910	490	0.068	2.2	1,300	<1	14.2	-113
	9	12/07/2017	6.8	390	2,300	2.1	13	860	480	<0.050	1.2	1,200	<10	11.9	-113
	10	12/14/2017	7.2	393	2,500	2.1	20	920	550	<0.050	1.2	1,200	<1	14.0	-113
		Upper TL[2]	5.3-8.1	586	3,845	2.7	40	1,280	730	0.13	2.8	1,607	<1	15.7	-106
G-02	1	02/29/2016	7.3	164	1,000	3.6	17	210	180	0.37	1.7	690	<10	12.2	-83
	2	05/25/2016	6.9	169	1,100	3.4	18	210	180	0.56	1.7	720	<10	14.5	-80
	3	03/02/2017	7.2	170	1,100	3.5	26	220	160	0.36	1.9	720	<1	10.9	-81
	4	05/24/2017	6.9	162	990	3.6	19	<0.2	160	0.23	1.8	630	<1	12.8	-78
	5	06/27/2017	6.1	146	1,100	4.0	19	190	150	0.12	2.2	900	<1	14.5	-76
	6	08/08/2017	7.3	161	1,000	3.6	11	210	150	0.18	1.9	670	<1	12.1	-75
	7	09/12/2017	7.0	158	1,000	3.4	13	200	140	0.14	1.8	680	<1	18.0	-76
	8	11/01/2017	6.2	152	910	3.2	15	210	140	0.14	1.9	650	<1	14.6	-68
	9	12/07/2017	7.1	154	930	2.9	22	200	120	0.12	1.4	620	<10	10.7	-77
	10	12/14/2017	7.0	153	980	3.1	11	220	150	0.11	1.8	610	<1	12.3	-78
		Upper TL	5.7-8.1	182	1,214	4.3	31	237	207	0.68	2.2	791	<1	17.3	-69

TABLE A-3 (Continued): ANALYSIS OF GROUNDWATER FIELD AND ROUTINE PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Well	Sampling Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
				mS/m	mg/L								CFU/100mL	°C	ft CCD
G-03	1	03/01/2016	7.4	307	1,600	18	76	520	140	0.18	29	490	<10	10.1	-101
	2	05/24/2016	9.0	585	1,500	15	74	510	140	0.14	28	420	<10	14.3	-98
	3	03/01/2017	7.2	283	1,600	15	83	540	140	0.18	28	520	<1	13.6	-104
	4	05/23/2017	7.4	283	1,600	16	87	560	110	0.16	30	500	<1	13.7	-102
	5	06/27/2017	6.2	290	1,600	14	76	500	130	0.087	29	480	<1	14.3	-101
	6	08/08/2017	7.2	292	1,600	15	72	650	140	0.14	28	460	<1	14.0	-102
	7	09/12/2017	6.7	302	1,500	14	70	510	130	0.20	27	480	<1	14.4	-103
	8	11/02/2017	6.7	272	1,500	15	72	580	130	0.14	26	520	1	15.7	-102
	9	12/07/2017	7.3	274	1,300	17	77	520	120	0.13	29	460	<10	12.1	-107
	10	12/14/2017	7.4	258	1,400	14	67	560	150	0.13	27	480	<1	14.7	-105
		Upper TL	5.7-8.4	312	1,826	19.3	93	618	167	0.24	32	570	<1	18.3	-95
G-04	8	11/29/2017	8.3	166	1,100	4.7	18	160	300	0.070	10	700	1	15.1	-34
	8	11/29/2017	ND[3]	ND	1,100	5.0	22	160	300	0.066	11	660	<1	ND	ND
	9	12/06/2017	7.0	177	1,100	11	42	170	270	0.13	5.7	640	<10	14.4	-35
	9	12/06/2017	ND	ND	1,100	2.2	15	160	270	<0.050	3.2	700	<10	ND	ND
	10	12/11/2017	6.8	169	1,200	4.9	22	170	310	0.079	11	650	<1	16.4	-37
	10	12/12/2017	6.4	197	1,100	5.2	19	180	320	0.081	11	690	<1	15.7	-37
	10	12/13/2017	7.3	175	1,100	5.0	23	190	320	0.080	11	660	<1	15.3	-38
	10	12/13/2017	ND	ND	1,100	4.9	23	190	330	0.072	10	680	<1	ND	ND
		Upper TL	6.3-9.2	179	1,100	8.1	30	213	584	0.11	19	746	<1	17.0	-34

TABLE A-3 (Continued): ANALYSIS OF GROUNDWATER FIELD AND ROUTINE PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Well	Sampling Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
				mS/m	mg/L								CFU/100mL	°C	ft CCD
G-05	8	11/29/2017	8.4	165	1,300	4.6	21	120	420	0.076	5.6	680	<1	14.1	-41
	9	12/06/2017	7.1	182	1,200	4.6	26	120	410	0.070	28	660	<10	13.6	-39
	10	12/11/2017	6.9	174	1,200	19	80	150	490	0.18	5.6	670	<1	15.1	-39
	10	12/12/2017	6.3	201	1,200	26	95	140	470	0.25	6.0	680	<1	14.6	-40
	10	12/13/2017	7.4	181	1,200	22	88	140	480	0.18	6.3	710	<1	14.8	-40
		Upper TL	6.3-9.4	219	1,200	29.8	102	159	499	0.32	6.6	738	<1	15.3	-38
G-06	1	03/02/2016	7.3	143	1,000	2.9	<10	100	320	0.057	3.1	670	<10	9.3	-18
	2	05/25/2016	6.9	598	1,000	3.1	13	110	300	0.076	2.9	660	<10	12.7	-17
	3	03/02/2017	7.0	144	1,000	3.2	12	120	270	<0.050	3.4	630	<1	12.0	-15
	4	05/24/2017	6.9	141	1,100	3.3	12	110	300	0.060	2.8	670	<1	12.6	-17
	5	06/28/2017	7.3	143	1,100	3.5	13	99	330	<0.050	2.6	740	<1	12.5	-16
	6	08/09/2017	7.2	157	1,200	3.2	<10	120	320	<0.050	2.8	720	<1	12.3	-16
	7	09/13/2017	7.2	140	1,200	3.3	<10	120	340	<0.050	2.6	700	<1	18.4	-17
	8	11/01/2017	6.7	152	1,000	2.9	13	130	350	<0.050	3.0	750	<1	13.9	-16
	9	12/06/2017	7.0	149	960	4.5	27	110	270	0.070	11	650	<10	11.9	-18
	10	12/12/2017	6.2	167	960	3.0	<10	130	320	<0.050	3.1	670	<1	13.4	-19
		Upper TL	6.0-7.9	176	1,324	3.8	17	147	392	0.081	3.7	804	<1	16.2	-13

