CLEAN WATER ACT COMPLIANCE EVALUATION INSPECTION REPORT
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 5

Purpose: Compliance Evaluation Inspection

Facility: Village of Frankfort Wastewater Treatment Plant (WWTP)
91 South Main Street
Frankfort, Ohio 45628

Date of Inspection: May 11, 2022

EPA Representatives:

Ray Cullen, Environmental Engineer
Water Enforcement and Compliance Assurance Branch (WECAB), Section 2
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Andi Hodaj, Environmental Engineer
WECAB, Section 1
(312) 353-4645
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Facility Representatives:

Joan Waugh, Wastewater and Water Superintendent/WTTP Operator of Record
(740) 988-4423, redwaugh@att.net.

Tim Fout, WWTP operator/Village employee (imminent Village Administrator)

Ron Vandemark, WWTP operator/Village employee

Report Prepared by: Ray Cullen

Inspector Signature: RAYMOND CULLEN Digitally signed by RAYMOND CULLEN Date: 2022.06.29 15:11:47 -05'00'
Ray Cullen

Approver Name and Title: Ryan J. Bahr, Section 2 Supervisor
WECAB

Approver Signature and Date: Bahr, Ryan Digitally signed by Bahr, Ryan Date: 2022.06.29 17:07:22 -05'00'

Purpose of Inspection:

Andi Hodaj and I, from EPA Region 5's WECAB, conducted an unannounced inspection of the Village of Frankfort's (the Village's) WWTP to assess its compliance with the Clean Water Act and applicable permits. More specifically, we sought to obtain more information on the Village's progress in implementing the compliance schedule in its National Pollutant Discharge Elimination System Permit No. 0PB00014*JD (Permit) with regard to WWTP and collection system upgrades. Relatedly, we were also interested in discussing the excessive inflow and infiltration (I/I) from the collection system that had been occuring plus recent effluent exceedances of several permitted parameters. This is the first time that EPA has inspected the facility in at least the last 10 years, and according to EPA's Enforcement and Compliance History Online (ECHO) website, the Ohio Environmental Protection Agency most recently inspected it in December 2020.

Arrival Time: 8:40 a.m.
Departure Time: 12 p.m.

☒ Credentials presented
☒ CBI protection assurances discussed

The following information was obtained verbally from Ms. Waugh during the inspection unless otherwise noted.

Facility Background/Process Description:

Three people currently work at the WWTP: Ms. Waugh, who started in April 2021, Mr. Fout, and Mr. Vandemark. They are typically there Monday-Thursday for 6 hours/day. Ms. Waugh also oversees the Village's drinking water plant, which is located across the street from the WWTP. The WWTP, which began operating in 2004, accepts only sanitary wastewater from a population of approximately 1,500. It has a design flowrate of 0.2 million gallons per day (MGD), a peak flowrate of 0.4 MGD, and average flowrates of 0.12-0.15 MGD (dry weather) and 0.2-0.5 MGD (wet weather). We recorded an effluent flowrate of 113.7 gallons per minute (0.16 MGD) during the inspection (Photo 17, *see* Attachment 1). All I/I flows directly to the WWTP. Currently, the Village is in the process of televising 20 percent of its sewer lines, clearing them, and installing lining (scheduled to be completed by August 27, 2022 (Photos 1 and 2)). Ms. Waugh thinks more should be televised based on a 2014 study that was conducted of the system.

In April 2022, the Village fixed a manhole as part of a collection system project that a citizen had apparently provided evidence was overflowing. Ms. Waugh had never been notified of a sanitary sewer overflow (SSO) prior to this, and Village administration would look during rain events but has never seen any. At the time of the inspection, the Village had not been creating separate SSO reports; it simply includes in the Discharge Monitoring Reports (DMRs) that it submits to Ohio EPA that there have been no SSOs. Ms. Waugh did not include the overflow from the recently fixed manhole in any of subsequent DMRs because she was unable to verify the date of occurrence or any other information from the person who notified her of it.

