

2021 Mississippi River Water Quality Data - Ford

Station	Sample Time	Sample type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
Ford	04/08/2021 08:50	Grab	50	11.8	249.4	333.7	< 10.81	9.3	0.16	78	122	< 0.06	1.8	29
Ford	07/01/2021 07:55	Grab	75	26.5	445.7	433.1	< 7.66	7.9	0.21	75	164	< 0.06	2.1	< 15
Ford	11/04/2021 08:10	Grab	30	8.0	325.5	481.9	< 12.25	8.5	0.23	> 100	196	< 0.06	1.1	16

2021 Mississippi River Water Quality Data - Meeker

Station	Sample Time	Sample type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)					Nitrogen (mg/L)	Oxygen Demand 5-day (mg/L)	Oxygen Demand (mg/L)
Meeker	01/07/2021 09:20	Grab	23	-0.3	232.5	449.5	< 14.57	8.6	0.21	> 100	175	0.07	1.2	18
Meeker	03/04/2021 09:20	Grab	36	2.8	296.5	514.0	< 12.89	8.8	0.25	> 100	199	0.11	0.5	17
Meeker	04/08/2021 09:05	Grab	50	11.6	250.4	336.7	~ 11.28	8.6	0.16	67	123	0.06	1.8	37
Meeker	04/22/2021 08:10	Grab	45	7.5	194.5	292.3	~ 12.33	9.2	0.14	51	110	< 0.06	1.7	35
Meeker	05/07/2021 08:15	Grab	48	12.9	248.6	323.1	< 11.34	6.9	0.16	54	138	< 0.06	1.6	30
Meeker	05/21/2021 08:28	Grab	68	9.1	321.8	362.4	~ 9.67	8.0	0.17	75	147	< 0.06	1.9	26
Meeker	06/03/2021 08:05	Grab	73	21.3	374.2	402.9	< 8.08	8.7	0.19	64	169	< 0.06	2.6	27
Meeker	06/17/2021 08:15	Grab	80	25.5	417.9	413.9	~ 8.00	8.6	0.20	64	176	< 0.06	2.7	26
Meeker	07/01/2021 08:25	Grab	77	26.1	444.4	435.6	~ 6.83	7.9	0.21	87	167	< 0.06	1.5	< 15
Meeker	07/22/2021 08:40	Grab	77	26.5	473.9	461.1	< 7.41	8.4	0.22	63	173	< 0.06	2.5	21
Meeker	08/05/2021 08:25	Grab	70	25.4	454.6	451.4	~ 8.59	7.9	0.22	82	169	< 0.06	2.2	23
Meeker	08/19/2021 08:15	Grab	75	25.6	469.4	463.9	< 8.59	8.2	0.22	90	170	< 0.06	2.2	17
Meeker	09/02/2021 08:30	Grab	64	24.0	451.0	459.5	< 7.93	7.0	0.22	69	162	< 0.06	2.2	26
Meeker	09/16/2021 08:30	Grab	69	21.1	426.1	459.9	< 8.74	8.3	0.22	50	162	< 0.06	2.3	17
Meeker	10/07/2021 08:30	Grab	63	20.1	420.2	463.3	~ 9.17	8.5	0.22	> 100	177	< 0.06	1.6	19
Meeker	10/21/2021 08:15	Grab	45	14.8	364.8	452.8	~ 10.12	7.9	0.22	82	94	< 0.06	1.5	30
Meeker	11/04/2021 08:40	Grab	30	7.8	317.9	474.0	~ 12.52	8.0	0.23	> 100	193	< 0.06	0.8	18
Meeker	11/18/2021 09:05	Grab	29	2.1	254.7	452.0	< 13.42	7.7	0.22	> 100	185	< 0.06	0.9	< 15
Meeker	12/02/2021 09:25	Grab	41	4.4	278.5	459.5	< 12.86	8.6	0.22	> 100	187	< 0.06	1.5	< 15

2021 Mississippi River Water Quality Data - Ford continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Ford	04/08/2021 08:50	Grab	38.0	16.0	< 0.02	< 0.01	0.06	130	0.80	0.50	0.50	< 0.06	12.7	2.7
Ford	07/01/2021 07:55	Grab	39.0	27.5	< 0.02	0.01	0.06	169	0.57	0.27	0.27	< 0.06	15.1	2.2
Ford	11/04/2021 08:10	Grab	5.8	23.4	< 0.02	0.02	~ 0.02	185	0.52	0.91	0.91	< 0.06	21.8	0.8

2021 Mississippi River Water Quality Data - Meeker continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)	Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
Meeker	01/07/2021 09:20	Grab	5.4	22.8	< 0.02	< 0.01	~ 0.02	190	0.56	0.82	0.82	< 0.06	14.0	0.7
Meeker	03/04/2021 09:20	Grab	2.6	34.8	< 0.02	< 0.01	~ 0.03	185	0.60	1.12	1.12	< 0.06	16.4	0.9
Meeker	04/08/2021 09:05	Grab	36.0	16.5	~ 0.02	< 0.01	0.06	138	0.80	0.50	0.50	< 0.06	13.0	2.6
Meeker	04/22/2021 08:10	Grab	21.0	11.4	~ 0.04	< 0.01	0.10	134	0.78	0.47	0.47	< 0.06	10.0	1.9
Meeker	05/07/2021 08:15	Grab	37.0	12.7	< 0.02	< 0.01	0.06	137	0.67	0.28	0.28	< 0.06	11.1	2.0
Meeker	05/21/2021 08:28	Grab	30.0	17.2	~ 0.02	< 0.01	~ 0.03	137	0.77	0.29	0.29	< 0.06	12.1	2.5
Meeker	06/03/2021 08:05	Grab	53.0	18.8	< 0.02	< 0.01	0.06	160	0.96	0.46	0.46	< 0.06	13.9	3.4
Meeker	06/17/2021 08:15	Grab	57.0	21.1	~ 0.03	< 0.01	0.07	153	0.84	< 0.20	< 0.20	< 0.06	15.1	4.1
Meeker	07/01/2021 08:25	Grab	23.0	27.3	~ 0.03	0.02	0.07	178	0.62	0.38	0.38	< 0.06	15.2	2.0
Meeker	07/22/2021 08:40	Grab	37.0	36.1	< 0.02	< 0.01	~ 0.05	202	0.77	< 0.20	< 0.20	< 0.06	18.0	3.3
Meeker	08/05/2021 08:25	Grab	33.0	33.5	~ 0.04	< 0.01	0.06	197	0.73	< 0.20	< 0.20	< 0.06	16.8	2.9
Meeker	08/19/2021 08:15	Grab	25.0	37.9	< 0.02	< 0.01	~ 0.04	174	0.70	< 0.20	< 0.20	< 0.06	17.3	2.6
Meeker	09/02/2021 08:30	Grab	67.0	38.8	< 0.02	< 0.01	0.05	189	0.87	< 0.20	< 0.20	< 0.06	17.0	3.1
Meeker	09/16/2021 08:30	Grab	65.0	39.3	< 0.02	< 0.01	~ 0.05	155	0.83	< 0.20	< 0.20	< 0.06	18.9	3.6
Meeker	10/07/2021 08:30	Grab	25.0	29.2	~ 0.02	0.01	~ 0.04	168	0.60	0.32	0.32	< 0.06	19.8	1.6
Meeker	10/21/2021 08:15	Grab	11.0	23.3	~ 0.03	0.02	0.10	144	0.67	0.61	0.61	< 0.06	19.8	1.5
Meeker	11/04/2021 08:40	Grab	6.2	23.2	~ 0.03	0.02	~ 0.03	183	0.58	0.92	0.92	< 0.06	22.2	0.8
Meeker	11/18/2021 09:05	Grab	6.9	21.9	< 0.02	< 0.01	~ 0.04	166	0.58	0.68	0.68	< 0.06	19.1	0.9
Meeker	12/02/2021 09:25	Grab	6.7	23.2	< 0.02	< 0.01	~ 0.02	177	0.43	0.80	0.80	< 0.06	19.4	1.0