TABLE A-3 (Continued): ANALYSIS OF GROUNDWATER FIELD AND ROUTINE PARAMETERS IN EACH MONITORING WELL AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Well	Sampling Event	Sample Date	pH	EC	TDS	TOC	COD	Cl^-	SO_4^{2-}	Total P	NH_3-N	Hardness	FC	Temp	Elevation
				mS/m	mg/L								CFU/100mL	°C	ft CCD
G-07[4]	1	03/01/2016	7.1	446	2,000	11	34	390	520	1.5	130	1,300	<10	5.5	-5
	2	05/24/2016	8.3	481	2,500	11	45	410	500	2.2	150	1,100	<10	13.7	-5
	3	03/01/2017	6.8	437	2,100	11	45	450	520	3.3	160	1,200	<1	13.0	-5
	4	05/23/2017	6.8	447	2,100	11	45	470	550	3.1	170	1,300	<1	13.4	-5
	5	06/28/2017	7.0	456	2,700	11	43	440	530	2.9	160	1,200	<1	13.3	-4
	6	08/09/2017	6.9	444	2,200	10	50	450	530	3.2	160	1,300	<1	13.0	-4
	7	09/13/2017	6.8	467	2,200	11	44	490	580	2.5	160	1,200	<1	13.7	-4
	8.1	11/01/2017	6.0	437	2,200	10	46	500	550	2.3	160	1,300	<1	14.5	-4
	9	12/07/2017	6.8	434	2,100	13	50	470	530	2.5	170	1,200	<10	12.5	-5
	10	12/13/2017	7.1	360	2,100	10	55	480	570	1.9	160	1,200	<1	14.0	-5
		Upper TL	5.8-7.8	536	2,856	12	62	558	610	4.3	192	1,430	<1	20.3	-3

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]For pH, upper and lower tolerance limits are shown.
[3]Not Determined. Field parameters were measured only once when multiple samples were collected on a single day.
[4]McCook Reservoir site was previously unpaved biosolids lagoons. Elevated NH_3-N may reflect infiltration or drilling through old biosolids lagoon sediments.

TABLE A-4: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
Ag	mg/L	<0.0005[1]	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.025
As	"	0.0017	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	<0.0100	0.0014	0.0018
B	"	0.48	0.46	0.54	0.45	0.56	0.48	0.51	0.49	0.51	0.50	0.598
Ba	"	0.040	0.044	0.036	0.031	0.037	0.033	0.036	0.038	0.030	0.033	0.048
Be	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	0.035
Cr	"	0.0180	0.0970	0.0087	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0100	<0.0050	0.025
Cu	"	0.0030	0.0023	<0.0020	0.0023	<0.0020	0.0029	0.0031	0.0025	0.0037	<0.0020	0.0044
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	<2.0	<2.0	<0.20	<0.20	<2.0	<0.20	<0.20	<0.20	0.13	<0.20	0.05
Fe	"	3.7	3.6	0.71	0.12	<0.10	<0.10	0.34	<0.10	0.057	<0.10	4.92
Hg	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.070	0.086	0.039	0.033	0.032	0.035	0.037	0.033	0.033	0.030	0.099
Ni	"	0.0080	0.0330	<0.0020	<0.0020	<0.0020	0.0021	<0.0020	<0.0020	<0.0050	<0.0020	0.011
NO_3-N	"	0.75	0.42	0.71	<0.20	0.40	<0.20	<0.20	<0.20	0.62	<0.20	1.08
Pb	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0030	<0.0005	0.00375
Sb	"	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.003	0.003
Se	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.01
Ra-226	pCi/L	2.01	2.33	1.58	<1.00	<1.00	1.15	1.37	1.44	1.30	1.33	2.78
Ra-228	"	2.64	2.20	1.76	1.10	1.09	<1.00	1.77	1.47	1.87	1.64	3.19

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-5: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-02 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date 2/29/2016	5/25/2016	3/2/2017	5/24/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	Upper TL
Ag	mg/L	<0.0005[1]	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.025
As	"	0.0011	0.0011	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0100	<0.0010	0.025
B	"	0.43	0.46	0.43	0.80	0.46	0.39	0.44	0.40	0.42	0.41	0.51
Ba	"	0.069	0.080	0.079	0.14	0.078	0.072	0.075	0.066	0.066	0.067	0.092
Be	"	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	<0.0010	0.0020	0.0015	0.0078	0.0014	0.0019	<0.0010	<0.0010	<0.0020	<0.0010	0.0081
Cr	"	0.094	0.91	0.37	0.46	0.17	0.24	0.075	0.042	0.11	0.051	0.633
Cu	"	0.0040	0.012	0.0042	0.0096	0.0039	0.0067	<0.0020	<0.0020	0.0040	0.0023	0.015
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	0.44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.17	<0.20	0.05
Fe	"	5.2	6.0	7.0	6.2	2.2	2.4	1.6	1.2	1.4	0.83	10.5
Hg	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.055	0.079	0.066	0.067	0.038	0.041	0.032	0.025	0.037	0.026	0.103
Ni	"	0.029	0.095	0.100	0.390	0.063	0.084	0.030	0.034	0.037	0.030	0.25
NO_3-N	"	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.31	<0.20	0.075
Pb	"	0.00088	0.00075	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00300	<0.00050	0.00375
Sb	"	<0.003	<0.003	<0.003	<0.006	<0.003	<0.003	<0.003	<0.003	<0.005	<0.003	0.003
Se	"	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	<0.02	<0.02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.01
Ra-226	pCi/L	1.59	1.78	2.02	<1.00	1.11	1.400	1.25	1.24	1.39	1.41	2.33
Ra-228	"	1.16	1.35	1.06	<1.00	1.03	<1.00	1.15	<1.00	1.31	1.13	1.51

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-6: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-03 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/2/2017	12/7/2017	12/14/2017	
Ag	mg/L	<0.0005[1]	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.025
As	"	0.0024	0.0020	0.0016	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0100	0.0012	0.0028[2]
B	"	1.0	1.0	0.94	0.91	1.0	0.90	1.2	0.87	0.95	0.92	1.09
Ba	"	0.14	0.11	0.098	0.13	0.11	0.11	0.12	0.10	0.11	0.10	0.15
Be	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	0.0019	0.0014	0.0012	0.0027	0.0024	0.0018	0.0019	0.0015	<0.0020	0.0014	0.0032
Cr	"	0.015	0.0051	0.0066	0.050	0.074	0.063	0.097	0.053	0.039	0.033	0.13
Cu	"	0.0044	<0.0020	<0.0020	0.0064	0.0022	0.0040	0.0080	0.0023	0.0017	<0.0020	0.0095
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	0.92	<0.20	<0.20	0.25	<0.20	<0.20	<0.20	0.21	0.29	0.23	0.33
Fe	"	2.4	0.43	0.45	1.6	2.1	2.2	3.5	2.1	1.5	1.5	4.48
Hg	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.053	0.036	0.028	0.079	0.120	0.130	0.150	0.120	0.084	0.077	0.21
Ni	"	0.017	0.011	0.011	0.047	0.045	0.026	0.037	0.018	0.020	0.017	0.065
NO_3-N	"	<0.2	<0.2	<2.0	<0.2	<2.0	<0.2	<0.2	<0.2	<0.02	<0.2	0.075
Pb	"	0.0037	0.00061	0.0010	0.0036	0.0011	0.0016	0.0030	0.0014	<0.0030	0.00073	0.0056
Sb	"	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.003	0.003
Se	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.01
Ra-226	pCi/L	2.32	1.75	1.49	2.00	1.33	1.32	1.71	1.47	1.46	1.47	2.58
Ra-228	"	2.08	2.09	1.66	1.69	1.30	1.52	2.03	1.39	3.45	3.05	4.12

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Non-parametric upper TL calculated due to high values of left-censored data.