Influent wastewater first flows to a manhole (Photo 6), which contains a basket to collect rags and other trash and is emptied manually. There are five other pipes going to this manhole: two from surface catch basins, one for clarifier return water, one for decant from an aerobic digester, and one that had come from the old WWTP on-site, which is offline (referred to as Plant 1). The wastewater then goes through a bar screen (Photo 10) before being pumped to a splitter box that has one side closed to the shut-down Plant 1. The Village uses a second pump simultaneously during heavy rain events. From there, the wastewater goes to a mixed liquor aeration tank and then a clarifier. Sludge from the clarifier goes to an aerobic digester usually weekly, sometimes semiweekly, and then to a holding tank (Photo 20). This tank has blowers and acts as a second digester. After conducting a Specific Oxygen Uptake Rate (SOUR) test of the sludge, the Village land applies it usually twice a year and sometimes sends it to the City of Chillicothe, Ohio WWTP if there is an excessive amount. The next land application is scheduled for the end of May/the beginning of June. Back to the wastewater, it is returned from the clarifier to the aeration tank, and overflow from the clarifier goes to a chlorine contact tank and from there to cascading steps where dechlorination occurs (Photo 18). Finally, the WWTP effluent discharges to Paint Creek through Outfall 001.

Sampling via an ISCO composite sampler occurs from a manhole at the bottom of the cascading steps to ensure sufficient chlorine removal and compliance with other effluent limits. The Village did not have an influent sampler until the end of May 2021. Prior, it just conducted influent grab sampling. MASI Environmental Laboratories (MASI) analyzes collected samples for all permitted parameters, including those for the annual sludge monitoring, except for pH, dissolved oxygen (DO), and total residual chlorine, which the Village does in-house. At the time of the inspection, the thermometer in the refrigerator that holds the grab and composite samples read 2°C.

As briefly mentioned above, at the site among the currently operating treatment equipment is decommissioned equipment that used to be part of Plant 1 (the current WWTP is referred to as Plant 2). The Village is currently installing a new treatment system where Plant 1 used to be. When that starts up, the Village will take the current system offline but will eventually have both available for use. The new plant will use ultraviolet disinfection as opposed to chemical disinfection via sodium sulfide that the Village currently applies. There will be a self-cleaning automatic screen prior to the influent wet well, five new blowers in the aeration tank, two new influent pumps controlled with variable frequency drives, and a supervisory control and data acquisition system. All other equipment (such as the diffusers) will be new as well. All five of the Village's lift stations will be receiving upgrades, too. The Village has funding secured for these changes and awarded the contract in or around December, but there has been delays in acquiring equipment.

Effluent Exceedances

Ms. Waugh discovered that Lightle Enterprises of Ohio, LLC (Lightle), a road sign manufacturer, had been discharging process wastewater from its stencil painting operation to the WWTP without the Village's permission. Sampling by Ms. Waugh of Lightle's discharge showed high readings of carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), and total disolved solids (TDS), among other pollutants. As a result, the Village

developed and in November 2021 passed an emergency sewer use ordinance, effectively forbidding Lightle to continue discharging to the WWTP unless it obtains the proper necessary permits from Ohio EPA; the Village does not have its own pretreatment program. Lightle ceased discharging process wastewater to the WWTP on January 13, 2022. Since then, Ms. Waugh has been learning how removal of this discharge is affecting the WWTP's processes and figuring out how to operate it to achieve the best treatment capability (e.g., ideal return and mixed liquor rates). It took several weeks to see a turnaround at the WWTP; sludge generated from when Lightle was discharging is still making its way through the system. She believes that recent effluent exceedances had occurred only during high-flow rain events. She further believes that ammonia-nitrogen exceedances specifically were caused by decanting sludge from the holding tank at too high a volume.

Facility Tour

We toured the facility starting at approximately 10:25 a.m. at the beginning of the treatment process as described above. During the tour, we observed that there was no thermometer in the ISCO sampler that the Village uses to collect influent composite samples (Photo 9). Ms. Waugh admitted to breaking it the day before and said she will replace it. The effluent ISCO sampler had a thermometer, but it was frozen, and we could not read the temperature. Later, in a May 18, 2022, email to me, Ms. Waugh stated that despite checking the temperature of the composite samplers during every sampling event, the Village has not been consistently recording these readings. Also during the tour, the hose leading to the effluent sampler had a red residue inside, which Ms. Waugh thinks may be algae (Photo 19). She had replaced the hose in February and said she will replace it again and use bleach to clean it separately. Lastly, with regard to the samplers, the influent one collects time, not flow-proportional composite samples; the Permit requires the latter.