2021 Mississippi River Water Quality Data - Ford continued

Station	Sample Time	Sample type	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Ford	04/08/2021 08:50	Grab							204	9.9	17	5
Ford	07/01/2021 07:55	Grab							254	6.6	6	4
Ford	11/04/2021 08:10	Grab	< 0.1000	< 1.0000	0.6700	< 0.5000	0.7400	< 5.0000	280	7.2	3	~ 1

2021 Mississippi River Water Quality Data - Meeker continued

Station	Sample Time	Sample type	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Meeker	01/07/2021 09:20	Grab							259	7.2	~ 2	~ 1
Meeker	03/04/2021 09:20	Grab							302	5.8	~ 2	~ 2
Meeker	04/08/2021 09:05	Grab							209	10.4	16	4
Meeker	04/22/2021 08:10	Grab							190	11.7	14	< 1
Meeker	05/07/2021 08:15	Grab							196	10.6	14	5
Meeker	05/21/2021 08:28	Grab							214	9.2	11	5
Meeker	06/03/2021 08:05	Grab							243	9.2	11	5
Meeker	06/17/2021 08:15	Grab							249	8.0	10	7
Meeker	07/01/2021 08:25	Grab							254	6.4	5	3
Meeker	07/22/2021 08:40	Grab							274	7.0	8	5
Meeker	08/05/2021 08:25	Grab							263	6.3	8	5
Meeker	08/19/2021 08:15	Grab							273	6.9	6	4
Meeker	09/02/2021 08:30	Grab							138	6.3	12	7
Meeker	09/16/2021 08:30	Grab							267	7.5	16	9
Meeker	10/07/2021 08:30	Grab							258	6.4	6	3
Meeker	10/21/2021 08:15	Grab							282	7.4	7	3
Meeker	11/04/2021 08:40	Grab	< 0.1000	< 1.0000	0.6800	< 0.5000	0.7500	< 5.0000	288	7.2	3	~ 1
Meeker	11/18/2021 09:05	Grab							252	7.2	~ 1	~ 1
Meeker	12/02/2021 09:25	Grab	< 0.1000	< 1.0000	< 0.5000	< 0.5000	0.5900	< 5.0000	276	7.3	~ 2	~ 1

2021 Mississippi River Water Quality Data - Wash

Station	Sample Time	Sample type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical	
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)				Nitrogen (mg/L)	Oxygen Demand 5-day (mg/L)		
Wash	01/07/2021 09:55	Grab	23	-0.2	227.9	439.7	14.28	8.7	0.21	> 100	173	0.07	1.2	25
Wash	02/04/2021 10:15	Grab	24	-0.2	238.5	460.5	13.94	8.4	0.22	> 100	196	0.08	0.8	< 15
Wash	03/04/2021 09:55	Grab	37	3.4	294.3	501.0	13.32	8.4	0.24	> 100	202	0.11	0.8	< 15
Wash	04/08/2021 09:15	Grab	50	11.4	245.6	331.4	11.29	8.5	0.16	57	129	< 0.06	1.7	31
Wash	04/22/2021 08:25	Grab	45	7.3	195.2	294.9	13.34	8.7	0.14	47	114	< 0.06	1.7	31
Wash	05/07/2021 08:25	Grab	48	12.8	247.7	323.2	11.58	7.0	0.16	40	142	< 0.06	1.7	34
Wash	05/21/2021 08:38	Grab	68	19.2	320.9	361.2	9.56	7.8	0.17	63	147	0.14	2.0	26
Wash	06/03/2021 08:20	Grab	75	20.9	371.4	403.1	9.07	8.1	0.19	64	161	< 0.06	2.6	35
Wash	06/17/2021 08:25	Grab	81	26.1	420.5	412.0	8.40	8.4	0.20	64	175	< 0.06	2.8	24
Wash	07/01/2021 08:50	Grab	79	27.1	451.5	434.1	7.75	7.9	0.21	85	164	< 0.06	1.2	< 15
Wash	07/22/2021 08:55	Grab	77	26.7	470.7	455.9	7.57	8.1	0.22	63	166	< 0.06	2.4	21
Wash	08/05/2021 08:55	Grab	70	25.0	451.7	451.7	8.23	7.9	0.22	74	167	< 0.06	2.1	23
Wash	08/19/2021 08:30	Grab	78	25.9	475.8	467.7	8.35	8.0	0.22	87	172	< 0.06	1.7	17
Wash	09/02/2021 08:45	Grab	68	24.1	450.5	458.5	8.41	6.9	0.22	68	155	< 0.06	2.3	26
Wash	09/16/2021 08:45	Grab	70	20.8	425.7	463.2	8.87	8.0	0.22	52	169	< 0.06	2.4	19
Wash	10/07/2021 08:40	Grab	63	20.7	428.6	467.3	9.54	7.7	0.23	95	177	< 0.06	1.4	21
Wash	10/21/2021 08:30	Grab	45	14.7	365.0	454.7	10.50	7.2	0.22	98	194	< 0.06	1.3	24
Wash	11/04/2021 09:15	Grab	30	7.6	317.9	476.1	12.84	7.8	0.23	> 100	194	< 0.06	1.0	18
Wash	11/18/2021 09:30	Grab	29	2.7	265.4	463.1	13.03	7.9	0.22	> 100	190	< 0.06	1.0	< 15
Wash	12/02/2021 09:55	Grab	41	4.0	276.1	460.8	12.94	8.6	0.22	> 100	182	< 0.06	1.2	< 15