TABLE A-7: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date								Upper TL
		11/29/2017	11/29/2017	12/6/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	12/13/2017	
Ag	mg/L	<0.0005[1]	<0.0005	<0.0020	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	0.025
As	"	0.0033	0.0033	<0.0100	<0.0100	0.0031	0.0027	0.0028	0.0034	0.0035[2]
B	"	2.4	2.4	2.4	4.3	2.5	2.3	2.5	2.4	2.5
Ba	"	0.055	0.070	0.047	0.024	0.055	0.059	0.056	0.057	0.095
Be	"	<0.0010	<0.0010	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	<0.0010	<0.0010	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010	0.0024	0.035
Cr	"	<0.005	<0.005	<0.010	<0.010	<0.005	<0.005	<0.005	<0.005	0.035
Cu	"	<0.0020	<0.0020	0.0014	0.0014	<0.0020	0.0022	0.0023	<0.0020	0.0031
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	0.33	0.32	0.31	0.33	0.31	0.32	0.33	0.25	0.4
Fe	"	1.00	0.89	0.81	0.42	0.74	0.92	0.82	0.89	1.37
Hg	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.02	0.018	0.027	0.0064	0.014	0.019	0.016	0.017	0.036
Ni	"	0.0038	0.0034	0.0073	<0.0050	0.0022	0.0028	0.0024	0.0043	0.0092
NO_3-N	"	<0.20	<0.20	1.60	0.36	<0.20	<0.20	<0.20	<0.20	0.075
Pb	"	0.00073	<0.00050	<0.00300	<0.00300	<0.00050	0.00067	0.00060	0.00069	0.0077[2]
Sb	"	<0.003	<0.003	<0.005	<0.005	<0.003	<0.003	<0.003	<0.003	0.003
Se	"	<0.0025	<0.0025	<0.0050	<0.0050	<0.0025	<0.0025	<0.0025	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	0.051	0.045	0.043	<0.020	<0.020	<0.020	<0.020	<0.020	0.057
Ra-226	pCi/L	1.42	1.42	1.27	1.58	1.58	1.55	1.65	1.52	1.89
Ra-228	"	1.88	2.33	1.32	0.98	1.90	1.92	1.95	1.66	3.08

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Non-parametric upper TL calculated due to high values of left-censored data.

TABLE A-8: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-05 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date					Upper TL
		11/29/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	
Ag	mg/L	<0.0005[1]	<0.0020	<0.0005	<0.0005	<0.0005	0.025
As	"	0.0019	<0.0100	0.0023	0.0015	0.0015	0.0027
B	"	2.5	2.3	2.4	2.4	2.5	2.5
Ba	"	0.049	0.052	0.051	0.050	0.047	0.053
Be	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	0.0025	<0.0020	0.0035	<0.0010	<0.0010	0.035
Cr	"	<0.005	<0.010	<0.005	<0.005	<0.005	0.035
Cu	"	<0.0020	0.0024	0.0023	0.0034	<0.0020	0.0025
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	0.29	0.33	0.24	0.34	0.32	0.35
Fe	"	0.47	0.86	0.95	0.94	0.95	0.95
Hg	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.026	0.017	0.026	0.025	0.024	0.026
Ni	"	0.014	<0.0050	0.0056	0.0039	0.0030	0.0062
NO_3-N	"	<0.2	<0.02	<0.2	<0.2	<0.2	0.075
Pb	"	<0.00050	<0.00300	0.00075	<0.00050	<0.00050	0.00375
Sb	"	<0.0030	<0.0050	0.0041	<0.0030	<0.0030	0.003
Se	"	<0.0025	<0.0050	<0.0025	<0.0025	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	0.072	<0.020	0.026	0.040	0.027	0.10
Ra-226	pCi/L	1.48	1.54	1.44	1.31	1.30	1.60
Ra-228	"	1.01	1.56	1.27	1.21	1.47	1.65

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-9: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-06 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/25/2016	3/2/2017	5/24/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/6/2017	12/12/2017	
Ag	mg/L	<0.0005[1]	<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.025
As	"	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.010	<0.001	0.025
B	"	4.3	4.4	5.1	9.5	5.2	4.7	4.5	3.9	2.2	4.7	7.1
Ba	"	0.024	0.025	0.024	0.045	0.027	0.022	0.025	0.025	0.050	0.024	0.058
Be	"	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	0.035
Cr	"	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005	0.035
Cu	"	0.0041	<0.0020	<0.0020	0.0041	0.0031	0.0037	0.0026	0.0046	0.0022	0.0027	0.0062
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	0.49	0.26	0.27	0.21	0.21	<0.20	<0.20	0.29	0.22	0.31	0.37
Fe	"	2.00	0.68	0.78	1.00	0.82	0.88	0.68	0.45	1.10	0.47	1.43
Hg	"	<0.0002	<0.0002	0.00025	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.0110	0.0080	0.0080	0.0140	0.0083	0.0083	0.0080	0.0060	0.0180	0.0065	0.021
Ni	"	<0.002	<0.002	<0.002	<0.004	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	0.05
NO_3-N	"	<0.2	<0.2	<0.2	<0.2	<0.2	<2.0	<0.2	<0.2	<0.02	<0.2	0.075
Pb	"	<0.0005	<0.0005	<0.0005	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0030	<0.0005	0.00375
Sb	"	<0.003	<0.003	<0.003	<0.006	<0.003	<0.003	<0.003	<0.003	<0.005	<0.003	0.003
Se	"	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	0.023	<0.020	<0.020	0.047	0.038	0.031	<0.020	0.270	<0.020	<0.020	0.069
Ra-226	pCi/L	1.49	1.65	1.63	1.10	1.34	1.18	1.17	1.86	1.64	1.66	2.24
Ra-228	"	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.02	1.85	1.87	1.89

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-10: ANALYSIS OF GROUNDWATER INORGANIC AND RADIOACTIVE PARAMETERS IN MONITORING WELL G-07 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/7/2017	12/13/2017	
Ag	"	<0.0005[1]	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.025
As	"	0.0070	0.0069	0.0042	0.0044	0.0048	0.0037	0.0042	0.0043	<0.0100	0.0051	0.0086
B	"	0.40	0.47	0.42	0.40	0.44	0.37	0.37	0.41	0.40	0.56	0.59
Ba	"	0.075	0.082	0.073	0.078	0.084	0.074	0.076	0.073	0.068	0.080	0.09
Be	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0015
Cd	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Co	"	0.0034	0.0039	0.0043	0.0042	0.0041	0.0040	0.0041	0.0043	0.0039	0.0041	0.0048
Cr	"	<0.005	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050	<0.0050	<0.0100	<0.0050	0.035
Cu	"	0.0036	0.0067	0.0030	0.0110	0.0031	0.0030	0.0029	<0.0020	0.0029	0.0023	0.0074
CN	"	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
F	"	<0.2	<2.0	<2.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	0.05
Fe	"	2.3	3.0	1.9	2.0	1.8	1.7	1.8	1.8	1.8	1.7	2.44
Hg	"	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00037	<0.0002	<0.0002	<0.0002	0.001
Mn	"	0.0092	0.0110	0.0092	0.0110	0.0099	0.0093	0.0100	0.0096	0.0100	0.0096	0.012
Ni	"	0.0090	0.0091	0.0073	0.0072	0.0070	0.0064	0.0063	0.0063	0.0068	0.0067	0.01
NO_3-N	"	<0.2	<0.2	<2.0	<0.2	<0.2	<2.0	<2.0	<0.2	<0.02	<0.2	0.075
Pb	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0030	<0.0005	0.00375
Sb	"	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.005	<0.003	0.003
Se	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	<0.0025	0.025
Tl	"	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Zn	"	<0.020	0.046	<0.020	0.076	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.01
Ra-226	pCi/L	2.63	3.34	<1.00	2.07	2.08	2.56	2.59	2.35	2.36	2.33	3.75
Ra-228	"	3.53	2.32	<1.00	2.60	2.75	2.31	2.83	2.99	2.58	3.23	4.64

