REPORT OF COMPLIANCE SAMPLING INSPECTION

AT

Bonner Springs Wastewater Treatment Plant
12021 Kaw Drive
Bonner Springs, Kansas 66102

NPDES Permit # KS0082881

ON

May 13, 2024 to May 16, 2024

BY

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 7
Enforcement and Compliance Assurance Division

INTRODUCTION

I conducted a Compliance Sampling Inspection (CSI) of the Bonner Springs Wastewater Treatment Plant in Bonner Springs, Kansas, from May 13, 2024, through May 16, 2024. This inspection was performed pursuant to Section 308(a) of the Federal Water Pollution Control Act, as amended. This narrative report and attachments present the findings and observations made during the inspection.

PARTICIPANTS

City of Bonner Springs, Public Works:
Jerry Wisthoff, Chief Plant Operator
Nick Poff, Operator
Steve Garcia, Collection Systems Operator
Chuck Staples, Municipal Utility Manager

U.S. Environmental Protection Agency (EPA), Region 7, Enforcement Compliance and Assurance Division (ECAD), Water Branch:
Suzanne Ward, Physical Scientist 913-551-7251 (Inspector)
Hannah Lewis, Life Scientist 913-551-7679 (Inspector)

INSPECTION PROCEDURES

On Monday, May 13, 2024, prior to entering the Bonner Springs Wastewater Treatment Plant (WWTP), I conducted visual reconnaissance from the front gate to identify any areas of concern visible from the public right-of-way. At approximately 9:45 a.m., I entered the facility unannounced and met with Jerry Wisthoff and Nick Poff in the main office of the Bonner Springs Wastewater Treatment Plant. Both individuals acted as official facility representatives during the inspection. I started the entry briefing conference with introductions and I presented

my EPA identification. I was accompanied by Hannah Lewis of EPA Region 7, who also provided her inspector credentials. I explained that the purpose of the inspection was to evaluate the facility's compliance status with the Clean Water Act (CWA) and permit requirements under the authority of Section 308(a) of the Federal Water Pollution Control Act. I explained that the scope of the inspection would include a records review, a review of operations, and a visual inspection of the facility, which may include the collection of photographs, documents, and samples. I asked if there was any required PPE besides footwear or if there were procedures we should follow and was told no. I provided Mr. Wisthoff with a printed copy of the U.S. EPA Notice Regarding Propriety/Confidential Business Information (CBI) Information Sheet and Form. I made him aware of the City's confidentiality rights and informed him that they had 10 business days to return the form signed if they needed to make any claims. He did not raise CBI claims during the inspection. During the exit briefing conference, Chuck Staples, Municipal Utility Manager, said they did not have any CBI concerns. He signed the CBI formed and returned it to me (Attachment 9).

May 13, 2024, through May 16, 2024, I spoke with Jerry Wisthoff, Nick Poff, Steve Garcia, and Chuck Staples, to get information pertaining to the plant, laboratory, and sanitary sewer collection system's operation. On May 13, 2024, Mr. Wisthoff and Mr. Poff accompanied me during the visual inspection of the wastewater plant. On May 14, 2024, Mr. Garcia and Mr. Poff accompanied me during the visual inspection of the sanitary sewer collection system. May 14, 2024, through May 16, 2024, I collected influent and effluent samples. I took 161 photos and one video during the visual inspection. Descriptions of all photos taken are listed in Attachment 2 – Photo Log. Visual images of 83 photographs are displayed in Attachment 1 – Photographs. On May 16, 2024, I summarized the findings and recommendations with Mr. Staples and Mr. Poff in an exit briefing conference and issued a Notice of Preliminary Findings (NOPF) (Attachment 10). Mr. Staples responded to the NOPF in letters dated May 21 and May 22, 2024 (Attachment 11). I received electronic documents for review following the on-site inspection from all inspection participants. Records received from the facility are logged in Attachment 26.

FACILITY DESCRIPTION

The Bonner Springs WWTP plant is located at 12021 Kaw Drive in Bonner Springs, Wyandotte County, Kansas. The legal description is SE 1/4, NW 1/4, SE 1/4, Section 28, Township 11S, Range 23E. Bonner Springs WWTP's permit, KS0082881 (Attachment 5), was last issued on November 1, 2021, expires on October 31, 2026. The permit sets forth requirements and conditions that the permittee is to follow. The city of Bonner Springs owns and operates this 1.4 MGD facility with two full time employees for the plant and one full time employee for the collection system. The WWTP treats domestic wastewater from the city of Bonner Springs. The 2020 Census shows the population is 7,837. According to the permit, the facility consists of two oxidation ditches, two final clarifiers, gravity sludge thickening, belt press dewatering, and UV disinfection of effluent. See Attachment 4 for a process flow diagram and Attachment 5 for an aerial map of the plant. Although this facility has a design flow over 1.0 MGD, the permit does not include stormwater requirements and KDHE has not required the facility to apply for an industrial stormwater permit.