2021 Mississippi River Water Quality Data - Wash continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total		Nitrate (mg/L)	Nitrate-		Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
									Kjeldahl Nitrogen (mg/L)	Nitrite (mg/L)		Nitrite (mg/L)	Nitrite (mg/L)		
Wash	01/07/2021 09:55	Grab	8.8	23.2	< 0.02	< 0.01	~ 0.03	175	0.60	0.92	0.92	< 0.06	13.2	0.8	
Wash	02/04/2021 10:15	Grab	2.2	22.7	< 0.02	< 0.01	~ 0.03	198	0.53	0.85	0.85	< 0.06	14.1	0.7	
Wash	03/04/2021 09:55	Grab	3.1	32.8	< 0.02	< 0.01	~ 0.03	183	0.59	1.14	1.14	< 0.06	16.1	0.9	
Wash	04/08/2021 09:15	Grab	35.0	15.6	< 0.02	< 0.01	0.06	132	0.73	0.51	0.51	< 0.06	12.3	2.5	
Wash	04/22/2021 08:25	Grab	21.0	11.4	< 0.02	< 0.01	0.08	131	0.79	0.42	0.42	< 0.06	10.2	1.8	
Wash	05/07/2021 08:25	Grab	35.0	12.8	< 0.02	< 0.01	0.05	139	0.71	0.29	0.29	< 0.06	11.3	2.0	
Wash	05/21/2021 08:38	Grab	31.0	17.0	< 0.02	< 0.01	0.05	130	0.98	0.28	0.28	< 0.06	12.1	2.6	
Wash	06/03/2021 08:20	Grab	56.0	19.1	< 0.02	< 0.01	0.06	138	0.87	0.46	0.46	< 0.06	13.7	3.3	
Wash	06/17/2021 08:25	Grab	54.0	21.0	< 0.02	< 0.01	0.07	152	0.86	< 0.20	< 0.20	< 0.06	14.4	3.9	
Wash	07/01/2021 08:50	Grab	18.0	25.6	~ 0.03	0.02	~ 0.04	182	0.54	0.44	0.44	< 0.06	14.8	1.5	
Wash	07/22/2021 08:55	Grab	32.0	35.7	< 0.02	< 0.01	~ 0.04	193	0.76	< 0.20	< 0.20	< 0.06	17.9	2.8	
Wash	08/05/2021 08:55	Grab	25.0	32.6	< 0.02	< 0.01	0.05	174	0.73	< 0.20	< 0.20	< 0.06	17.1	2.7	
Wash	08/19/2021 08:30	Grab	23.0	37.8	< 0.02	< 0.01	0.05	161	0.72	< 0.20	< 0.20	< 0.06	17.8	2.3	
Wash	09/02/2021 08:45	Grab	62.0	39.2	~ 0.03	< 0.01	0.11	175	0.82	< 0.20	< 0.20	< 0.06	17.1	3.1	
Wash	09/16/2021 08:45	Grab	77.0	34.5	< 0.02	< 0.01	0.05	158	0.86	< 0.20	< 0.20	< 0.06	18.8	3.3	
Wash	10/07/2021 08:40	Grab	27.0	29.5	~ 0.02	< 0.01	~ 0.05	160	0.60	0.30	0.30	< 0.06	20.4	1.4	
Wash	10/21/2021 08:30	Grab	9.5	24.1	0.06	0.03	0.11	182	0.72	3.65	3.65	< 0.06	20.0	1.2	
Wash	11/04/2021 09:15	Grab	6.3	22.7	~ 0.03	0.02	0.06	160	0.59	0.98	0.98	< 0.06	22.4	0.9	
Wash	11/18/2021 09:30	Grab	7.6	23.8	< 0.02	< 0.01	~ 0.03	276	0.63	0.74	0.74	< 0.06	19.8	0.9	
Wash	12/02/2021 09:55	Grab	7.9	24.3	< 0.02	< 0.01	< 0.02	167	0.49	0.85	0.85	< 0.06	19.2	1.0	

2021 Mississippi River Water Quality Data - Wash continued

Station	Sample Time	Sample type	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Wash	01/07/2021 09:55	Grab							256	7.2	4	~ 1
Wash	02/04/2021 10:15	Grab							269	7.1	~ 2	< 1
Wash	03/04/2021 09:55	Grab							294	6.1	~ 2	~ 2
Wash	04/08/2021 09:15	Grab							206	10.1	18	5
Wash	04/22/2021 08:25	Grab							187	11.6	15	~ 3
Wash	05/07/2021 08:25	Grab							191	10.8	14	5
Wash	05/21/2021 08:38	Grab							217	9.2	12	5
Wash	06/03/2021 08:20	Grab							245	9.5	14	6
Wash	06/17/2021 08:25	Grab							245	8.4	11	8
Wash	07/01/2021 08:50	Grab							246	6.5	5	~ 2
Wash	07/22/2021 08:55	Grab							266	6.9	8	5
Wash	08/05/2021 08:55	Grab							262	6.8	8	5
Wash	08/19/2021 08:30	Grab							271	7.4	7	4
Wash	09/02/2021 08:45	Grab							266	6.5	14	8
Wash	09/16/2021 08:45	Grab							271	6.7	16	9
Wash	10/07/2021 08:40	Grab							264	6.5	7	3
Wash	10/21/2021 08:30	Grab							276	7.3	7	3
Wash	11/04/2021 09:15	Grab	< 0.1000	< 1.0000	0.7300	< 0.5000	0.7000	< 5.0000	282	7.2	4	~ 2
Wash	11/18/2021 09:30	Grab							249	7.1	~ 2	~ 2
Wash	12/02/2021 09:55	Grab	< 0.1000	< 1.0000	< 0.5000	< 0.5000	0.5900	< 5.0000	275	7.4	~ 2	~ 1

2021 Mississippi River Water Quality Data - Boom

Station	Sample Time	Sample type	Air	Water	Conductivity (µS/cm)	Specific	Dissolved	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia	Carbonaceous	Chemical	
			Temperature (°F)	Temperature (°C)		Conductivity (µS/cm)	Oxygen (mg/L)				Nitrogen (mg/L)	Biological Demand 5-day (mg/L)	Oxygen Demand (mg/L)	
Boom	01/07/2021 09:15	Grab	23	-0.1	228.7	438.5	14.08	9.2	0.21	> 100	181	0.08	1.0	16
Boom	02/04/2021 09:35	Grab	27	0.1	232.0	442.1	13.68	9.1	0.21	> 100	191	0.08	0.5	< 15
Boom	03/04/2021 09:00	Grab	34	4.2	283.2	468.7	12.93	8.3	0.23	> 100	198	0.10	0.5	< 15
Boom	04/08/2021 10:10	Grab	50	11.2	237.8	322.9	10.55	8.7	0.16	76	120	< 0.06	1.6	35
Boom	04/22/2021 09:10	Grab	48	7.2	184.3	279.0	12.42	8.6	0.13	57	108	< 0.06	1.5	35
Boom	05/07/2021 09:15	Grab	48	12.8	243.5	317.6	10.92	7.4	0.15	65	132	< 0.06	1.7	108
Boom	05/21/2021 09:32	Grab	72	19.4	317.3	355.2	8.95	8.1	0.17	85	144	< 0.06	1.8	27
Boom	06/03/2021 09:35	Grab	80	21.2	363.1	391.8	8.97	8.2	0.19	66	164	< 0.06	2.4	27
Boom	06/17/2021 09:10	Grab	83	25.9	416.4	409.0	8.05	8.6	0.19	68	178	< 0.06	2.6	24
Boom	07/01/2021 09:10	Grab	79	27.7	439.6	417.6	7.33	7.9	0.20	79	161	< 0.06	1.0	< 15
Boom	07/22/2021 10:15	Grab	81	26.7	454.1	439.8	9.14	8.1	0.21	68	167	< 0.06	2.8	23
Boom	08/05/2021 10:25	Grab	75	25.7	444.2	438.0	8.44	7.6	0.21	69	167	< 0.06	2.3	19
Boom	08/19/2021 09:55	Grab	80	26.7	463.3	448.4	7.74	8.1	0.21	80	167	< 0.06	2.4	17
Boom	09/02/2021 10:25	Grab	68	24.1	436.2	444.1	9.39	7.3	0.21	69	171	< 0.06	2.3	30
Boom	09/16/2021 10:15	Grab	76	20.4	409.2	448.5	10.53	8.3	0.22	56	162	< 0.06	2.2	23
Boom	10/07/2021 10:05	Grab	65	20.3	429.6	471.7	8.16	7.6	0.23	> 100	174	< 0.06	1.5	21
Boom	10/21/2021 09:20	Grab	45	14.4	358.9	450.0	9.68	7.4	0.22	> 100	190	< 0.06	1.3	26
Boom	11/04/2021 08:00	Grab	30	6.4	300.8	466.3	12.23	7.8	0.23	> 100	192	< 0.06	0.9	18
Boom	11/18/2021 08:55	Grab	28	3.5	265.0	449.0	13.19	8.8	0.22	> 100	188	< 0.06	0.9	< 15
Boom	12/02/2021 09:05	Grab	39	4.6	271.6	445.6	12.01	8.7	0.21	> 100	179	< 0.06	1.6	< 15