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-11: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
Herbicides												
2,4-D	mg/L	<0.00095[1]	<0.00095	<0.00094	<0.00094	<0.00100	<0.00095	<0.00095	<0.00100	<0.00052	<0.00100	0.005
Silvex (2,4,5-TP)	"	<0.00095	<0.00095	<0.00094	<0.00094	<0.00100	<0.00095	<0.00095	<0.00100	<0.00026	<0.00100	0.001
Atrazine	"	<0.0020	<0.0019	<0.0019	<0.0020	<0.0018	<0.0019	<0.0019	<0.0020	<0.00020	<0.0019	0.00025
Dalapon	"	<0.0019	<0.0019	<0.0019	<0.0019	<0.0020	<0.0019	<0.0019	<0.0020	<0.0052	<0.0020	0.0005
Simazine	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0016	<0.0017	<0.0015	<0.0016	<0.0005	<0.0016	0.001
PCBs, Total	"	<0.00039	<0.00037	<0.00037	<0.00039	<0.00039	<0.00042	<0.00037	<0.00039	<0.00054	<0.00039	0.00005
Pesticides												
Alachlor	"	<0.00039	<0.00037	<0.00037	<0.00039	<0.00039	<0.00042	<0.00037	<0.00039	<0.00020	<0.00039	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000078	<0.000074	<0.000074	<0.000078	<0.000078	<0.000085	<0.000074	<0.000079	<0.000270	<0.000078	0.00005
Endrin	"	<0.000039	<0.000037	<0.000037	<0.000039	<0.000039	<0.000042	<0.000037	<0.000039	<0.000500	<0.000039	0.00005
gamma-BHC (Lindane)	"	<0.000039	<0.000037	<0.000037	<0.000039	<0.000039	<0.000042	<0.000037	<0.000039	<0.000200	<0.000039	0.00005
Heptachlor	"	<0.000039	<0.000037	<0.000037	<0.000039	<0.000039	<0.000042	<0.000037	<0.000039	<0.000200	<0.000039	0.00025
Heptachlor epoxide	"	<0.000039	<0.000037	<0.000037	<0.000039	<0.000039	<0.000042	<0.000037	<0.000039	<0.000400	<0.000039	0.0001
Methoxychlor	"	<0.000078	<0.000074	<0.000074	<0.000078	<0.000078	<0.000085	<0.000074	<0.000079	<0.00050	<0.000078	0.001
Toxaphene	"	<0.00039	<0.00037	<0.00037	<0.00039	<0.00039	<0.00042	<0.00037	<0.00039	<0.00270	<0.00039	0.001

TABLE A-11 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
VOCs												
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.00002	<0.000018	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.0001
Ethylene Dibromide	"	<0.00002	<0.000018	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.001
cis-1,2-Dichloroethene	"	ND[2]	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Xylenes, Total	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025

TABLE A-11 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
SVOCs												
1,2,4-Trichlorobenzene	mg/L	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.0015	<0.0015	<0.0016	<0.0005	<0.0016	0.000025
1,2-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.0015	<0.0015	<0.0016	<0.0005	<0.0016	0.0025
1,4-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.0015	<0.0015	<0.0016	<0.0005	<0.0016	0.001
Benzo[a]pyrene	"	<0.00016	<0.00015	<0.00015	<0.00016	<0.00015	<0.00015	<0.00015	<0.00016	<0.00020	<0.00016	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0059	<0.0056	<0.0056	<0.0061	<0.0055	<0.0057	<0.0056	<0.0061	<0.0020	<0.0058	0.003
Hexachlorocyclopentadiene	"	<0.016	<0.015	<0.015	<0.016	<0.015	<0.015	<0.015	<0.016	<0.0020	<0.016	0.0025
Pentachlorophenol	"	<0.00047	<0.00047	<0.00047	<0.00047	<0.00051	<0.00047	<0.00048	<0.00050	<0.00021	<0.00051	0.0005
Phenol	"	<0.0039	<0.0037	<0.0037	<0.004	<0.0037	<0.0038	<0.0037	<0.0040	<0.0500	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Not Determined. Parameter was not analyzed in 2016 samples.

TABLE A-11 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
VOCs												
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.00002	<0.000018	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.0001
Ethylene Dibromide	"	<0.00002	<0.000018	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.001
cis-1,2-Dichloroethene	"	ND[2]	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Xylenes, Total	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025

TABLE A-11 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-01 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
SVOCs												
1,2,4-Trichlorobenzene	mg/L	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.0015	<0.0015	<0.0016	<0.0005	<0.0016	0.000025
1,2-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.0015	<0.0015	<0.0016	<0.0005	<0.0016	0.0025
1,4-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.0015	<0.0015	<0.0016	<0.0005	<0.0016	0.001
Benzo[a]pyrene	"	<0.00016	<0.00015	<0.00015	<0.00016	<0.00015	<0.00015	<0.00015	<0.00016	<0.00020	<0.00016	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0059	<0.0056	<0.0056	<0.0061	<0.0055	<0.0057	<0.0056	<0.0061	<0.0020	<0.0058	0.003
Hexachlorocyclopentadiene	"	<0.016	<0.015	<0.015	<0.016	<0.015	<0.015	<0.015	<0.016	<0.0020	<0.016	0.0025
Pentachlorophenol	"	<0.00047	<0.00047	<0.00047	<0.00047	<0.00051	<0.00047	<0.00048	<0.00050	<0.00021	<0.00051	0.0005
Phenol	"	<0.0039	<0.0037	<0.0037	<0.004	<0.0037	<0.0038	<0.0037	<0.0040	<0.0500	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Not Determined. Parameter was not analyzed in 2016 samples.

TABLE A-12: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-02 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		2/29/2016	5/25/2016	3/2/2017	5/24/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
Herbicides												
2,4-D	mg/L	<0.00095[1]	<0.00100	<0.00094	<0.00094	<0.00095	<0.00095	<0.00096	<0.00096	<0.00050	<0.00099	0.005
Silvex (2,4,5-TP)	"	<0.00095	<0.00100	<0.00094	<0.00094	<0.00095	<0.00095	<0.00096	<0.00096	<0.00025	<0.00099	0.001
Atrazine	"	<0.0020	<0.0019	<0.0019	<0.0019	<0.0019	<0.0021	<0.0019	<0.0021	<0.0002	<0.0021	0.00025
Dalapon	"	<0.0019	<0.0020	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0050	<0.0020	0.0005
Simazine	"	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0017	<0.0005	<0.0015	0.001
PCBs, total	"	<0.00038	<0.00038	<0.00038	<0.00037	<0.00038	<0.00039	<0.00037	<0.00043	<0.00050	<0.00038	0.00005
Pesticides												
Alachlor	"	<0.00038	<0.00038	<0.00038	<0.00037	<0.00038	<0.00039	<0.00037	<0.00043	<0.00020	<0.00038	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000076	<0.000076	<0.000075	<0.000074	<0.000076	<0.000077	<0.000075	<0.000086	<0.000250	<0.000075	0.00005
Endrin	"	<0.000038	<0.000038	<0.000038	<0.000037	<0.000038	<0.000039	<0.000037	<0.000043	<0.000500	<0.000038	0.00005
gamma-BHC (Lindane)	"	<0.000038	<0.000038	<0.000038	<0.000037	<0.000038	<0.000039	<0.000037	<0.000043	<0.000200	<0.000038	0.00005
Heptachlor	"	<0.000038	<0.000038	<0.000038	<0.000037	<0.000038	<0.000039	<0.000037	<0.000043	<0.000200	<0.000038	0.00025
Heptachlor epoxide	"	<0.000038	<0.000038	<0.000038	<0.000037	<0.000038	<0.000039	<0.000037	<0.000043	<0.000400	<0.000038	0.0001
Methoxychlor	"	<0.000076	<0.000076	<0.000075	<0.000074	<0.000076	<0.000077	<0.000075	<0.000086	<0.000500	<0.000075	0.001
Toxaphene	"	<0.00038	<0.00038	<0.00038	<0.00037	<0.00038	<0.00039	<0.00037	<0.00043	<0.00250	<0.00038	0.001