We also saw that the aeration tank, clarifer, contact tank, and aerobic digester are part of one big tank, separated by walls (Photos 11-16). During the inspection, the wastewater in the aeration tank appeared black and had debris floating in it. In addition, debris was also visible in the clarifier, and its weirs were covered with algae, which Ms. Waugh admits has made removing scum difficult (Photos 12 and 13). Currently, the weirs are cleaned with just a hose, but Ms. Waugh said she plans on using pool shock to remove the algae (with increased sodium sulfide usage when that occurs).

Near the end of the tour, we observed that the effluent wastewater to Paint Creek had a clear discharge (Photo 21), and there was appropriate signage at the outfall.

Areas of Concern

We relayed the following areas of concern observed during the inspection:

1. The WWTP continues to experience effluent exceedances (*see* Attachment 2).
2. The influent wastewater has been exceeding the design flowrate of the WWTP.
3. The basket and bar screen that are being used to collect debris from the influent wastewater is insufficient; debris was observed in the clarifier during the inspection.

4. Sampling of the influent wastewater needs to be flow, not time-proportional.
5. The water in the aeration tank appeared to be too dark, indicating the need for more oxidation.
6. The clarifier weirs need to be more thoroughly cleaned of algae, and the water in the tank was very cloudy.

Records Received

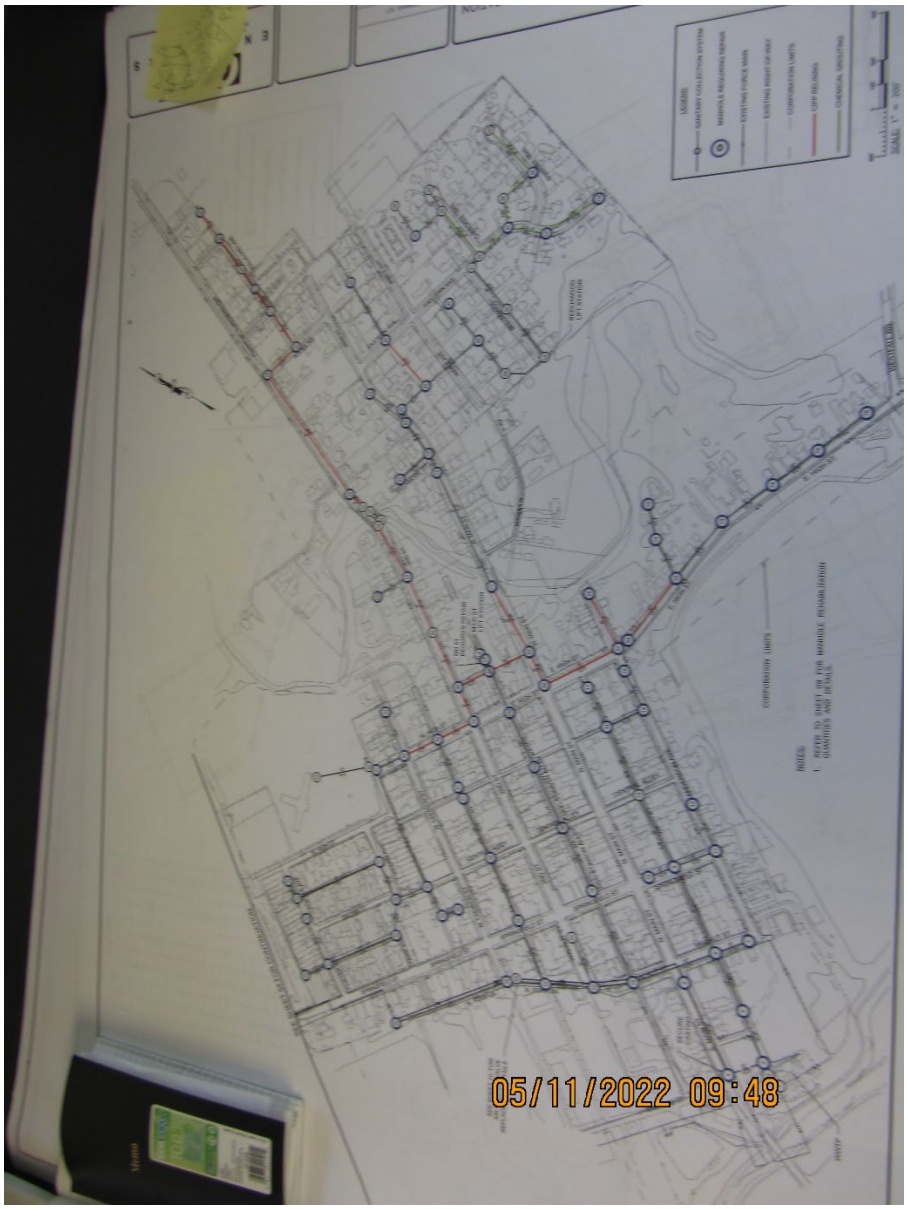
Ms. Waugh emailed me a list of requested and additional records on May 18 and 24, and June 6. These include:

1. Form 4500 monitoring data for Outfall 001, the wastewater influent, and the upstream and downstream monitoring locations since April 1, 2021, along with the lab reports for Outfall 001 and the influent;
2. Sludge monitoring data, including the results of annual Permit monitoring and fecal coliform and SOUR testing done prior to land application, since January 1, 2020;
3. The most recent calibration reports for the pH probe, DO meter, colorimeter (for chlorine), and flow meter;
4. A graph of CBOD and TSS readings in the effluent from May 2021 through early May 2022 that Ms. Waugh plotted to assist her in understanding the WWTP operations and trends and helped her discover Lightle's unpermitted discharge;
5. A timeline detailing the Village's efforts to investigate noncompliance at the WWTP; and
6. Lab analysis reports from MASI from April 2021 through early June 2022.

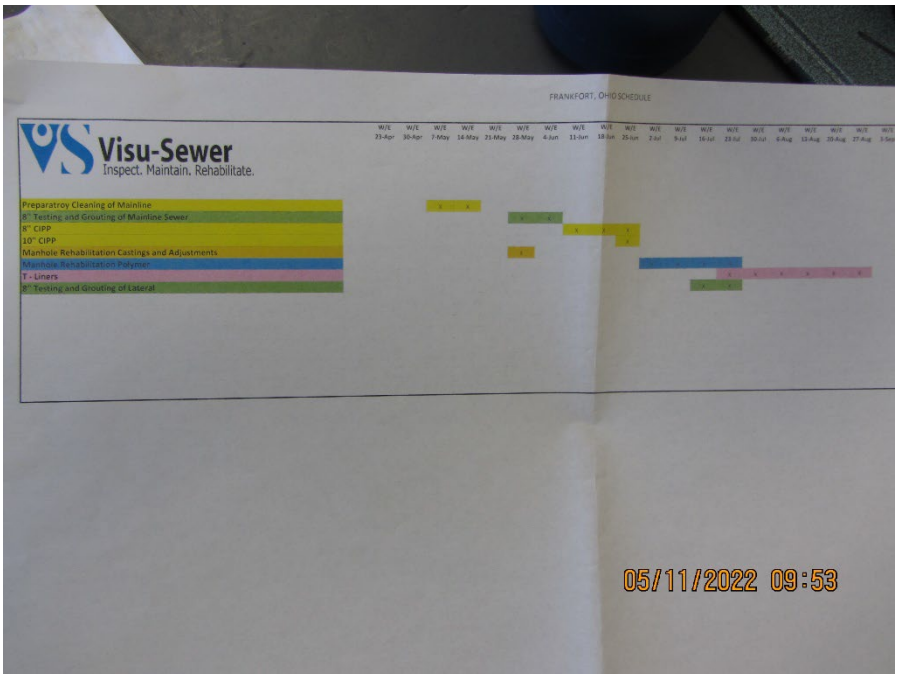
Attachments

1. Photo log.
2. Effluent exceedances table (April 2021-April 2022).

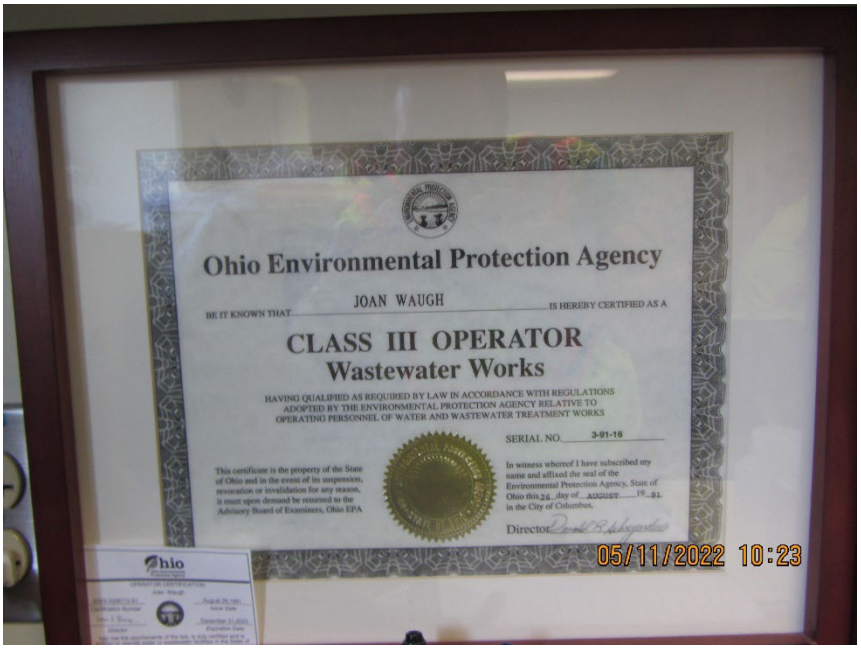