2021 Mississippi River Water Quality Data - Boom continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total		Nitrate-Nitrite (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)
									Kjeldahl Nitrogen (mg/L)	Nitrate (mg/L)			
Boom	01/07/2021 09:15	Grab	7.9	18.4	< 0.02	< 0.01	~ 0.03	173	0.58	0.79	0.79	< 0.06	12.7
Boom	02/04/2021 09:35	Grab	2.6	19.0	< 0.02	< 0.01	~ 0.02	173	0.52	1.01	1.01	< 0.06	13.1
Boom	03/04/2021 09:00	Grab	2.6	27.7	< 0.02	< 0.01	~ 0.03	203	0.61	1.06	1.06	< 0.06	15.3
Boom	04/08/2021 10:10	Grab	29.0	14.0	< 0.02	0.01	0.07	137	0.81	0.51	0.51	< 0.06	11.7
Boom	04/22/2021 09:10	Grab	19.0	11.0	~ 0.03	< 0.01	0.10	120	0.74	0.36	0.36	< 0.06	8.8
Boom	05/07/2021 09:15	Grab	32.0	12.1	~ 0.02	< 0.01	~ 0.04	124	0.71	0.26	0.26	< 0.06	10.6
Boom	05/21/2021 09:32	Grab	29.0	16.2	< 0.02	< 0.01	0.05	136	0.77	0.29	0.29	< 0.06	11.1
Boom	06/03/2021 09:35	Grab	58.0	17.5	< 0.02	< 0.01	0.07	156	0.88	0.42	0.42	< 0.06	12.7
Boom	06/17/2021 09:10	Grab	63.0	20.3	< 0.02	< 0.01	0.07	159	0.85	< 0.20	< 0.20	< 0.06	15.0
Boom	07/01/2021 09:10	Grab	14.0	22.9	~ 0.04	0.02	0.11	185	0.62	0.44	0.44	< 0.06	13.7
Boom	07/22/2021 10:15	Grab	42.0	32.3	~ 0.02	< 0.01	~ 0.05	191	0.70	< 0.20	< 0.20	< 0.06	16.8
Boom	08/05/2021 10:25	Grab	36.0	29.9	< 0.02	< 0.01	~ 0.03	172	0.80	< 0.20	< 0.20	< 0.06	15.9
Boom	08/19/2021 09:55	Grab	30.0	33.6	< 0.02	< 0.01	~ 0.04	171	0.74	< 0.20	< 0.20	< 0.06	16.1
Boom	09/02/2021 10:25	Grab	68.0	35.5	< 0.02	< 0.01	< 0.02	170	0.88	< 0.20	< 0.20	< 0.06	16.7
Boom	09/16/2021 10:15	Grab	72.0	32.2	< 0.02	< 0.01	~ 0.05	151	0.71	< 0.20	< 0.20	< 0.06	18.5
Boom	10/07/2021 10:05	Grab	24.0	27.5	~ 0.03	0.01	~ 0.04	200	0.66	0.34	0.34	< 0.06	20.9
Boom	10/21/2021 09:20	Grab	9.9	23.1	~ 0.04	0.02	0.07	153	0.64	0.77	0.77	< 0.06	19.7
Boom	11/04/2021 08:00	Grab	7.5	21.3	~ 0.03	0.02	~ 0.04	204	0.62	1.07	1.07	< 0.06	21.2
Boom	11/18/2021 08:55	Grab	7.7	19.9	< 0.02	< 0.01	~ 0.02	159	0.57	0.72	0.72	< 0.06	19.0
Boom	12/02/2021 09:05	Grab	12.0	20.4	< 0.02	< 0.01	~ 0.02	159	0.49	0.87	0.87	< 0.06	18.4

2021 Mississippi River Water Quality Data - Boom continued

Station	Sample Time	Sample type	Total Biological Oxygen Demand 5-day (mg/L)	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Boom	01/07/2021 09:15	Grab	0.6							253	7.1	4	~ 1
Boom	02/04/2021 09:35	Grab	0.9							256	7.0	~ 2	~ 1
Boom	03/04/2021 09:00	Grab	0.7							286	6.0	~ 1	~ 1
Boom	04/08/2021 10:10	Grab	2.3							209	10.5	15	4
Boom	04/22/2021 09:10	Grab	1.7							184	11.4	13	~ 2
Boom	05/07/2021 09:15	Grab	2.1							189	10.6	11	4
Boom	05/21/2021 09:32	Grab	2.2							217	9.3	11	5
Boom	06/03/2021 09:35	Grab	3.0							237	9.6	13	6
Boom	06/17/2021 09:10	Grab	4.2							243	8.2	8	7
Boom	07/01/2021 09:10	Grab	1.4							235	6.5	3	~ 2
Boom	07/22/2021 10:15	Grab	3.6							262	7.6	9	5
Boom	08/05/2021 10:25	Grab	2.8							257	6.7	8	5
Boom	08/19/2021 09:55	Grab	3.2							254	6.5	8	5
Boom	09/02/2021 10:25	Grab	3.0							253	6.7	13	7
Boom	09/16/2021 10:15	Grab	3.1							264	7.0	12	7
Boom	10/07/2021 10:05	Grab	1.4							273	6.6	5	~ 2
Boom	10/21/2021 09:20	Grab	1.6							269	7.4	6	~ 2
Boom	11/04/2021 08:00	Grab	1.1	< 0.1000	< 1.0000	0.7800	< 0.5000	0.9600	< 5.0000	284	7.3	5	~ 2
Boom	11/18/2021 08:55	Grab	0.9							241	7.3	~ 2	~ 2
Boom	12/02/2021 09:05	Grab	0.9	< 0.1000	< 1.0000	< 0.5000	< 0.5000	0.6300	< 5.0000	263	7.5	~ 2	~ 1