TABLE A-12 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-02 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		2/29/2016	5/25/2016	3/2/2017	5/24/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
VOCs												
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.000019	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	0.0001
Ethylene Dibromide	"	<0.000019	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.001
cis-1,2-Dichloroethene	"	ND[2]	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Xylenes, Total	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025

TABLE A-12 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-02 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		2/29/2016	5/25/2016	3/2/2017	5/24/2017	6/27/2017	8/8/2017	9/12/2017	11/1/2017	12/7/2017	12/14/2017	
SVOCs												
1,2,4-Trichlorobenzene	mg/L	<0.0016	<0.0015	<0.0015	<0.0015	<0.0015	<0.0017	<0.0015	<0.0017	<0.00050	<0.0017	0.000025
1,2-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0015	<0.0015	<0.0017	<0.0015	<0.0017	<0.00050	<0.0017	0.0025
1,4-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0015	<0.0015	<0.0017	<0.0015	<0.0017	<0.00050	<0.0017	0.001
Benzo[a]pyrene	"	<0.00016	<0.00015	<0.00015	<0.00015	<0.00015	<0.00017	<0.00015	<0.00017	<0.00020	<0.00017	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0061	<0.0057	<0.0057	<0.0058	<0.0057	<0.0062	<0.0057	<0.0063	<0.0020	<0.0062	0.003
Hexachlorocyclo-pentadiene	"	<0.016	<0.015	<0.015	<0.015	<0.015	<0.017	<0.015	<0.017	<0.0020	<0.017	0.0025
Pentachlorophenol	"	<0.00047	<0.0005	<0.00047	<0.00047	<0.00048	<0.00048	<0.00048	<0.00048	<0.00020	<0.0005	0.0005
Phenol	"	<0.0041	<0.0038	<0.0038	<0.0038	<0.0038	<0.0041	<0.0038	<0.0042	<0.0500	<0.0041	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Not Determined. Parameter was not analyzed in 2016 samples.

TABLE A-13: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-03 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/2/2017	12/7/2017	12/14/2017	
Herbicides												
2,4-D	mg/L	<0.00096[1]	<0.00095	<0.00095	<0.00940	<0.00096	<0.00095	<0.00100	<0.00095	<0.00046	<0.00098	0.005
Silvex (2,4,5-TP)	"	<0.00096	<0.00095	<0.00095	<0.00940	<0.00096	<0.00095	<0.00100	<0.00095	<0.00023	<0.00098	0.001
Atrazine	"	<0.0018	<0.0018	<0.0019	<0.0020	<0.0021	<0.0019	<0.0019	<0.0020	<0.00020	<0.0020	0.00025
Dalapon	"	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0020	<0.0019	<0.0046	<0.0020	0.0005
Simazine	"	<0.0016	<0.0016	<0.0016	<0.0016	<0.0017	<0.0016	<0.0015	<0.0016	<0.00049	<0.0017	0.001
PCBs, total	"	<0.00039	<0.00039	<0.00040	<0.00040	<0.00041	<0.00041	<0.00036	<0.00040	<0.00048	<0.00041	0.00005
Pesticides	"											
Alachlor	"	<0.00039	<0.00039	<0.00040	<0.00040	<0.00041	<0.00041	<0.00036	<0.00040	<0.00020	<0.00041	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000078	<0.000079	<0.000080	<0.000081	<0.000083	<0.000082	<0.000073	<0.000080	<0.000240	<0.000083	0.00005
Endrin	"	<0.000039	<0.000039	<0.000040	<0.000040	<0.000041	<0.000041	<0.000036	<0.000040	<0.000490	<0.000041	0.00005
gamma-BHC (Lindane)	"	<0.000039	<0.000039	<0.000040	<0.000040	<0.000041	<0.000041	<0.000036	<0.000040	<0.000200	<0.000041	0.00005
Heptachlor	"	<0.000039	<0.000039	<0.00004	<0.00004	<0.000041	<0.000041	<0.000036	<0.000040	<0.000200	<0.000041	0.00025
Heptachlor epoxide	"	<0.000039	<0.000039	<0.00004	<0.00004	<0.000041	<0.000041	<0.000036	<0.000040	<0.000390	<0.000041	0.0001
Methoxychlor	"	<0.000078	<0.000079	<0.00008	<0.000081	<0.000083	<0.000082	<0.000073	<0.000080	<0.000490	<0.000083	0.001
Toxaphene	"	<0.00039	<0.00039	<0.00040	<0.00040	<0.00041	<0.00041	<0.00036	<0.00040	<0.00240	<0.00041	0.001

TABLE A-13 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-03 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/2/2017	12/7/2017	12/14/2017	
VOCs												
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.000022	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	<0.000018	<0.000017	0.0001
Ethylene Dibromide	"	<0.000022	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	<0.000018	<0.000017	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.001
cis-1,2-Dichloroethene	"	ND[2]	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Xylenes, Total	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025

TABLE A-13 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-03 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/27/2017	8/8/2017	9/12/2017	11/2/2017	12/7/2017	12/14/2017	
SVOCs												
1,2,4-Trichlorobenzene	mg/L	<0.0015	<0.0015	<0.0015	<0.0016	<0.0016	<0.0015	<0.0015	<0.0016	<0.00050	<0.0016	0.000025
1,2-Dichlorobenzene	"	<0.0015	<0.0015	<0.0015	<0.0016	<0.0016	<0.0015	<0.0015	<0.0016	<0.00050	<0.0016	0.0025
1,4-Dichlorobenzene	"	<0.0015	<0.0015	<0.0015	<0.0016	<0.0016	<0.0015	<0.0015	<0.0016	<0.00050	<0.0016	0.001
Benzo[a]pyrene	"	<0.00015	<0.00015	<0.00015	<0.00016	<0.00016	0.00160	<0.00015	<0.00016	<0.00020	<0.00016	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0055	<0.0055	<0.0058	<0.0060	<0.0062	<0.0056	<0.0057	<0.0059	<0.0020	<0.0060	0.003
Hexachlorocyclo-pentadiene	"	<0.015	<0.015	<0.015	<0.016	<0.016	<0.015	<0.015	<0.016	<0.0020	<0.016	0.0025
Pentachlorophenol	"	<0.00048	<0.00047	<0.00047	<0.0047	<0.00048	<0.00047	<0.00051	<0.00047	<0.00018	<0.00049	0.0005
Phenol	"	<0.0037	<0.0037	<0.0038	<0.0040	<0.0041	<0.0037	<0.0038	<0.0039	<0.0500	<0.0040	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Not Determined. Parameter was not analyzed in 2016 samples.