Receiving stream. Final effluent is discharged to the Kansas River in the Kansas-Lower Republic Watershed (HUC 10270104) and more specifically the Lake of The Forest Dam-Kansas River Watershed (HUC 102701040606). According to the Kansas Surface Water Register, designated uses in this segment of the Kansas River, Segment 2, include special aquatic life use, primary

contact recreation in a stream open to and accessible to the public, domestic water supply, food procurement, ground water recharge, industrial water supply, irrigation use, and livestock watering use. Special aquatic life and primary contact recreation uses are impaired in this segment. This segment is included in a 2018 Kansas-Lower Republican Basin TMDL[1], for Total Phosphorus. The Bonner Springs WWTP has a Phase I waste load allocation of 1.00 mg/L or 11.70 lbs/day at a design flow of 2.17 cfs (1.4 million gallons per day/MGD).

Compliance history. KDHE conducted the last inspections of the WWTP on April 6, 2021 (Attachment 12), and December 21, 2021 (Attachment 13). The facility was found to be in compliance during the April 2021 inspection. Concerns during the December 2021 inspection included general maintenance issues and noncompliance with the schedule of compliance for nutrients, stating that the operators had not received nutrient removal training and nutrient permit goals were not being met.

FINDINGS AND OBSERVATIONS

Records Reviewed

Prior to the inspection, I reviewed documents for the Bonner Springs Wastewater Treatment Plant including aerial imagery, previous KDHE inspection reports and correspondence, and the permit conditions of the NPDES permit # KS0082881 (Attachment 6) for familiarization with the requirements specific to this facility.

Records I retrieved from the Kansas Environmental Information Management System and KDHE for review included the November 2021 to April 2024 discharge monitoring reports, December 21, 2021, and April 6, 2021, KDHE inspection reports, November 1, 2022, concern investigation documentation, permit, permit applications, and accompanying documents.

The facility provided documents for review electronically via email and secure file transfer from all inspection participants. I reviewed records from the facility documenting operations and maintenance for the laboratory, wastewater treatment, and sanitary sewer collection systems. All documents received from the facility are listed in Attachment 26.

Discussion of Inspection and Observations

Wastewater Treatment Plant.

I conducted visual inspections of components of the wastewater treatment plant, Outfall 001, and Lift stations 1, 2, 3, and 6 (Photographs 1-59, Video 60). Bonner Springs WWTP is enclosed by a fence with a locking gate (Photo 1). I asked the operators about their general maintenance routines for the WWTP. They said their daily morning procedure includes checking RAS, the influent bar screen, measuring the sludge blanket in the clarifier with a sludge judge, and checking the grit classifier. There is no SOP for routine maintenance and records of activities are not maintained (**Recommendation 1**). The WWTP is operated with a SCADA system using Pedrotti and Mission Control. The Pedrotti and Mission system is not fully functional (**Recommendation 1**). For example, dissolved oxygen is not communicated to the system. Mr. Staples said the city is currently building a new public drinking water facility. This system will have a new SCADA system. The city has a contract for a new system at the WWTP. Mr. Staples estimated the WWTP would have an upgraded SCADA system within a year. Documentation of the contract or timeline was not provided.

[1] Kansas-Lower Republican Basin Total Maximum Daily Load https://attains.epa.gov/attains-public/api/documents/actions/21KAN001/R7_2018_00448/135950

Backup power. A Generac station generator is available in case of power outage (Photo 7). The generator is serviced annually and is test run for 30 minutes each week on Thursdays at 9:30 a.m. The operators said that the generator has automatically kicked on during past power outages and operated as needed.

Design versus actual flow. The facility includes two oxidation ditches, east and west. Each ditch has a design flow of 0.7 MGD for a total design flow of 1.4 MGD. Operators record the flow totalizer value each day and calculate the 24-hour flow, which they record on a handwritten Flow and Weather Conditions log (Attachment 12). Based on my analysis of the logs, actual daily flow from January 2023 to May 2024 averaged 0.447 MGD. Max daily peak flow for the same period averaged 0.709 MGD.

Design versus actual mass loading and concentrations. Design loading was retrieved from a 1991 Wilson & Company engineering report and provided by a KDHE representative as seen in Table number below. Domestic sources are calculated based on a population of 7,837 and average influent flow at the WWTP. The industrial source is discussed in the Industrial User section of this report. Data is not available to determine loading for TKN and NH_3, but design is documented in the table.

I analyzed influent data to determine if design concentration was exceeded. For January 2023 to May 2024 influent BOD averaged 183.6 mg/L, influent TSS average 373.4 mg/L, and TKN averaged 51.6 mg/L. See Table 1 for design concentrations.

Table 1. Plant treatment design mass loading (lbs/day), design concentrations (mg/L) versus actuals

	BOD (lbs/day)	BOD (mg/L)	TSS (lbs/day)	TSS (mg/L)	TKN (lbs/day)	TKN (mg/L)	NH_3 lbs/day	NH_3 (mg/L)
Domestic	1,322		1,567					
Industrial	354		218					
Total	1,676		1,794					
Design	3,200	275	2,300	200	370	32	230	20

Overflow basin. When influent flow exceeds available capacity, excess flow is redirected to an earthen overflow basin. I observed standing water, overgrown vegetation, and deep-rooted vegetation in the overflow basin during the inspection (Photo 13) (**Recommendation 1)**. When influent flows return to normal, the operators return untreated wastewater back to the plant via gravity flow (Photo 14). Operators typically only run one oxidation ditch at a time so the overflow basin can be used for wet weather/peak flow.