2021 Mississippi River Water Quality Data - MWMO

Station	Sample Time	Sample type	Air	Water	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia Nitrogen (mg/L)	Carbonaceous	Chemical		
			Temperature (°F)	Temperature (°C)							Oxygen Demand	Oxygen Demand		
MWMO	01/07/2021 10:15	Grab	22	0.2	226.9	430.8	14.13	8.8	0.20	> 100	185	0.08	1.0	18
MWMO	02/04/2021 10:05	Grab	21	0.4	234.1	442.2	13.51	8.7	0.21	> 100	194	0.08	1.0	< 15
MWMO	03/04/2021 09:35	Grab	37	4.3	286.7	475.0	12.87	8.2	0.23	> 100	202	0.11	0.5	16
MWMO	04/08/2021 10:20	Grab	50	11.0	235.6	321.2	10.90	8.5	0.15	76	121	< 0.06	1.4	33
MWMO	04/22/2021 09:25	Grab	50	7.2	183.4	277.8	12.18	8.7	0.13	57	113	< 0.06	1.1	31
MWMO	05/07/2021 09:25	Grab	48	12.8	241.0	314.6	11.02	7.4	0.15	60	141	< 0.06	1.8	28
MWMO	05/21/2021 09:40	Grab	70	19.5	317.5	355.0	9.12	8.1	0.17	81	144	< 0.06	1.8	26
MWMO	06/03/2021 09:45	Grab	80	21.5	366.5	392.2	9.36	8.2	0.19	57	170	< 0.06	2.5	33
MWMO	06/17/2021 09:20	Grab	83	25.2	416.7	415.0	7.31	5.3	0.20	78	178	< 0.06	2.4	22
MWMO	07/01/2021 09:35	Grab	79	27.4	436.9	418.0	6.60	7.9	0.20	96	164	< 0.06	1.1	< 15
MWMO	07/22/2021 10:05	Grab	81	26.6	452.2	438.8	8.90	8.1	0.21	68	149	< 0.06	2.5	23
MWMO	08/05/2021 10:15	Grab	75	26.3	448.4	437.6	8.65	7.5	0.21	64	166	< 0.06	2.0	19
MWMO	08/19/2021 09:40	Grab	80	26.6	464.8	451.4	8.28	8.1	0.22	79	165	< 0.06	2.4	17
MWMO	09/02/2021 10:10	Grab	68	23.6	433.6	445.2	7.36	7.3	0.21	68	158	< 0.06	2.3	26
MWMO	09/16/2021 10:10	Grab	74	19.5	403.5	450.6	8.83	8.0	0.22	56	173	< 0.06	2.3	19
MWMO	10/07/2021 10:15	Grab	65	19.8	428.8	475.8	8.08	7.7	0.23	> 100	179	< 0.06	1.2	22
MWMO	10/21/2021 09:30	Grab	45	14.4	360.8	451.9	9.81	7.5	0.22	> 100	94	< 0.06	1.4	24
MWMO	11/04/2021 08:40	Grab	32	6.9	303.0	463.1	12.17	7.8	0.22	> 100	191	< 0.06	1.1	18
MWMO	11/18/2021 09:25	Grab	28	2.8	253.5	440.3	13.22	8.2	0.21	> 100	181	< 0.06	1.2	< 15
MWMO	12/02/2021 09:40	Grab	40	4.2	264.8	439.2	12.96	8.6	0.21	> 100	182	< 0.06	1.1	< 15

2021 Mississippi River Water Quality Data - MWMO continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen		Nitrate-Nitrite		Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
									Nitrogen (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Nitrite (mg/L)		
MWMO	01/07/2021 10:15	Grab	8.0	24.6	< 0.02	< 0.01	~ 0.03	173	0.64	0.89	0.89	< 0.06	12.5	0.6
MWMO	02/04/2021 10:05	Grab	2.2	19.6	< 0.02	< 0.01	~ 0.03	203	0.52	0.97	0.97	< 0.06	13.2	0.9
MWMO	03/04/2021 09:35	Grab	2.7	26.3	~ 0.03	< 0.01	< 0.02	170	0.57	1.15	1.15	< 0.06	15.1	0.8
MWMO	04/08/2021 10:20	Grab	33.0	13.7	< 0.02	< 0.01	0.08	147	0.84	0.52	0.52	< 0.06	11.9	2.3
MWMO	04/22/2021 09:25	Grab	19.0	10.6	< 0.02	< 0.01	0.07	122	0.76	0.41	0.41	< 0.06	9.2	1.6
MWMO	05/07/2021 09:25	Grab	31.0	11.8	< 0.02	< 0.01	0.06	139	0.76	0.26	0.26	< 0.06	10.1	2.1
MWMO	05/21/2021 09:40	Grab	30.0	16.8	~ 0.02	< 0.01	0.06	152	0.60	0.30	0.30	< 0.06	10.9	2.2
MWMO	06/03/2021 09:45	Grab	60.0	18.4	< 0.02	< 0.01	0.07	152	0.92	0.44	0.44	< 0.06	13.0	2.9
MWMO	06/17/2021 09:20	Grab	58.0	20.5	~ 0.04	< 0.01	0.07	144	0.87	< 0.20	< 0.20	< 0.06	15.3	3.4
MWMO	07/01/2021 09:35	Grab	14.0	23.4	< 0.02	0.02	~ 0.04	172	0.48	0.45	0.45	< 0.06	13.6	1.3
MWMO	07/22/2021 10:05	Grab	47.0	32.5	< 0.02	< 0.01	~ 0.05	187	0.78	< 0.20	< 0.20	< 0.06	16.6	3.5
MWMO	08/05/2021 10:15	Grab	33.0	29.8	~ 0.03	< 0.01	0.06	175	0.72	< 0.20	< 0.20	< 0.06	15.8	2.9
MWMO	08/19/2021 09:40	Grab	29.0	33.8	< 0.02	< 0.01	~ 0.04	166	0.73	< 0.20	< 0.20	< 0.06	16.6	2.9
MWMO	09/02/2021 10:10	Grab	72.0	34.6	< 0.02	< 0.01	~ 0.03	154	0.83	< 0.20	< 0.20	< 0.06	16.7	3.0
MWMO	09/16/2021 10:10	Grab	74.0	32.2	< 0.02	< 0.01	0.05	147	0.85	< 0.20	< 0.20	< 0.06	18.2	3.2
MWMO	10/07/2021 10:15	Grab	23.0	28.2	~ 0.02	0.01	~ 0.05	168	0.66	0.35	0.35	< 0.06	21.6	1.4
MWMO	10/21/2021 09:30	Grab	10.0	23.9	~ 0.03	0.02	0.08	164	0.61	0.61	0.61	< 0.06	19.6	1.3
MWMO	11/04/2021 08:40	Grab	6.2	20.7	~ 0.03	0.02	~ 0.05	146	0.61	1.05	1.05	< 0.06	21.2	0.9
MWMO	11/18/2021 09:25	Grab	7.7	20.7	0.06	< 0.01	< 0.02	164	0.56	0.69	0.69	< 0.06	18.3	1.1
MWMO	12/02/2021 09:40	Grab	7.1	23.0	< 0.02	< 0.01	~ 0.03	187	0.40	0.84	0.84	< 0.06	19.9	1.1