Village of Frankfort, Ohio Wastewater Treatment Plant
Photo Log
EPA Inspection May 11, 2022
All photos taken by Ray Cullen, Environmental Engineer, EPA



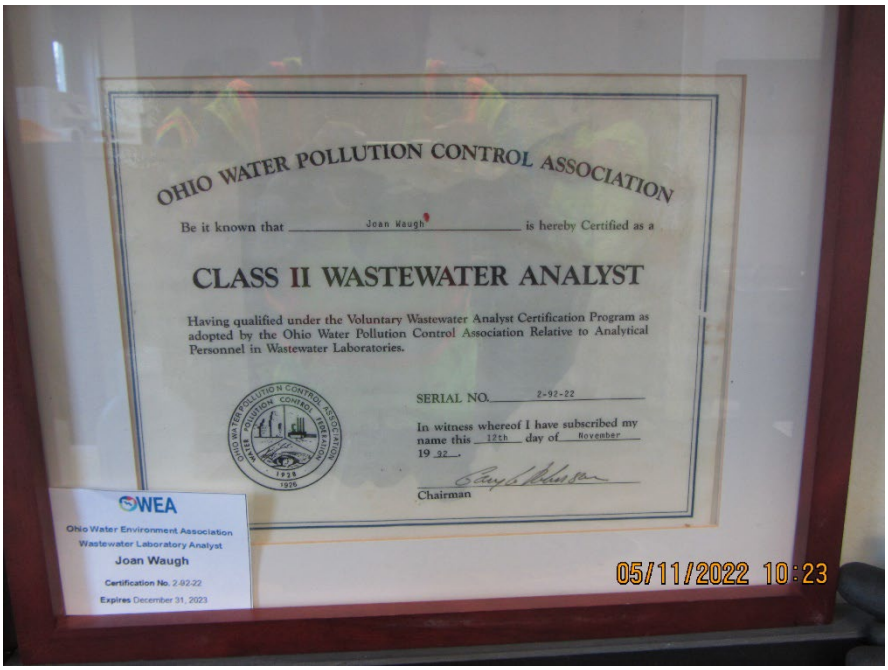
1: IMG_0249
Description: Map of collection system with highlighted sections showing where televising and lining is happening
Location: Office building
Camera Direction: N/A
Date/Time: 5/11/22, 9:48 a.m.



2: IMG_0250
Description: Timeline for collection system work and upgrades
Location: Office building
Camera Direction: N/A
Date/Time: 5/11/22, 9:53 a.m.



3: IMG_0251
Description: Joan Waugh's Class III Operator Wastewater Works certification
Location: Office building
Camera Direction: N/A
Date/Time: 5/11/22, 10:23 a.m.



4: IMG_0252
Description: Joan Waugh's Class II Wastewater Analyst certification
Location: Office building
Camera Direction: N/A
Date/Time: 5/11/22, 10:23 a.m.

5: IMG_0253
Description: Joan Waugh's Industrial Pretreatment Inspector certification
Location: Office building
Camera Direction: N/A
Date/Time: 5/11/22, 10:23 a.m.