Operational monitoring. Analysis is conducted on influent and effluent as operational monitoring in the on-site lab. Influent collected at the headworks is analyzed for COD and ammonia. Effluent collected at the sampling station is analyzed for COD, ammonia, nitrate, and nitrate (Photos 67-68). Minimal operational monitoring is conducted in the oxidation ditch and secondary clarifier. Dissolved oxygen (DO) is monitored in the west oxidation ditch in two locations with stationary Insite IG DO probes. Data from the Insite IG probes is not communicated to the current SCADA system. This is documented in **Recommendation 1**. The

operators said they check the Insite IG meter in the morning and a couple times throughout the day with DO typically observed between 1.5 to 2.5 milligrams per liter. At the time of the inspection, I observed Probe 1 reading 1.03 mg/L and Probe 2 reading 2.00 mg/L. The operators also utilize a portable DO meter as needed. They said the meter is calibrated each time it is used by pressing a calibration button and they change the tip every six months. Calibrations are not documented (**Recommendation 1**). Settleability is tested daily and documented in writing in the Laboratory Analysis 60 Minute Settling Test log sheets. Mr. Poff said settleability is normally 350-450 milliliters per liter in an hour. The sludge blanket is measured daily using a sludge judge, although it is not documented (**Recommendation 1**). Mixed liquor suspended solids, food to microorganism ratio, pH, temperature, solids retention time, microorganisms, and other operational monitoring in the oxidation ditch and clarifier are not analyzed, measured, or calculated (**Recommendation 1**).

Headworks. At the headworks, influent passes through a bar screen estimated by the operators to be ½- to 1-inch spacing (Photo 2-3). Approximately five gallons of screenings are removed at the bar screen daily and are disposed of into an indoor dumpster. Influent flow is measured utilizing a Parshall flume with an ultrasonic flow meter (Photos 4). The meter was last calibrated on June 23, 2023. Influent flow is documented in a handwritten chart and in the Pedrotti SCADA system. Influent mixes with RAS and is pumped to the grit classifier (Photo 5). A refrigerated automatic composite sampler is utilized to collect influent samples at the headworks (Photo 6). I conducted influent sampling at the headworks below the bar screen. See Effluent Limits and Monitoring Requirements section of this report for results of analysis.

Grit removal. A grit classifier, located in a dedicated building with a garage door, is used to screen solids from influent (Photos 8-9). The operators said that H_2S gas builds up inside, but the garage door is opened as needed to ventilate. It is recommended the facility add a H_2S gas analyzer for employee health and safety purposes (**Recommendation 2)**. As they are removed, screened solids are deposited directly into an indoor dumpster, which is emptied monthly (Photo 10). The operators said the unit is checked daily and weekly although operation and maintenance records are not maintained (**Recommendation 1**). They keep replacement brushes on-site as a spare parts inventory. The operators stated the classifier operation is unsatisfactory as solids cause issues for them in their treatment plant**.** Mr. Staples confirmed the problems with the classifier and said they would have someone out, but he did not provide a timeline (**Recommendation 1**).

Oxidation ditches. Influent flow is directed to the east and west oxidation ditches via a manual splitter (Photo 15-16). Dimensions of each oxidation ditch are approximately 55- by 35-foot. The operators were unsure of the depth. The east oxidation ditch has been inoperable since July 2023 because they are upgrading the aeration system (Photo 17-18). Mixing in each oxidation ditch is accomplished with a rotor. The new rotor and VFG motor for the east oxidation ditch are on-site and awaiting install (Photo 11-12). Mr. Staples said that although the parts are on-site, there is no date for install (**Recommendation 1**). A crane must be used so the work is weather dependent and the ground is currently too soft. The aeration system for the west oxidation ditch was upgraded approximately one year ago. At the time of the inspection, mixing in the west oxidation ditch appeared sufficient with minimal foam. Wastewater in the west oxidation ditch was light brown color with an earthy, organic smell (Photo 20-22).

Secondary clarifiers. Wastewater discharges from the oxidation ditch over a weir (Photo 23) and is directed to one of two circular secondary clarifiers (north and south) via a splitter (Photo 24). The operators did not know the detention time, hydraulic loading design, or dimensions of the clarifiers, but they said the north clarifier is larger than the south clarifier. The north clarifier was in use and the south clarifier was empty at the time of the inspection. Mr. Staples said the south clarifier has been inoperable since May 2023 (Photo 25) (**Recommendation 1**). The operators said that the skim arm is misaligned and unable to clear the scum box. Repair attempts have been made by two contractors, most recently in April 2024, but it is still not functioning properly. Mr. Staples said repair is in the bidding process. The city has not yet provided EPA information on this corrective action or documentation. Additionally, the valve between the clarifiers is inoperable. In the event that wastewater needs to be transfered between clarifiers, they have to use a skid pump. The operators said that it is not possible to repair the valve due to location, which is underground between the clarifiers (**Recommendation 1**).

On day one and day two of the inspection, I observed floating solids, which appeared to be pin floc, in the north secondary clarifier (Photos 32, 56). In addition to floc, I observed floating trash in the clarifier that had not been removed by the bar screen or classifier, such as sucker sticks and food wrappers (Photos 83, 84) (**Recommendation 1**). I also observed algae and sludge on the weir (Photos 29, 30). The skimmer and scum trough seemed to be operating properly (Photo 30). I observed excessive solids and trash in the scum pit (Photo 26). On the first day of the inspection, Mr. Poff measured the sludge blanket using a sludge judge and found it to be approximately 3.25 feet (Photo 31). He said it was around one foot on Day 4 of the inspection. The operators said maintenance of the clarifier includes lubing the chain, scraping algae every couple of weeks, and changing oil annually, although maintenance is not documented (**Recommendation 1**). A spare parts inventory for the baffles and sweep arms is maintained on-site.