2021 Mississippi River Water Quality Data - MWMO continued

Station	Sample Time	Sample type	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
MWMO	01/07/2021 10:15	Grab							249	7.0	4	~ 2
MWMO	02/04/2021 10:05	Grab							241	6.7	~ 2	~ 1
MWMO	03/04/2021 09:35	Grab							284	5.9	~ 1	~ 1
MWMO	04/08/2021 10:20	Grab							200	10.5	17	5
MWMO	04/22/2021 09:25	Grab							182	11.6	14	~ 2
MWMO	05/07/2021 09:25	Grab							187	10.5	13	5
MWMO	05/21/2021 09:40	Grab							217	9.5	11	5
MWMO	06/03/2021 09:45	Grab							245	9.8	14	5
MWMO	06/17/2021 09:20	Grab							245	8.4	8	6
MWMO	07/01/2021 09:35	Grab							241	6.5	3	3
MWMO	07/22/2021 10:05	Grab							262	6.8	9	5
MWMO	08/05/2021 10:15	Grab							254	6.4	9	5
MWMO	08/19/2021 09:40	Grab							266	6.5	8	4
MWMO	09/02/2021 10:10	Grab							266	6.8	12	7
MWMO	09/16/2021 10:10	Grab							276	6.6	13	8
MWMO	10/07/2021 10:15	Grab							272	6.6	6	3
MWMO	10/21/2021 09:30	Grab							274	7.3	8	~ 2
MWMO	11/04/2021 08:40	Grab	< 0.1000	< 1.0000	0.7600	< 0.5000	0.7500	< 5.0000	279	7.3	4	~ 2
MWMO	11/18/2021 09:25	Grab							240	7.3	3	~ 2
MWMO	12/02/2021 09:40	Grab							256	7.5	~ 2	~ 1

2021 Mississippi River Water Quality Data - Shingle Up

Station	Sample Time	Sample type	Air	Water	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Salinity pH (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia Nitrogen (mg/L)	Carbonaceous	Chemical		
			Temperature (°F)	Temperature (°C)							Biological Oxygen Demand (mg/L)	Oxygen Demand 5-day (mg/L)		
Shingle Up	02/04/2021 10:55	Grab	21	0.3	235.0	444.5	14.29	8.6	0.21	> 100	198	0.09	0.7	< 15
Shingle Up	03/04/2021 10:10	Grab	38	3.9	280.6	470.8	12.98	8.3	0.23	> 100	198	0.10	0.5	< 15
Shingle Up	04/08/2021 10:35	Grab	50	10.9	233.2	319.0	11.00	8.4	0.15	68	123	< 0.06	1.4	27
Shingle Up	04/22/2021 09:35	Grab	50	7.2	189.4	286.5	12.85	8.6	0.14	50	115	< 0.06	1.3	33
Shingle Up	05/07/2021 09:35	Grab	48	12.8	243.9	318.0	11.21	7.6	0.15	53	141	< 0.06	2.0	32
Shingle Up	05/21/2021 09:50	Grab	70	19.6	325.9	363.5	9.53	8.0	0.17	87	137	< 0.06	1.9	24
Shingle Up	06/03/2021 09:55	Grab	80	21.8	371.6	395.5	9.89	8.2	0.19	48	168	< 0.06	2.6	33
Shingle Up	06/17/2021 09:25	Grab	84	25.2	415.0	413.4	8.23	8.2	0.20	76	174	< 0.06	2.5	22
Shingle Up	07/01/2021 09:55	Grab	82	26.4	425.4	414.5	6.99	7.9	0.20	90	161	< 0.06	1.0	< 15
Shingle Up	07/22/2021 09:55	Grab	81	26.0	448.3	440.3	7.43	8.4	0.21	75	170	< 0.06	1.9	21
Shingle Up	08/05/2021 10:00	Grab	75	23.6	422.2	433.9	7.62	7.5	0.21	77	168	< 0.06	2.0	25
Shingle Up	08/19/2021 09:30	Grab	75	25.3	446.3	443.4	7.65	8.1	0.21	80	164	< 0.06	2.5	19
Shingle Up	09/02/2021 10:00	Grab	68	22.6	413.7	433.8	8.01	7.3	0.21	69	169	< 0.06	2.4	30
Shingle Up	09/16/2021 10:00	Grab	73	19.3	398.9	447.5	8.92	8.3	0.22	55	160	< 0.06	2.1	21
Shingle Up	10/07/2021 10:20	Grab	65	19.4	423.6	474.3	8.84	7.6	0.23	> 100	179	< 0.06	1.4	24
Shingle Up	10/21/2021 09:40	Grab	45	13.7	354.3	451.8	10.10	7.4	0.22	> 100	94	< 0.06	1.3	23
Shingle Up	11/04/2021 09:10	Grab	37	7.0	303.8	463.7	12.23	7.8	0.22	> 100	194	< 0.06	1.0	16
Shingle Up	11/18/2021 09:55	Grab	29	2.8	259.2	449.4	13.29	8.0	0.22	> 100	188	< 0.06	1.2	< 15
Shingle Up	12/02/2021 10:05	Grab	41	3.9	261.2	437.5	13.17	8.6	0.21	> 100	196	< 0.06	1.3	< 15