6: IMG_0254
Description: Manhole with basket to collect debris in influent wastewater (at 12 o'clock position)
Location: Directly northeast of pump station
Camera Direction: West, down
Date/Time: 5/11/22, 10:26 a.m.

7: IMG_0255
Description: Influent sump and sampling tube for influent ISCO composite sampler
Location: Pump station building
Camera Direction: Down
Date/Time: 5/11/22, 10:33 a.m.

8: IMG_0256
Description: Same as Photo 7 but brighter
Location: Pump station building
Camera Direction: Down
Date/Time: 5/11/22, 10:33 a.m.

9: IMG_0257
Description: Influent ISCO composite sampler without thermometer
Location: Pump station building
Camera Direction: N/A
Date/Time: 5/11/22, 10:35 a.m.

10: IMG_0258
Description: Influent wastewater bar screen
Location: Southeast of manhole shown in Photo 6, near splitter box
Camera Direction: West, down
Date/Time: 5/11/22, 10:38 a.m.

11: IMG_0259
Description: Aeration/digester/clarifier tank, with aeration section in the foreground, digester in the back, and clarifier in center; clarifier discharges to the right in the photo, below the walkway
Location: Directly northeast of splitter box and bar screen shown in Photo 10
Camera Direction: Northeast
Date/Time: 5/11/22, 10:43 a.m.

12: IMG_0260
Description: Clarifier with algae-covered weirs
Location: Center section of aeration/digester/clarifier tank
Camera Direction: North
Date/Time: 5/11/22, 10:52 a.m.

13: IMG_0261
Description: Clarifier with algae-covered weirs
Location: Center section of aeration/digester/clarifier tank
Camera Direction: South
Date/Time: 5/11/22, 10:53 a.m.

14: IMG_0262
Description: Digester return water
Location: Northeastern section of aeration/digester/clarifier tank
Camera Direction: Northwest
Date/Time: 5/11/22, 10:58 a.m.

15: IMG_0263
Description: Digester
Location: Northeastern section of aeration/digester/clarifier tank
Camera Direction: North
Date/Time: 5/11/22, 10:59 a.m.

16: IMG_0264
Description: Wastewater from clarifier
Location: Eastern section of aeration/digester/clarifer tank
Camera Direction: West
Date/Time: 5/11/22, 11:00 a.m.

17: IMG_0265
Description: Effluent flow meter reading 113.7 gallons per minute
Location: Southeast of aeration/digester/clarifier tank
Camera Direction: N/A
Date/Time: 5/11/22, 11:06 a.m.

18: IMG_0266
Description: Cascading steps where dechlorination occurs
Location: Southeast of aeration/digester/clarifier tank
Camera Direction: South
Date/Time: 5/11/22, 11:14 a.m.

19: IMG_0267
Description: Effluent ISCO composite sampler with red residue in sampling tube
Location: Southeast of aeration/digester/clarifier tank
Camera Direction: East
Date/Time: 5/11/22, 11:14 a.m.

20: IMG_0268
Description: Sludge holding tank
Location: East of aeration/digester/clarifier tank
Camera Direction: East
Date/Time: 5/11/22, 11:19 a.m.

21: IMG_0269
Description: Outfall
Location: Approx. 50 feet south of the facility
Camera Direction: Southwest
Date/Time: 5/11/22, 11:26 a.m.