Disinfection system. The Bonner Springs WWTP uses UV radiation to disinfect effluent (Photo 43). The UV system is housed in a dedicated building (Photo 42). Effluent from the secondary clarifiers flows through a final bar screen (Photo 44), the UV channel, over a weir to the sampling station, and then over a weir to Outfall 001. The UV system has five banks with 40 bulbs each and 20 ballasts. During the inspection, two banks were in operation. The operators said that one bank is having electrical issues, one bank is having ballast issues, and one bank has been completely removed from the channel for unknown reasons (Photo 47) (**Recommendation 1**). The control panel indicated Banks 2 and 3 were on at the time of the inspection (Photo 45). I observed UV light at the channel in two banks (Photo 46). I observed sludge build up on surfaces in the UV channel and on the weir (Photo 48-49) (**Finding 1**). The operators said they clean the protective quartz sleeves with a hose every two weeks, although maintenance is not documented (**Recommendation 1**). Spare parts inventory on-site includes bulbs and ballasts. The operators said there will be a new UV system installed, which will be two alternating banks, but they did not have a timeline for modifications. Mr. Staples said the new UV system will be replaced this year. The city has not yet provided EPA this corrective action or documentation.

Sampling station. Flow from the UV channel discharges to the sampling station over a weir. I observed sludge build up on surfaces in the UV channel and on the weir (Photo 48-49) as well as sludge build up in the sampling station surfaces and on the effluent weir to Outfall 001 (Photo 50-51) (**Finding 1**). On day two of the inspection, I observed sludge chunks approximately ½ to 1 inch in diameter on effluent weir (Photo 57) (**Finding 1**). On day three, I again observed

sludge chunks approximately 1 in diameter on effluent weir (Photos 58-59) (**Finding 1**). A refrigerated automatic composite sampler inside the UV building is utilized to collect effluent samples from the sampling station (Photo 52). I conducted sampling in the same location the facility collects effluent samples. See Effluent Limits and Monitoring Requirements section of this report for results of analysis.

Outfall 001. Final effluent is discharged from Outfall 001. Outfall 001 is located outside of the fenced-in area of the WWTP and is accessible through a locking gate. Discharged effluent creates a stream channel that flows south for approximately 225 feet from the outfall to the Kansas River. I estimated the distance to the Kansas River based on analysis of aerial imagery. I visually inspected discharge at the outfall, but the effluent stream channel was heavily vegetated so I did not inspect downstream. On day one of the inspection, I observed sludge particles adhering to the walls of the outfall structure, settled on algae, and deposited in the receiving stream (Photos 53-55) (**Finding 3**). On day four of the inspection, I took a video documenting the volume of flow and sludge at the outfall (Video 60). The video documents the behavior of the settled sludge when disturbed. When disturbed with a stick, the settled and loosely consolidated sludge swirls around and breaks into clouds of small light brown clots. The operators said they visually inspect the outfall once every couple of months to remove algae and "open the channel." Maintenance is not documented (**Finding 3**).

Sludge wasting and disposal. I visually inspected the sludge management components of the plant including the scum pit (Photo 26), WAS pump station (Photo 27), RAS sump (Photo 28), aerated sludge thickening tanks (Photos 33-35), sludge pump room and controls (Photos 36-38), and dewatering components. I observed excessive solids and trash in the scum pit. Mr. Poff said the RAS nozzle in the sump has to be cleaned frequently because it gets clogged with solids that are not removed by the grit classifier.

During normal operations, sludge is wasted for eight minutes every 27 minutes. During the inspection, the WAS pump timer was not working and the pump had to be operated manually (**Finding 1**). Mr. Staples said the pump system went down approximately two to three weeks prior to the inspection. During that time, the operators would turn the pump on to waste sludge continuously while they were on-site from approximately 7:00 AM to 3:30 PM. They would then turn the WAS pump off when they left and sludge was not being wasted from approximately 3:30 PM to 7:00 AM. When the pump system had stopped working, they contracted an electrician to attempt repairs, which didn't work, and ordered a new pump. The new pump was due to arrive the week of the inspection or early the following week. The concern with inconsistent and insufficient wasting is that the sludge gets too old, which can lead to bulking, formation of small pin flocs, and a decline in living microorganisms.

Sludge is wasted to two aerated sludge thickening tanks. The polymer system (Photo 39), housed in the belt press building, delivers polymer to thicken sludge before it is dewatered with a belt press (Photo 40). Dewatered sludge is transferred to a dedicated dump truck by that is constantly receiving material (Photo 41). The truck is parked in an enclosed garage bay in the belt press building. Mr. Staples said the polymer pump went out the week before the inspection. He said they have a replacement pump and it should be fixed next week (**Recommendation 1**). Additionally, he said a bearing in the 20-year old belt press went out recently and while the belt press was inoperable, they kept wasting low to allow a few days for repair. In the event it takes longer, he said they could also pump into the empty oxidation ditch or send flow to the overflow

basin. Mr. Staples said the belt press is on the budget to be replaced in 2025. Maintenance records are not maintained.