TABLE A-14: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date								Upper TL
		11/29/2017	11/29/2017	12/6/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	12/13/2017	
Herbicides										
2,4-D	mg/L	<0.00083[1]	<0.00084	<0.00049	<0.00048	<0.00110	<0.00095	<0.00095	<0.00095	0.005
Silvex (2,4,5-TP)	"	<0.00083	<0.00084	<0.00024	<0.00024	<0.00110	<0.00095	<0.00095	<0.00095	0.001
Atrazine	"	<0.0019	<0.0019	<0.00019	<0.00020	<0.0020	<0.0021	<0.0021	<0.0019	0.00025
Dalapon	"	<0.0017	<0.0017	<0.0049	<0.0048	<0.0021	<0.0019	<0.0019	<0.0019	0.0005
Simazine	"	<0.0015	<0.0015	<0.00049	<0.00049	<0.00170	<0.0015	<0.0016	<0.0015	0.001
PCBs, total	"	<0.00038	<0.00039	<0.00048	<0.00048	<0.00042	<0.00038	<0.00041	<0.00038	0.00005
Pesticides	"									
Alachlor	"	<0.00038	<0.00039	<0.00019	<0.00020	<0.00042	<0.00038	<0.00041	<0.00038	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000075	<0.000077	<0.000240	<0.000240	<0.000083	<0.000077	<0.000081	<0.000075	0.00005
Endrin	"	<0.000038	<0.000039	<0.000490	<0.000490	<0.000042	<0.000038	<0.000041	<0.000038	0.00005
gamma-BHC (Lindane)	"	<0.000038	<0.000039	<0.000190	<0.000200	<0.000042	<0.000038	<0.000041	<0.000038	0.00005
Heptachlor	"	<0.000038	<0.000039	<0.000190	<0.000200	<0.000042	<0.000038	<0.000041	<0.000038	0.00025
Heptachlor epoxide	"	<0.000038	<0.000039	<0.000390	<0.000390	<0.000042	<0.000038	<0.000041	<0.000038	0.0001
Methoxychlor	"	<0.000075	<0.000077	<0.000490	<0.000490	<0.000083	<0.000077	<0.000081	<0.000075	0.001
Toxaphene	"	<0.00038	<0.00039	<0.00240	<0.00240	<0.00042	<0.00038	<0.00041	<0.00038	0.001

TABLE A-14 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date								Upper TL
		11/29/2017	11/29/2017	12/6/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	12/13/2017	
VOCs										
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.005000	<0.005000	<0.000018	<0.000018	<0.000018	<0.000017	<0.000017	<0.000018	0.0001
Ethylene Dibromide	"	<0.001	<0.001	<0.000018	<0.000018	<0.000018	<0.000017	<0.000017	<0.000018	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.001
cis-1,2-Dichloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.0050	<0.00050	<0.00050	0.0062	<0.0050	<0.0050	0.0054	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Xylenes, Total	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025

TABLE A-14 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date								Upper TL
		11/29/2017	11/29/2017	12/6/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	12/13/2017	
SVOCs										
1,2,4-Trichlorobenzene	mg/L	<0.0015	<0.0015	<0.00050	<0.00050	<0.0016	<0.0017	<0.0017	<0.0015	0.000025
1,2-Dichlorobenzene	"	<0.0015	<0.0015	<0.00050	<0.00050	<0.0016	<0.0017	<0.0017	<0.0015	0.0025
1,4-Dichlorobenzene	"	<0.0015	<0.0015	<0.00050	<0.00050	<0.0016	<0.0017	<0.0017	<0.0015	0.001
Benzo[a]pyrene	"	<0.00015	<0.00015	<0.00019	<0.00020	<0.00016	<0.00017	<0.00017	<0.00015	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0056	<0.0057	<0.0019	<0.0020	<0.006	<0.0064	<0.0062	<0.0058	0.003
Hexachlorocyclopentadiene	"	<0.0150	<0.0150	<0.0019	<0.0020	<0.016	<0.0170	<0.0170	<0.0150	0.0025
Pentachlorophenol	"	<0.00041	<0.00042	<0.00020	<0.00019	<0.00053	<0.00048	<0.00047	<0.00047	0.0005
Phenol	"	<0.0037	<0.0038	<0.0500	<0.050	<0.0040	<0.0043	<0.0042	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-15: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-05 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date					Upper TL
		11/29/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	
Herbicides							
2,4-D	mg/L	<0.00083[1]	<0.00052	<0.00095	<0.00100	<0.00097	0.005
Silvex (2,4,5-TP)	"	<0.00083	<0.00026	<0.00095	<0.00100	<0.00097	0.001
Atrazine	"	<0.0019	<0.0002	<0.0020	<0.0021	<0.0020	0.00025
Dalapon	"	<0.0017	<0.0052	<0.0019	<0.0021	<0.0019	0.0005
Simazine	"	<0.00160	<0.00051	<0.00160	<0.00150	<0.00150	0.001
PCBs, total	"	<0.00039	<0.00049	<0.00039	<0.00037	<0.00038	0.00005
Pesticides	"						
Alachlor	"	<0.00039	<0.00020	<0.00039	<0.00037	<0.00038	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000078	<0.000240	<0.000078	<0.000074	<0.000077	0.00005
Endrin	"	<0.000039	<0.000510	<0.000039	<0.000037	<0.000038	0.00005
gamma-BHC (Lindane)	"	<0.000039	<0.000200	<0.000039	<0.000037	<0.000038	0.00005
Heptachlor	"	<0.000039	<0.000200	<0.000039	<0.000037	<0.000038	0.00025
Heptachlor epoxide	"	<0.000039	<0.000410	<0.000039	<0.000037	<0.000038	0.0001
Methoxychlor	"	<0.000078	<0.000510	<0.000078	<0.000074	<0.000077	0.001
Toxaphene	"	<0.00039	<0.00240	<0.00039	<0.00037	<0.00038	0.001

TABLE A-14 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date								Upper TL
		11/29/2017	11/29/2017	12/6/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	12/13/2017	
VOCs										
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.005000	<0.005000	<0.000018	<0.000018	<0.000018	<0.000017	<0.000017	<0.000018	0.0001
Ethylene Dibromide	"	<0.001	<0.001	<0.000018	<0.000018	<0.000018	<0.000017	<0.000017	<0.000018	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.001
cis-1,2-Dichloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.0050	<0.00050	<0.00050	0.0062	<0.0050	<0.0050	0.0054	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Xylenes, Total	"	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025