2021 Mississippi River Water Quality Data - Shingle Up continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen		Nitrate-Nitrite		Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
									Nitrogen (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Nitrite (mg/L)		
Shingle Up	02/04/2021 10:55	Grab	3.1	18.5	< 0.02	< 0.01	~ 0.03	212	0.50	0.96	0.96	< 0.06	13.7	1.1
Shingle Up	03/04/2021 10:10	Grab	3.2	24.1	< 0.02	< 0.01	~ 0.03	186	0.56	1.06	1.06	< 0.06	15.0	0.7
Shingle Up	04/08/2021 10:35	Grab	30.0	12.7	~ 0.02	< 0.01	0.06	139	0.82	0.53	0.53	< 0.06	12.0	2.3
Shingle Up	04/22/2021 09:35	Grab	21.0	12.3	< 0.02	< 0.01	0.06	134	0.78	0.42	0.42	< 0.06	9.9	1.7
Shingle Up	05/07/2021 09:35	Grab	35.0	12.1	< 0.02	< 0.01	0.06	138	0.76	0.29	0.29	< 0.06	11.6	2.2
Shingle Up	05/21/2021 09:50	Grab	34.0	15.1	< 0.02	< 0.01	~ 0.04	141	0.75	0.27	0.27	< 0.06	11.9	2.2
Shingle Up	06/03/2021 09:55	Grab	64.0	17.5	< 0.02	< 0.01	0.06	170	1.00	0.49	0.49	< 0.06	13.7	3.2
Shingle Up	06/17/2021 09:25	Grab	61.0	19.8	< 0.02	< 0.01	0.07	167	0.87	< 0.20	< 0.20	< 0.06	15.4	3.5
Shingle Up	07/01/2021 09:55	Grab	10.0	22.2	< 0.02	0.02	0.05	177	0.57	0.42	0.42	< 0.06	13.6	1.2
Shingle Up	07/22/2021 09:55	Grab	43.0	31.4	~ 0.04	< 0.01	~ 0.04	181	0.66	< 0.20	< 0.20	< 0.06	16.0	2.9
Shingle Up	08/05/2021 10:00	Grab	33.0	30.0	< 0.02	< 0.01	0.06	172	0.72	< 0.20	< 0.20	< 0.06	15.4	2.8
Shingle Up	08/19/2021 09:30	Grab	35.0	32.2	< 0.02	< 0.01	0.07	163	0.92	< 0.20	< 0.20	< 0.06	15.9	3.1
Shingle Up	09/02/2021 10:00	Grab	74.0	31.9	< 0.02	< 0.01	~ 0.05	164	2.00	< 0.20	< 0.20	< 0.06	16.5	3.0
Shingle Up	09/16/2021 10:00	Grab	76.0	32.9	< 0.02	< 0.01	~ 0.05	157	0.87	< 0.20	< 0.20	< 0.06	17.9	3.0
Shingle Up	10/07/2021 10:20	Grab	31.0	27.8	< 0.02	0.01	0.09	180	0.73	0.32	0.32	< 0.06	23.0	1.7
Shingle Up	10/21/2021 09:40	Grab	9.5	22.1	~ 0.03	0.02	0.11	170	0.67	0.63	0.63	< 0.06	19.7	1.2
Shingle Up	11/04/2021 09:10	Grab	6.2	20.5	~ 0.03	0.02	~ 0.04	192	0.54	1.12	1.12	< 0.06	21.7	1.0
Shingle Up	11/18/2021 09:55	Grab	8.0	19.1	~ 0.03	< 0.01	~ 0.04	181	0.62	0.72	0.72	< 0.06	20.3	1.1
Shingle Up	12/02/2021 10:05	Grab	7.5	19.5	< 0.02	< 0.01	~ 0.02	180	0.41	0.83	0.83	< 0.06	18.7	1.0

2021 Mississippi River Water Quality Data - Shingle Up continued

Station	Sample Time	Sample type	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Shingle Up	02/04/2021 10:55	Grab							246	7.6	~ 2	~ 1
Shingle Up	03/04/2021 10:10	Grab							282		~ 1	~ 1
Shingle Up	04/08/2021 10:35	Grab							202	10.6	18	5
Shingle Up	04/22/2021 09:35	Grab							178	11.6	14	3
Shingle Up	05/07/2021 09:35	Grab							191	10.6	16	6
Shingle Up	05/21/2021 09:50	Grab							222	8.7	12	5
Shingle Up	06/03/2021 09:55	Grab							238	9.4	13	6
Shingle Up	06/17/2021 09:25	Grab							251	7.9	9	6
Shingle Up	07/01/2021 09:55	Grab							245	6.6	3	~ 2
Shingle Up	07/22/2021 09:55	Grab							261	7.6	8	5
Shingle Up	08/05/2021 10:00	Grab							252	6.4	7	4
Shingle Up	08/19/2021 09:30	Grab							254	6.8	20	7
Shingle Up	09/02/2021 10:00	Grab							251	6.5	13	7
Shingle Up	09/16/2021 10:00	Grab							254	6.8	13	7
Shingle Up	10/07/2021 10:20	Grab							272	6.7	7	3
Shingle Up	10/21/2021 09:40	Grab							281	7.1	6	~ 2
Shingle Up	11/04/2021 09:10	Grab	< 0.1000	< 1.0000	0.7100	< 0.5000	0.7200	< 5.0000	281	7.4	3	~ 1
Shingle Up	11/18/2021 09:55	Grab							175	7.7	~ 2	3
Shingle Up	12/02/2021 10:05	Grab	< 0.1000	< 1.0000	< 0.5000	< 0.5000	0.6200	< 5.0000	259	7.5	~ 2	~ 1

2021 Mississippi River Water Quality Data - Upper

Station	Sample Time	Sample type	Air Temperature (°F)	Water Temperature (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH	Salinity (ppt)	Transparency (cm)	Alkalinity (mg/L)	Ammonia Nitrogen (mg/L)	Carbonaceous	
													Biological Oxygen Demand 5-day (mg/L)	Chemical Oxygen Demand (mg/L)
Upper	01/07/2021 10:40	Grab	23	0.0	245.6	473.9	14.52	8.5	0.22	> 100	193	0.08	1.1	18
Upper	02/04/2021 11:10	Grab	23	0.1	298.2	568.0	13.51	8.4	0.27	52	208	0.09	0.9	16
Upper	03/04/2021 10:25	Grab	37	3.7	293.4	494.9	12.93	8.4	0.24	> 100	195	0.10	0.6	15
Upper	04/08/2021 10:45	Grab	50	10.9	236.2	323.6	10.83	8.4	0.16	68	132	< 0.06	1.3	29
Upper	04/22/2021 09:45	Grab	50	7.2	194.6	294.9	13.16	8.5	0.14	57	121	< 0.06	1.1	33
Upper	05/07/2021 09:45	Grab	50	12.8	248.6	324.1	11.27	7.6	0.16	54	139	< 0.06	1.7	28
Upper	05/21/2021 10:00	Grab	70							79	151	< 0.06	1.8	29
Upper	06/03/2021 08:50	Grab	75	21.8	455.7	485.8	9.59	8.3	0.23	51	185	< 0.06	3.1	31
Upper	06/17/2021 09:10	Grab	80	24.6	428.3	431.7	8.49	8.4	0.21	66	178	< 0.06	2.7	24
Upper	07/01/2021 10:25	Grab	82	26.8	433.1	418.9	8.14	8.0	0.20	> 100	163	< 0.06	1.3	19
Upper	07/22/2021 09:30	Grab	75	26.6	457.2	443.9	7.90	8.1	0.21	53	168	< 0.06	2.1	23
Upper	08/05/2021 08:35	Grab	73	22.9	621.0	646.0	8.85	7.7	0.31	80	196	< 0.06	1.8	17
Upper	08/19/2021 09:05	Grab	75	25.9	458.1	450.4	8.38	8.1	0.22	80	160	< 0.06	1.8	39
Upper	09/02/2021 09:35	Grab	66	21.8	409.1	453.3	9.23	7.5	0.21	70	164	< 0.06	2.7	32
Upper	09/16/2021 09:25	Grab	72	21.5	422.6	452.5	9.47	8.1	0.22	40	162	< 0.06	2.5	15
Upper	10/07/2021 09:20	Grab	63	19.0	426.5	481.5	8.87	7.8	0.23	87	180	< 0.06	1.6	21
Upper	10/21/2021 09:30	Grab	48	13.0	346.7	450.1	10.15	7.6	0.22	> 100	196	< 0.06	1.2	24
Upper	11/04/2021 09:50	Grab	39	7.2	339.0	513.0	12.27	7.7	0.25	> 100	200	< 0.06	0.9	18
Upper	11/18/2021 10:05	Grab	29	3.0	263.6	455.3	13.38	7.6	0.22	> 100	190	< 0.06	1.3	15
Upper	12/02/2021 10:25	Grab	41	3.4	265.2	451.1	13.34	8.6	0.22	> 100	191	< 0.06	1.2	15