Dewatered sludge is disposed one to three times a week when the dump truck is full at the Waste Management Johnson County Landfill. Waste Management requires annual analysis of the sludge. It was last analyzed in September 2023 (Attachment 16). My review of the analysis indicates sludge is dewatered to approximately 11 percent solids.

Effluent Limits and Monitoring Requirements.
Inspection Sample Collection and Analysis. I followed Region 7 LSASD standard operating procedures in the collection, packaging, transportation, and handling of samples. I used ISCO 3710 automatic composite samplers with 3/8-inch weighted tubing to collect three sets of influent and effluent samples. On May 13, May 14, and May 15, 2024, I programmed each sampler to collect aliquots every 30 minutes for 24 hours. Samples were collected into a clean Nalgene bottle, which was packed in ice. I returned each day to collect samples and reprogram the sampler. When collecting samples, I removed the bottle, agitated its contents, and poured them into clean, pre-labeled containers. I measured the pH and temperature in a separate grab sample using a pH meter. Each day, I placed the collected samples in a cooler on ice, sealed the cooler, and hand delivered it the to the EPA Region 7 Science and Technology Center for analysis. I electronically submitted Field Sheets and Chain of Custody forms each day following Region 7 procedures. The results from sample analysis are summarized in Table 2 below. Flow information was obtained from the facility (Attachment 14). See Attachment 7 for report of EPA Sample Analysis Results.

Table 2. Analytical Results for Influent and Effluent Samples

Parameter	Permit limit	5/14/2024 Sample # 2400209	5/15/2024 Sample # 2400210	5/16/2024 Sample # 2400211
Influent BOD	Monitor	**121 mg/L**	**277 mg/L**	**440 mg/L**
Effluent BOD	Daily max 45 Monthly ave 30	**6.76 mg/L**	**6 mg/L**	**8.98 mg/L**
BOD Removal	85%	94.4%	97.8%	98.0%
Influent TSS	Monitor	**37.6 mg/L**	**158 mg/L**	**639 mg/L**
Effluent TSS	Daily max 45 Monthly ave 30	**14.8 mg/L**	**17.9 mg/L**	**24.7 mg/L**
TSS Removal	85%	60.6%	88.7%	96.1%
Effluent Ammonia	Daily max 8.5 Monthly ave 7.6	**<0.100 mg/L**	**<0.100 mg/L**	Not analyzed
Influent TP	Monitor	**2.21 mg/L**	**4.11 mg/L**	**13.3 mg/L**
Effluent TP	Goal average ≤1.0 mg/L	**2.2 mg/L**	**2.28 mg/L**	Not analyzed
Influent TKN	Monitor	**23.3 mg/L**	**36.9 mg/L**	**75.3 mg/L**
Effluent TKN	Monitor	**2.41 mg/L**	**2.5 mg/L**	Not analyzed
Effluent N+N	Monitor	**19.7 mg/L**	**17.4 mg/L**	Not analyzed
Effluent TN (calculated)	Monitor	**22.11 mg/L**	**19.9 mg/L**	Not calculated
Flow	Monitor	0.475 MGD	0.543 MGD	0.499 MGD

The sample results for TSS may not have fully reflected the actual circumstances. I observed sludge chunks at the sampling station weir to Outfall 001 (Photos 57-59) which were likely too big to be collected by a composite sampler 3/8-inch tubing. The permit requires TSS and BOD to

be removed at a rate of 85%. TSS removal the first day of sampling was below the required removal rate, however, the subsequent days were above the required rate (**Finding 3)**. Influent levels of BOD, TSS, and TKN are unusually high on May 15 and May 16, 2024, which is an indication of industrial contribution.

Discharge monitoring reports. I reviewed DMR data from November 2021 through May 2024 (Attachment 15). I did not note any violations of permitted effluent limits in the DMRs entered by the facility. There was, however, a conflict for two of the DMR data points compared to Pace Analytical Services Reports of Laboratory Analysis Sample analysis for discharge monitoring reports is contracted to Pace Analytical Services. The operators conduct sampling and hand deliver the samples to the Pace lab. City staff enter the values from the lab report into the Kansas Environmental Information Management System (KEIMS) as a DMR. I reviewed Pace Analytical Services Reports of Laboratory Analysis from May 2022 to April 2024 (Attachment 25) and compared lab report values with DMRs submitted by the facility.

For samples collected July 25, 2023, the DMR entered by the facility for effluent TSS was 27.4 mg/L. The value documented in the Pace lab report was 274 mg/L. The value exceeded the permit effluent limits for TSS of 45 mg/L weekly average and 30 mg/L monthly average (**Finding 2**). The corrected data results in a change of compliance status. The DMR value entered for influent TSS was 302 mg/L. The value documented in the Pace lab report was 3,020 mg/L. Influent TSS is for monitoring purposes only and does not have a permitted limit.

For samples collected January 12, 2023, the DMR value for ammonia was entered at 12.6 mg/L, but the report documented a value of 0.11 mg/L. The effluent limit for that month was 17.0 mg/L so the corrected data did not result in a change in compliance status.