Attachment 2. Frankfort WWTP Exceedances

Nitrogen-Ammonia

Monitoring Period	Conc. (mg/L)	Limit (mg/L)	Load (kg/d)	Limit (kg/d)	Limit Type
Apr 2022	11.1	10.0	7.8	7.2	Mo. Avg.
Apr 2022, 1st wk.	17.9	15.0			Wk. Max.
Mar 2022	11.0	10.0			Mo. Avg.
Jan 2022			8.7	7.2	Mo. Avg.
Nov 2021	16.2	10.0	10.4	7.2	Mo. Avg.
Nov 2021, 3rd wk.	18.7	15.0	10.9	10.8	Wk. Max.
Oct 2021	14	4.3	5.7	3.1	Mo. Avg.
Oct 2021, 3rd wk.	20.9	6.4	7.71	4.61	Wk. Max.
Oct 2021, 1st wk.	6.6	6.4			Wk. Max.
Sep 2021	24	4.3	10.6	3.1	Mo. Avg.
Sep 2021, 3rd wk.	25.5	6.4	11.5	4.61	Wk. Max.
Sep 2021, 1st wk.	23.2	6.4	9.76	4.61	Wk. Max.
Aug 2021	24	4.3	9.8	3.1	Mo. Avg.
Aug 2021, 4th wk.	25.7	6.4	9.72	4.61	Wk. Max.
Aug 2021, 2nd wk.	23.1	6.4	9.92	4.61	Wk. Max.
Jul 2021	14	4.3	5.8	3.1	Mo. Avg.
Jul 2021, 3rd wk.	17.4	6.4	5.68	4.61	Wk. Max.
Jul 2021, 1st wk.	9.7	6.4	6.01	4.61	Wk. Max.
Jun 2021	14	4.3	7.5	3.1	Mo. Avg.
Jun 2021, 3rd wk.	11.9	6.4	8.37	4.61	Wk. Max.
Jun 2021, 1st wk.	16.6	6.4	6.60	4.61	Wk. Max.
May 2021	13	4.3	9.1	3.1	Mo. Avg.
May 2021, 4th wk.	19.1	6.4	8.13	4.61	Wk. Max.
May 2021, 2nd wk.			10.1	4.61	Wk. Max.
Apr 2021	16.1	10.0	8.8	7.2	Mo. Avg.
Apr 2021, 3rd wk.	19.4	15.0			Wk. Max.

Total Suspended Solids

Monitoring Period	Conc. (mg/L)	Limit (mg/L)	Load (kg/d)	Limit (kg/d)	Limit Type
Feb 2022			11.6	10.1	Mo. Avg.
Feb 2022, 4th wk.			17.1	13.7	Wk. Max.
Feb 2022, 1st wk.			13.8	13.7	Wk. Max.
Jan 2022	27.8	14.0	30.7	13.7	Mo. Avg.
Jan 2022, 3rd wk.	22.0	19.0	17	13.7	Wk. Max.
Jan 2022, 2nd wk.	34.0	19.0	36.9	13.7	Wk. Max.
Jan 2022, 1st wk.	38.0	19.0	58	13.7	Wk. Max.
Dec 2021	18.3	14.0	16.3	10.1	Mo. Avg.
Dec 2021, 3rd wk.			14.5	13.7	Wk. Max.
Dec 2021, 2nd wk.			16.4	13.7	Wk. Max.
Dec 2021, 1st wk.			22.4	13.7	Wk. Max.
Sep 2021	18.6	14.0			Mo. Avg.
Sep 2021, 1st wk.	35.5	19.0			Wk. Max.
Aug 2021, 4th wk.	25.0	19.0			Wk. Max.
Jun 2021	67.6	14.0	54.2	10.1	Mo. Avg.
Jun 2021, 1st wk.	242	19.0	197	13.7	Wk. Max.
May 2021	75.3	14.0	86.8	10.1	Mo. Avg.
May 2021, 4th wk.	66.0	19.0	29.0	13.7	Wk. Max.
May 2021, 2nd wk.	23.0	19.0	32.1	13.7	Wk. Max.
May 2021, 1st wk.	199	19.0	277	13.7	Wk. Max.
Apr 2021	217	14.0	112	10.1	Mo. Avg.
Apr 2021, 4th wk.	316	19.0	160	13.7	Wk. Max.
Apr 2021, 3rd wk.	500	19.0	252	13.7	Wk. Max.
Apr 2021, 2nd wk.	39	19.0	28	13.7	Wk. Max.