2021 Mississippi River Water Quality Data - Upper continued

Station	Sample Time	Sample type	Chlorophyll-a (µg/l)	Chloride (mg/L)	Dissolved Phosphorus (mg/L)	Ortho Phosphate (mg/L)	Total Phosphorus (mg/L)	Hardness (mg/L CaCO3)	Total Kjeldahl Nitrogen		Nitrate-Nitrite		Sulfate (mg/L)	Total Biological Oxygen Demand 5-day (mg/L)
									Nitrogen (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Nitrite (mg/L)		
Upper	01/07/2021 10:40	Grab	7.7	24.5	~ 0.02	< 0.01	~ 0.03	212	0.57	0.86	0.86	< 0.06	18.0	0.6
Upper	02/04/2021 11:10	Grab	21.0	44.9	< 0.02	< 0.01	0.07	246	0.73	0.85	0.85	< 0.06	23.8	2.0
Upper	03/04/2021 10:25	Grab	6.5	28.8	< 0.02	< 0.01	~ 0.04	189	0.66	1.11	1.11	< 0.06	17.8	0.9
Upper	04/08/2021 10:45	Grab	35.0	13.3	~ 0.04	< 0.01	0.07	127	0.77	0.56	0.56	< 0.06	12.4	2.3
Upper	04/22/2021 09:45	Grab	20.0	10.7	~ 0.03	< 0.01	0.07	141	0.79	0.46	0.46	< 0.06	10.7	1.8
Upper	05/07/2021 09:45	Grab	36.0	11.7	< 0.02	< 0.01	0.06	132	0.80	0.29	0.29	< 0.06	11.3	2.1
Upper	05/21/2021 10:00	Grab	33.0	15.9	< 0.02	< 0.01	~ 0.04	145	0.79	0.29	0.29	< 0.06	12.3	2.2
Upper	06/03/2021 08:50	Grab	55.0	31.4	< 0.02	< 0.01	0.05	166	0.93	0.50	0.50	< 0.06	21.5	3.6
Upper	06/17/2021 09:10	Grab	53.0	23.6	0.19	< 0.01	~ 0.05	157	0.86	< 0.20	< 0.20	< 0.06	16.8	3.4
Upper	07/01/2021 10:25	Grab	13.0	22.8	< 0.02	0.02	0.12	163	0.58	0.40	0.40	< 0.06	14.1	1.5
Upper	07/22/2021 09:30	Grab	40.0	31.0	< 0.02	< 0.01	~ 0.05	175	0.74	< 0.20	< 0.20	< 0.06	17.1	3.1
Upper	08/05/2021 08:35	Grab		72.6	< 0.02	< 0.01	0.07	220	0.64	< 0.20	< 0.20	< 0.06	37.7	2.8
Upper	08/19/2021 09:05	Grab	23.0	35.3	< 0.02	< 0.01	~ 0.04	209	0.69	< 0.20	< 0.20	< 0.06	17.3	2.5
Upper	09/02/2021 09:35	Grab	74.0	32.5	< 0.02	< 0.01	~ 0.04	208	0.97	< 0.20	< 0.20	< 0.06	17.2	3.5
Upper	09/16/2021 09:25	Grab	67.0	33.8	< 0.02	< 0.01	0.06	165	0.58	< 0.20	< 0.20	< 0.06	18.5	3.4
Upper	10/07/2021 09:20	Grab	33.0	29.5	< 0.02	< 0.01	~ 0.04	201	0.62	0.33	0.33	< 0.06	22.6	1.8
Upper	10/21/2021 09:30	Grab	9.5	24.6	~ 0.05	0.02	0.08	168	0.63	0.62	0.62	< 0.06	20.4	1.3
Upper	11/04/2021 09:50	Grab	4.9	28.0	~ 0.03	0.02	~ 0.05	186	0.53	1.04	1.04	< 0.06	27.7	1.0
Upper	11/18/2021 10:05	Grab	5.6	20.6	< 0.02	< 0.01	~ 0.03	172	0.57	0.77	0.77	< 0.06	20.9	1.2
Upper	12/02/2021 10:25	Grab	6.3	21.7	< 0.02	< 0.01	~ 0.03	176	0.48	0.85	0.85	< 0.06	19.8	1.1

2021 Mississippi River Water Quality Data - Upper continued

Station	Sample Time	Sample type	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Copper (mg/L)	Total Lead (mg/L)	Total Nickel (mg/L)	Total Zinc (mg/L)	Total Dissolved Solids (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (mg/L)	Volatile Suspended Solids (mg/L)
Upper	01/07/2021 10:40	Grab							277	6.9	~ 2	~ 1
Upper	02/04/2021 11:10	Grab							322	7.7	21	5
Upper	03/04/2021 10:25	Grab							291	6.0	4	3
Upper	04/08/2021 10:45	Grab							196	10.0	20	5
Upper	04/22/2021 09:45	Grab							186	12.3	15	~ 3
Upper	05/07/2021 09:45	Grab							185	10.7	15	5
Upper	05/21/2021 10:00	Grab							223	9.4	11	4
Upper	06/03/2021 08:50	Grab							285	9.2	14	7
Upper	06/17/2021 09:10	Grab							254	7.9	9	6
Upper	07/01/2021 10:25	Grab							251	6.6	4	3
Upper	07/22/2021 09:30	Grab							260	7.6	9	5
Upper	08/05/2021 08:35	Grab							375	5.3	7	4
Upper	08/19/2021 09:05	Grab							262	6.9	9	4
Upper	09/02/2021 09:35	Grab							243	6.6	13	8
Upper	09/16/2021 09:25	Grab							261	6.8	13	8
Upper	10/07/2021 09:20	Grab							338	6.6	5	3
Upper	10/21/2021 09:30	Grab							283	7.2	4	~ 2
Upper	11/04/2021 09:50	Grab	< 0.1000	< 1.0000	0.7600	< 0.5000	0.7600	< 5.0000	303	7.1	3	~ 1
Upper	11/18/2021 10:05	Grab							267	7.4	~ 2	~ 2
Upper	12/02/2021 10:25	Grab	< 0.1000	< 1.0000	0.8100	< 0.5000	0.6000	< 5.0000	265	7.5	~ 2	~ 1