TABLE A-14 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-04 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date								Upper TL
		11/29/2017	11/29/2017	12/6/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	12/13/2017	
SVOCs										
1,2,4-Trichlorobenzene	mg/L	<0.0015	<0.0015	<0.00050	<0.00050	<0.0016	<0.0017	<0.0017	<0.0015	0.000025
1,2-Dichlorobenzene	"	<0.0015	<0.0015	<0.00050	<0.00050	<0.0016	<0.0017	<0.0017	<0.0015	0.0025
1,4-Dichlorobenzene	"	<0.0015	<0.0015	<0.00050	<0.00050	<0.0016	<0.0017	<0.0017	<0.0015	0.001
Benzo[a]pyrene	"	<0.00015	<0.00015	<0.00019	<0.00020	<0.00016	<0.00017	<0.00017	<0.00015	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0056	<0.0057	<0.0019	<0.0020	<0.006	<0.0064	<0.0062	<0.0058	0.003
Hexachlorocyclopentadiene	"	<0.0150	<0.0150	<0.0019	<0.0020	<0.016	<0.0170	<0.0170	<0.0150	0.0025
Pentachlorophenol	"	<0.00041	<0.00042	<0.00020	<0.00019	<0.00053	<0.00048	<0.00047	<0.00047	0.0005
Phenol	"	<0.0037	<0.0038	<0.0500	<0.050	<0.0040	<0.0043	<0.0042	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-15: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-05 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date					Upper TL
		11/29/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	
Herbicides							
2,4-D	mg/L	<0.00083[1]	<0.00052	<0.00095	<0.00100	<0.00097	0.005
Silvex (2,4,5-TP)	"	<0.00083	<0.00026	<0.00095	<0.00100	<0.00097	0.001
Atrazine	"	<0.0019	<0.0002	<0.0020	<0.0021	<0.0020	0.00025
Dalapon	"	<0.0017	<0.0052	<0.0019	<0.0021	<0.0019	0.0005
Simazine	"	<0.00160	<0.00051	<0.00160	<0.00150	<0.00150	0.001
PCBs, total	"	<0.00039	<0.00049	<0.00039	<0.00037	<0.00038	0.00005
Pesticides	"						
Alachlor	"	<0.00039	<0.00020	<0.00039	<0.00037	<0.00038	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000078	<0.000240	<0.000078	<0.000074	<0.000077	0.00005
Endrin	"	<0.000039	<0.000510	<0.000039	<0.000037	<0.000038	0.00005
gamma-BHC (Lindane)	"	<0.000039	<0.000200	<0.000039	<0.000037	<0.000038	0.00005
Heptachlor	"	<0.000039	<0.000200	<0.000039	<0.000037	<0.000038	0.00025
Heptachlor epoxide	"	<0.000039	<0.000410	<0.000039	<0.000037	<0.000038	0.0001
Methoxychlor	"	<0.000078	<0.000510	<0.000078	<0.000074	<0.000077	0.001
Toxaphene	"	<0.00039	<0.00240	<0.00039	<0.00037	<0.00038	0.001

TABLE A-15 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-05 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date					Upper TL
		11/29/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	
VOCs							
1,1,1-Trichloroethane	mg/L	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.005000	<0.000017	<0.000017	<0.000017	<0.000017	0.0001
Ethylene Dibromide	"	<0.001000	<0.000017	<0.000017	<0.000017	<0.000017	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.001
cis-1,2-Dichloroethene	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.0050	<0.00050	0.0054	<0.0050	<0.0050	0.0025
Methyl tert-butyl ether	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.035
Styrene	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
Toluene	"	0.0017	0.0021	0.0018	0.0023	0.0019	0.0025
trans-1,2-Dichloroethene	"	<0.001	<0.0005	<0.001	<0.001	<0.001	0.0025
Trichloroethene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Vinyl chloride	"	<0.00050	<0.00050	0.0050	0.0045	0.0048	0.0052
Xylenes, Total	"	0.0018	0.0021	0.0017	0.0020	0.0018	0.0022

TABLE A-15 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-05 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date					Upper TL
		11/29/2017	12/6/2017	12/11/2017	12/12/2017	12/13/2017	
SVOCs							
1,2,4-Trichlorobenzene	mg/L	<0.0015	<0.00050	<0.0016	<0.0016	<0.0016	0.000025
1,2-Dichlorobenzene	"	<0.0015	<0.00050	<0.0016	<0.0016	<0.0016	0.0025
1,4-Dichlorobenzene	"	<0.0015	<0.00050	<0.0016	<0.0016	<0.0016	0.001
Benzo[a]pyrene	"	<0.00015	<0.00020	<0.00016	<0.00016	<0.00016	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0058	<0.0020	<0.0059	<0.0062	<0.0059	0.003
Hexachlorocyclopentadiene	"	<0.015	<0.0020	<0.016	<0.016	<0.016	0.0025
Pentachlorophenol	"	<0.00042	<0.00021	<0.00047	<0.00052	<0.00049	0.0005
Phenol	"	<0.0039	<0.0500	<0.0039	<0.0041	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.

TABLE A-16: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-06 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/25/2016	3/2/2017	5/24/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/6/2017	12/12/2017	
Herbicides												
2,4-D	mg/L	<0.00096[1]	<0.00095	<0.00094	<0.00095	<0.00095	<0.00095	<0.00100	<0.00096	<0.00048	<0.00095	0.005
Silvex (2,4,5-TP)	"	<0.00096	<0.00095	<0.00094	<0.00095	<0.00095	<0.00095	<0.00100	<0.00096	<0.00024	<0.00095	0.001
Atrazine	"	<0.0020	<0.0019	<0.0019	<0.0020	<0.0021	<0.0021	<0.0021	<0.0019	<0.00019	<0.0019	0.00025
Dalapon	"	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0021	<0.0019	<0.0048	<0.0019	0.0005
Simazine	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0017	<0.0015	<0.0016	<0.0015	<0.00049	<0.0016	0.001
PCBs, total	"	<0.00041	<0.00037	<0.00039	<0.00040	<0.00042	<0.00038	<0.00041	<0.00037	<0.00049	<0.00039	0.00005
Pesticides	"											
Alachlor	"	<0.00041	<0.00037	<0.00039	<0.0004	<0.00042	<0.00038	<0.00041	<0.00037	<0.00019	<0.00039	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000082	<0.000075	<0.000077	<0.000080	<0.000084	<0.000076	<0.000082	<0.000075	<0.000240	<0.000078	0.00005
Endrin	"	<0.000041	<0.000037	<0.000039	<0.000040	<0.000042	<0.000038	<0.000041	<0.000037	<0.000490	<0.000039	0.00005
gamma-BHC (Lindane)	"	<0.000041	<0.000037	<0.000039	<0.000040	<0.000042	<0.000038	<0.000041	<0.000037	<0.000190	<0.000039	0.00005
Heptachlor	"	<0.000041	<0.000037	<0.000039	<0.000040	<0.000042	<0.000038	<0.000041	<0.000037	<0.000190	<0.000039	0.00025
Heptachlor epoxide	"	<0.000041	<0.000037	<0.000039	<0.000040	<0.000042	<0.000038	<0.000041	<0.000037	<0.000390	<0.000039	0.0001
Methoxychlor	"	<0.000082	<0.000075	<0.000077	<0.000080	<0.000084	<0.000076	<0.000082	<0.000075	<0.000490	<0.000078	0.001
Toxaphene	"	<0.00041	<0.00037	<0.00039	<0.00040	<0.00042	<0.00038	<0.00041	<0.00037	<0.00240	<0.00039	0.001

TABLE A-16 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-06 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/25/2016	3/2/2017	5/24/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/6/2017	12/12/2017	
VOCs												
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.00002	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	<0.000017	<0.000018	<0.000017	0.0001
Ethylene Dibromide	"	<0.00002	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	<0.000017	<0.000018	<0.000017	0.000025
Benzene	"	<0.00050	<0.00050	<0.00050	0.00067	0.00057	0.00078	<0.00050	<0.00050	<0.00050	<0.00050	0.00088
Carbon tetrachloride	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.001
cis-1,2-Dichloroethene	"	ND[2]	ND	0.0110	0.0099	0.0092	0.0081	0.0073	0.0090	0.0093	0.0110	0.013
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.005
Tetrachloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025