The permit requires effluent analysis for *E. coli* as a grab sample each month. Standard Condition 4 of the permit requires the permittee to conform to 40 CFR Part 136, use of an approved method for analysis. All Pace Analytical Services Reports document that Standard Method (SM) 9223B is used for analysis and preparation. SM 9223B refers to SM 9060 for holding times. SM 9060 requires less than eight hours between collection and lab analysis. All Pace reports I reviewed included a qualifier (u3, u6, and/or H3) for *E. coli*. The report defines u3 as "Analysis initiated more than 8 hours but less than 24 hours after sample collection," u6 as "Analysis initiated more than 24 hours after sample collection," and H3 as "Sample was received or analysis requested beyond the recognized method holding time" (**Finding 3**). Mr. Staples stated that a Pace representative told him that KDHE accepts *E. coli* results within a 24-hour hold time. I told Mr. Staples the permit (Standard Condition 4) requires the facility to follow approved methods. He said they would talk to Pace or find another lab that is able to meet hold times.

I requested documentation of BOD and TSS removal calculations kept by the facility. The operators said they do not calculate percent removal. Using DMR data, I calculated percent removal with the equation [(IN – Out)/IN] x 100 for the DMR data I reviewed. According to DMR data, both BOD and TSS are generally reduced below the minimum detectable limit (MDL) of analysis. I did not note any months when percent removal was below the permitted requirement (Attachment 17). Since BOD and TSS are reduced below the MDL, the plant essentially accomplishes 100 percent removal. This is in conflict with the results of my sampling

during the inspection. I calculated removal ranging between 94.4% to 98.0% for BOD and 60.6% to 96.1% for TSS.

Schedule of Compliance and Nutrient Removal. A TMDL for total phosphorus (TP) has been adopted in the section of the Kansas River receiving effluent discharge, which includes a Phase I waste load allocation (WLA) for the Bonner Springs WWTP.

The permit schedule of compliance required the operators to go through operational training for nutrient removal, to implement changes as recommended by the technical assistance providers, and to submit a report summarizing operational changes implemented by November 1, 2022. Nicholas Willis, Senior Program Manager with Wichita State University Environmental Finance Center, conducted a site visit on October 7, 2022, to discuss efforts to meet TN goals and reduce TP in discharges. In a follow up email sent October 13, 2022 (Attachment 18), he provided recommendations on operational changes including:

- Independent feed for controls. He noted the plant was using dissolved oxygen (DO), but recommended obtaining oxidation reduction potential (ORP) probes so operators can determine if there is a good environment for Phosphorus Accumulating Organisms.
    - **The facility is still utilizing DO and has not switched to ORP.**
- Timing aeration with programmable timer controls.
    - **The facility has the ability to time aeration with the VFG controls, but this has not been implemented. Additionally, the DO values do not feed into the SCADA system so this may not be possible.**
- Minimize residence time of sludge in the clarifiers to prevent anaerobic conditions from occuring in the sludge blanket.
    - **Operational monitoring is not conducted that would allow for calculation of sludge retention time.**
- Contact Nicholas Willis again after nitrate removal success to discuss further.
    - **There has been no further discussion.**

In a May 15, 2024, email (Attachment 18), KDHE considered the email follow up from Mr. Willis to count as the operational changes plan report that was due on November 1, 2022. However, based on observations during my inspection, these recommended changes have not been implemented at the WWTP as indicated by bolded text above (**Finding 4**).

Special Condition D. of the permit incorporates the WLA total concentration value for TP of 1.00 mg/L along with 10.0 mg/L for total nitrogen (TN) as a permit goals. Special Condition D. of the permit also incorporates the WLA annual average limit of 11.7 pounds per day for TP. The annual average limit became an enforceable limit as of November 1, 2023. I reviewed DMR submittals and calculated annual averages from EPA's Integrated Compliance Information System for the period from March 2022 to March 2024 (Table 3). The TP annual average exceeds the goal of 1.0 mg/L for all months. The TN annual average exceeds the goal of 10.0 mg/L for all months. I did not note any months when the TP annual average limit of 11.7 pounds per day exceeded the permitted requirement.

Table 3. Nutrient annual averages

	TP goal 1 mg/L	TP limit 11.7 lbs/day	TN goal 10 mg/L
March-22	2.32		17.24
April-22	2.23333		18.13333
May-22	2.15714		15.84286
June-22	2.125		14.5125
July-22	2.25556		14.98889
August-22	2.41		15.15
September-22	2.6		16.27273
October-22	2.73333		17.65833
November-22	2.65833		19.05
December-22	2.7		19.65833
January-23	2.76667		19.0775
February-23	2.76667		19.34417
March-23	2.70833		19.2225
April-23	2.775		18.58083
May-23	2.875		20.40583
June-23	2.96667		22.53083
July-23	2.975		23.73083
August-23	2.9		22.55583
September-23	2.75833		20.55583
October-23	2.75		18.8025
November-23	2.75	9.40995	18.28583
December-23	2.73	9.54149	17.6275
January-24	2.72167	9.66063	18.18333
February-24	2.63	9.33786	16.69167
March-24	2.68	9.36851	16.72167

Laboratory.

The Bonner Springs WWTP has a laboratory on-site (State Lab ID: E-92672), which is certified by KDHE for analysis of pH. The certification was renewed on May 1, 2024, and expires on April 30, 2027 (Photo 61). The operators use a HQ440D, EPA Method 8156/SM 4500-H+B, to measure pH. Calibration standards for pH are purchased in gallon jugs and put into smaller containers for use as needed. The standards I observed in the lab were within the expiration date (Photo 66). Operators document daily calibrations and the date received, date opened, and expiration date of calibration standards on the pH Meter Calibration Chart (Attachment 19).