Carbonaceous Biochemical Oxygen Demand

Monitoring Period	Conc. (mg/L)	Limit (mg/L)	Load (kg/d)	Limit (kg/d)	Limit Type
Mar 2022, 1st wk.			15.0	13.7	Wk. Max.
Feb 2022, 4th wk.			21.4	13.7	Wk. Max.
Jan 2022	29.4	14.0	27.3	10.1	Mo. Avg.
Jan 2022, 3rd wk.	59.0	19.0	45.6	13.7	Wk. Max.
Jan 2022, 2nd wk.	21.5	19.0	23.5	13.7	Wk. Max.
Jan 2022, 1st wk.	19.5	19.0	28.9	13.7	Wk. Max.
Dec 2021	14.1	14.0	12.4	10.1	Mo. Avg.
Dec 2021, 3rd wk.	20.0	19.0	15.0	13.7	Wk. Max.
Dec 2021, 1st wk.			14.4	13.7	Wk. Max.
Oct 2021, 3rd wk.	25.5	19.0			Wk. Max.
Sep 2021	16.6	14.0			Mo. Avg.
Sep 2021, 1st wk.	32	19.0			Wk. Max.
Aug 2021	19.9	14.0			Mo. Avg.
Aug 2021, 4th wk.	41.5	19.0	14.9	13.7	Wk. Max.
Jun 2021	25.1	14.0	18.6	10.1	Mo. Avg.
Jun 2021, 1st wk.	77.5	19.0	61.3	13.7	Wk. Max.
May 2021	34.1	14.0	37.8	13.7	Mo. Avg.
May 2021, 4th wk.	32.0	19.0	14.2	13.7	Wk. Max.
May 2021, 1st wk.	87.0	19.0	117.9	13.7	Wk. Max.
Apr 2021	85	14.0	44.0	13.7	Mo. Avg.
Apr 2021, 4th wk.	103	19.0	52.0	13.7	Wk. Max.
Apr 2021, 3rd wk.	210	19.0	106.0	13.7	Wk. Max.
Apr 2021, 2nd wk.			14.0	13.7	Wk. Max.

Total Residual Chlorine

Monitoring Date	Conc. (mg/L)	Limit (mg/L)	Limit Type
10/28/21	0.04	0.038	Daily Max.
10/27/21	0.04	0.038	Daily Max.
10/22/21	0.72	0.038	Daily Max.
10/20/21	0.05	0.038	Daily Max.
10/19/21	0.04	0.038	Daily Max.
10/18/21	0.05	0.038	Daily Max.
10/12/21	0.04	0.038	Daily Max.
10/11/21	0.04	0.038	Daily Max.
10/7/21	0.04	0.038	Daily Max.
10/6/21	0.04	0.038	Daily Max.
10/5/21	0.05	0.038	Daily Max.
10/1/21	0.05	0.038	Daily Max.
9/30/21	0.08	0.038	Daily Max.
9/27/21	0.04	0.038	Daily Max.
9/20/21	0.70	0.038	Daily Max.
9/15/21	0.05	0.038	Daily Max.
9/12/21	0.04	0.038	Daily Max.
9/7/21	0.04	0.038	Daily Max.
9/6/21	0.04	0.038	Daily Max.
9/3/21	0.04	0.038	Daily Max.
8/19/21	0.05	0.038	Daily Max.
8/3/21	1.26	0.038	Daily Max.
8/2/21	0.04	0.038	Daily Max.
7/28/21	0.82	0.038	Daily Max.
7/18/21	2.2	0.038	Daily Max.
7/14/21	0.04	0.038	Daily Max.
7/1/21	0.04	0.038	Daily Max.
6/1/21	0.07	0.038	Daily Max.
5/30/21	0.1	0.038	Daily Max.
5/5/21	0.04	0.038	Daily Max.

E. coli

Monitoring Date	Conc. (#/100 mL)	Limit (#/100 mL)	Limit Type
Oct 2021	6093	126	Mo. Avg.
Oct 2021, 3rd wk.	24200	284	Wk. Max.
Sep 2021	4011.25	126	Mo. Avg.
Sep 2021, 3rd wk.	437	284	Wk. Max.
Sep 2021, 1st wk.	15500	284	Wk. Max.
Aug 2021	4704.5	126	Mo. Avg.
Aug 2021, 4th wk.	13000	284	Wk. Max.
Aug 2021, 3rd wk.	1180	284	Wk. Max.
Aug 2021, 2nd wk.	4350	284	Wk. Max.
Aug 2021, 1st wk.	288	284	Wk. Max.
Jul 2021	663.75	126	Mo. Avg.
Jul 2021, 1st wk.	2330	284	Wk. Max.
Jun 2021	527	126	Mo. Avg.
Jun 2021, 2nd wk.	2040	284	Wk. Max.
May 2021	1189.5	126	Mo. Avg.
May 2021, 4th wk.	354	284	Wk. Max.
May 2021, 2nd wk.	1250	284	Wk. Max.
May 2021, 1st wk.	3080	284	Wk. Max.