TABLE A-16 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-06 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/2/2016	5/25/2016	3/2/2017	5/24/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/6/2017	12/12/2017	
Trichloroethene	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Vinyl chloride	"	0.15	0.15	0.17	0.15	0.14	0.12	0.12	0.12	0.10	0.16	0.203
Xylenes, Total	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
SVOCs												
1,2,4-Trichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0017	<0.0017	<0.0017	<0.0015	<0.00050	<0.0016	0.000025
1,2-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0017	<0.0017	<0.0017	<0.0015	<0.00050	<0.0016	0.0025
1,4-Dichlorobenzene	"	<0.0016	<0.0015	<0.0015	<0.0016	<0.0017	<0.0017	<0.0017	<0.0015	<0.00050	<0.0016	0.001
Benzo[a]pyrene	"	<0.00016	<0.00015	<0.00015	<0.00016	<0.00017	<0.00017	<0.00017	<0.00015	<0.00019	<0.00016	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0061	<0.0056	<0.0057	<0.0060	<0.0062	<0.0062	<0.0063	<0.0057	<0.0019	<0.0058	0.003
Hexachlorocyclopenta-diene	"	<0.016	<0.015	<0.015	<0.016	<0.017	<0.017	<0.017	<0.015	<0.0019	<0.016	0.0025
Pentachlorophenol	"	<0.00048	<0.00048	<0.00047	<0.00047	<0.00048	<0.00048	<0.00052	<0.00048	<0.00019	<0.00048	0.0005
Phenol	"	<0.0040	<0.0037	<0.0038	<0.0040	<0.0041	<0.0041	<0.0042	<0.0038	<0.0500	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Not Determined. Parameter was not analyzed in 2016 samples.

TABLE A-17: ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-07 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/7/2017	12/13/2017	
Herbicides	mg/L											
2,4-D	"	<0.00095[1]	<0.00094	<0.00095	<0.00940	<0.00097	<0.00098	<0.00098	<0.00095	<0.00050	<0.00095	0.005
Silvex (2,4,5-TP)	"	<0.00095	<0.00094	<0.00095	<0.00940	<0.00097	<0.00098	<0.00098	<0.00095	<0.00025	<0.00095	0.001
Atrazine	"	<0.0019	<0.0019	<0.0020	<0.0020	<0.0019	<0.0019	<0.0020	<0.0019	<0.00019	<0.0019	0.00025
Dalapon	"	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0020	<0.0020	<0.0019	<0.0050	<0.0019	0.0005
Simazine	"	<0.0015	<0.0016	<0.0016	<0.0016	<0.0015	<0.0017	<0.0016	<0.0016	<0.00049	<0.0016	0.001
PCBs, total	"	<0.00038	<0.00040	<0.00041	<0.00039	<0.00039	<0.00042	<0.00039	<0.00039	<0.00049	<0.00041	0.00005
Pesticides	"											
Alachlor	"	<0.00038	<0.00040	<0.00041	<0.00039	<0.00039	<0.00042	<0.00039	<0.00039	<0.00019	<0.00041	0.00025
Aldicarb	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Carbofuran	"	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0015
Chlordane (technical)	"	<0.000075	<0.000080	<0.000081	<0.000079	<0.000077	<0.000083	<0.000078	<0.000079	<0.000250	<0.000081	0.00005
Endrin	"	<0.000038	<0.000040	<0.000041	<0.000039	<0.000039	<0.000042	<0.000039	<0.000039	<0.000490	<0.000041	0.00005
gamma-BHC (Lindane)	"	<0.000038	<0.000040	<0.000041	<0.000039	<0.000039	<0.000042	<0.000039	<0.000039	<0.000190	<0.000041	0.00005
Heptachlor	"	<0.000038	<0.000040	<0.000041	<0.000039	<0.000039	<0.000042	<0.000039	<0.000039	<0.000190	<0.000041	0.00025
Heptachlor epoxide	"	<0.000038	<0.000040	<0.000041	<0.000039	<0.000039	<0.000042	<0.000039	<0.000039	<0.000390	<0.000041	0.0001
Methoxychlor	"	<0.000075	<0.000080	<0.000081	<0.000079	<0.000077	<0.000083	<0.000078	<0.000079	<0.000490	<0.000081	0.001
Toxaphene	"	<0.00038	<0.00040	<0.00041	<0.00039	<0.00039	<0.00042	<0.00039	<0.00039	<0.00250	<0.00041	0.001

TABLE A-17 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-07 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/7/2017	12/13/2017	
VOCs												
1,1,1-Trichloroethane	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1,2-Trichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,1-Dichloroethene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloroethane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dichloropropane	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
1,2-Dibromo-3-Chloropropane	"	<0.000019	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	0.0001
Ethylene Dibromide	"	<0.000019	<0.000018	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000018	<0.000017	0.000025
Benzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Carbon tetrachloride	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Chlorobenzene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.001
cis-1,2-Dichloroethene	"	ND[2]	ND	0.0020	0.0042	0.0019	0.0025	0.0017	0.0020	0.0017	0.0019	0.0029
Ethylbenzene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
Methylene Chloride	"	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	0.0057	0.0025
Methyl tert-butyl ether	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.035
Styrene	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.005
Tetrachloroethene	"	0.0024	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	0.0025
Toluene	"	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0025
trans-1,2-Dichloroethene	"	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025
Trichloroethene	"	<0.00050	0.00160	0.00091	0.00072	0.00066	0.00076	0.00051	0.00062	0.00055	0.00052	0.0011
Vinyl chloride	"	0.0023	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001
Xylenes, Total	"	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	0.0025

TABLE A-17 (Continued): ANALYSIS OF GROUNDWATER ORGANIC PARAMETERS IN MONITORING WELL G-07 AT THE MCCOOK RESERVOIR SITE DURING BACKGROUND MONITORING

Parameter	Units	Sample Date										Upper TL
		3/1/2016	5/24/2016	3/1/2017	5/23/2017	6/28/2017	8/9/2017	9/13/2017	11/1/2017	12/7/2017	12/13/2017	
SVOCs												
1,2,4-Trichlorobenzene	mg/L	<0.0015	<0.0015	<0.0016	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.00050	<0.0016	0.000025
1,2-Dichlorobenzene	"	<0.0015	<0.0015	<0.0016	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.00050	<0.0016	0.0025
1,4-Dichlorobenzene	"	<0.0015	<0.0015	<0.0016	<0.0016	<0.0015	<0.0015	<0.0016	<0.0015	<0.00050	<0.0016	0.001
Benzo[a]pyrene	"	<0.00015	<0.00015	<0.00016	<0.00016	<0.00015	<0.00015	<0.00016	<0.00015	<0.00019	<0.00016	0.0001
Bis(2-ethylhexyl) phthalate	"	<0.0057	<0.0056	<0.0059	<0.006	<0.0057	<0.0056	<0.0059	<0.0057	<0.0019	<0.0058	0.003
Hexachlorocyclopentadiene	"	<0.015	<0.015	<0.016	<0.016	<0.015	<0.015	<0.016	<0.015	<0.0019	<0.016	0.0025
Pentachlorophenol	"	<0.00048	<0.00047	<0.00048	<0.00470	<0.00048	<0.00049	<0.00049	<0.00048	<0.00020	<0.00047	0.0005
Phenol	"	<0.0038	<0.0037	<0.0039	<0.0040	<0.0038	<0.0038	<0.0039	<0.0038	<0.0500	<0.0039	0.0025

[1]Value following any "<" symbol is the laboratory reporting limit.
[2]Not Determined. Parameter was not analyzed in 2016 samples.

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