Laboratory equipment on-site includes a muffle furnace, an oven, a Hach DR 2800 Spectrophotometer, a Hach DRB200 Reactor, a HQ440D Multimeter, a scale, a microscope, a desiccator, and a settleometer (Photo 62-65). Other analysis on influent and effluent conducted on-site includes COD, ammonia, nitrate, and nitrate and is recorded in Effluent Lab Results and Influent Lab Results handwritten logs (Attachment 24). The lab includes a sink for cleaning glassware. Dawn dish soap is used rather than a lab grade detergent.

The three Hach meters last received annual service by the manufacturer in September 2023 (Attachment 20). Facility representatives said they do not have standard operating procedures (SOPs) for lab procedures. During the on-site document review, I found a folder containing SOPs for KDHE permit sampling & monitoring plan, wastewater plant lab, monthly Pace

analytical sample collection, settleability, calibration and sample collection for pH meter, suspended solids, and total volatile solids. These SOPs were last updated between 2015 to 2017 and current staff are not utilizing the SOPs.

Industrial Users.
Mr. Staples said the city has one industrial user discharging to the collection system, Brill, A CSM Bakery Solutions Company, which is located at 2410 South Scheidt Lane in Bonner Springs. The bakery utilizes a dissolved air flotation wastewater treatment system. Apex Envirotech, Inc. collects samples twice monthly, which are analyzed by Pace Analytical Services for TSS, BOD, oil and grease (O&G), and total petroleum hydrocarbons (TPH). The Pace lab reports are provided to the city. City ordinances limit sanitary sewer discharges to 350 mg/L for BOD and TSS. When the bakery exceeds that threshold, they are surcharged. Mr. Staples said there is a written agreement with the bakery. The city has not yet provided EPA this corrective action or documentation. Mr. Staples provided an email chain from 2020 with the Maintenance Manager where he educated him about the BOD and TSS limits and an email documenting attempted contact in 2024 (Attachment 21). I reviewed the last six months of data from Pace Laboratory Analysis and City of Bonner Springs Billing History (Attachment 21). BOD discharges into the sanitary sewer over the last six months average 2,812 mg/L and TSS discharges average 1,785 mg/L (Table 4). Mr. Poff said he believes the bakery sends wastewater at times that impacts treatment at the plant and it could have caused the clarifier problems I observed during the inspection.

Bonner Springs WWTP's design mass loading is 3,200 pounds per day BOD and 2,300 pounds per day TSS. I calculated Brill's contribution using data from January 2023 to April 2023. Brill contributes an average of 354 lbs/day BOD, which is approximately 11 percent of the design capacity. They contribute 218 lbs/day TSS, which is approximately nine percent of the design capacity.

Table 4. Brill, CSM Bakery industrial discharge data

Sample date	Composite		Water Use (gallons)	Charges	
	BOD (mg/L)	TSS (mg/L)			
11/16/2023	2,650	36.4	566,700	$3,134.12	BOD
11/29/2023	2,023	61		-$2,182.06	TSS
12/13/2023	1,590	135	654,900	$11,257.67	BOD
12/21/2023	3,430	862		$0.00	TSS
1/4/2024	<2,000	164	778,100	$3,377.31	BOD
1/17/2024	5,520	15,000		$0.00	TSS
2/9/2024	3,480	1,640	850,900	$7,486.31	BOD
2/28/2024	3,220	1,370		$6,944.07	TSS
3/13/2024	3,930	720	847,300	$7,852.67	BOD
3/26/2024	1,220	234		$6,540.72	TSS
4/11/2024	1,580	292	1,150,800	$9,995.21	BOD
4/24/2024	2,290	907		$8,384.81	TSS
Averages	2,812	1,785			

Sanitary Sewer Collection System.
I discussed the basic components of the collection system, such as size of pipe, age, material type, manholes, and the city's operation and management of the collection system, such as customer service, emergency preparedness, procedures, and training with Steve Garcia. The city of Bonner Springs sanitary sewer collection system consists of approximately 678 manholes and nine lift stations. Mr. Garcia estimated that around 80% of the sewer lines are gravity and 20% are force main.

Management and inspections. The collection system as a whole is being managed through visual inspections and the use of city-owned equipment including a 2,500-gallon vac truck, a pole camera, three aerators, smoke testing equipment, a crane truck, a jet truck, and two trash pumps. Mr. Garcia visually inspected 351 manholes in 2023 and 203 so far in 2024, which is recorded in the Master Manhole Inspection Excel spreadsheet. Maintenance and repairs of the lift stations and the associated generators are documented in the Semi-Annual Lift Station Maintenance Excel spreadsheet. Both preventive and reactive jetting is conducted. Roots are controlled by chemical means and by contracting Dukes Root control for additional treatment with a warranty. The city uses a variety of contractors to clean, line, and repair manholes, lines, grinder pumps, and lift stations.

Resident concerns. Mr. Garcia said the city gets an annual average of 10 complaints per year. He documents each complaint on a written log, which is emailed to City Hall for retention. He responds to concerns the same day they are received. Examples of complaints received include grinder pump issues and sewer odors.

Sanitary sewer codes. Article 3 of the Code of the city of Bonner Springs covers wastewater (sanitary sewer) service rates, charges, and regulations (Attachment 22). The city code limits and/or prohibits fats, oils and grease, temperature, strong acid iron pickling wastes and concentrated plating solutions, metals, colors, storm water and other discharges, flammables/explosives, Biochemical Oxygen Demand (BOD), solids, and pH in discharges to the collection system. According to the City's website, wastewater is billed at a usage rate of $10.29 per 1,000 gallons of water usage within city limits. Outside city limits usage rate is $15.44 per 1,000 gallons of water usage.

Exposed lines. Mr. Garcia said there are nine locations the sanitary sewer line crosses a creek either encased in concrete or under the creek bed and two locations where the sanitary sewer line is suspended over a creek. I visually inspected two exposed lines along Spring Creek in South Park (Photographs 81-82). He said he visually inspects all exposed lines quarterly and some of them daily. Inspections are not documented.

Lift stations. The collection system currently includes nine lift stations. A tenth lift station is anticipated to come online in 2026. I visually inspected four lift stations (1, 2, 3, and 6). All lift stations have low- and high-level alarms and are on the Mission Control system as of 2021. Lift stations are cleaned annually and solids are vacuumed out as needed. See Table 5 below for lift station locations and additional information.

Table 5. Lift station information

Lift Station	Location	Backup power	Pumps	Notes
1	13527 Wood End	Yes, automatic	Submersible	Aerated. Steel company suspected to discharge from sump pumps.
2	220 Front Street	Yes, manual	Temporary skid pump	Aerated. Accounts for 50% of flow to WWTP
3	2225 S 138th Street	No	Dry well	
4	13117 Riverview	Yes, automatic	Submersible	Aerated
5	633 N 130th Street	No	Submersible	
6	1115 Kaw Drive	Yes, automatic	Dry well	
7	11711 Kaw Drive	No	Dry well	
8	500 S 138th Street	No	Submersible	Aerated
9	223 S 134th Street	Yes, automatic	Submersible	Downstream of LS4 and LS5
10	Anticipated online 2026			

Wastewater incidents. I reviewed Wastewater Incident Report Forms submitted to KDHE for May 2021 to May 2024 (Attachment 23). Wastewater incidents reported by the city include sanitary sewer overflows and basement backups. I asked if there was a written SOP for SSO and emergency response to explain who to contact, how to prevent untreated wastewater from entering surface water, what testing to conduct, what equipment is available, etc. The city did not provide written procedures on how to respond to an SSO or other wastewater emergencies.

In May 2022, Lift Station 2 experienced a collapse, which resulted in a discharge of an estimated 150,000 gallons of untreated sewage lasting from May 21 to May 23. An unnamed tributary to Wolf Creek is immediately adjacent to the lift station. I asked Mr. Garcia if the untreated wastewater was diverted to prevent a discharge to surface water. He said the lift station discharged to the creek From May 21 to May 23, 2022 (**Finding 5**). The flow of untreated sewage was not contained or redirected to prevent discharge to surface waters. The creek connects with Wolf Creek approximately 1,000 feet downstream of the lift station. Impaired designated uses in Wolf Creek include aquatic life, which is impaired by TSS and other parameters, and primary contact recreation, which is impaired by *E. coli*. The lift station failure led to nine additional incidents in 2022: one basement backup, three wet weather overflows, and six equipment failure overflows for a total estimated discharge up to 349,695 gallons. See Attachment 8 for additional information and a map regarding Lift Station 2 incidents. The lift station has been operated under a temporary fix, using a skid pump, since May 2022 (**Recommendation 1**). Mr. Staples said they are still waiting for an insurance payment to repair it. He said Burns & McDonnell, a local engineering consultant, is working on plans for a new, relocated lift station with a very loose timeline for completion at the end of 2025. The city has not yet provided EPA this corrective action or documentation.

SUMMARY

I provided a Notice of Preliminary Findings during the closing conference of the inspection (Attachment 10). Mr. Staples responded to the NOPF in letters dated May 21 and May 22, 2024 (Attachment 11). Upon review of records, DMR data, and inspection observations, my inspection findings and recommendations include:

Recommendation 1 – The facility should implement additional measures to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances. I noted many operating, maintenance, and repair issues at the WWTP and collection system including:

- The facility does not have an operations and maintenance manual with a list of equipment, schedules of routine maintenance, and updated standard operating procedures for the wastewater treatment plant and laboratory.
- Calibrations of the portable DO meter not documented.
- Sludge blanket measurements not documented.
- Mixed liquor suspended solids, food to microorganism ratio, pH, temperature, solids retention time, microorganisms, and other operational monitoring in the oxidation ditch and clarifier are not analyzed, measured, or calculated.
- Maintenance and repair of grit classifier, UV system, clarifier, and other equipment not documented.
- The overflow basin contains woody and dense vegetation.
- The SCADA system is not fully operational. For example, dissolved oxygen is not communicated to the system.
- The operators said the classifier is unsatisfactory leading to operational difficulties within the treatment plant.
- The east oxidation ditch has been inoperable since July 2023 because they are upgrading the aeration system. The parts are on-site, although there is no date for install.
- The skim arm on the south clarifier is misaligned and unable to clear scum box.
- The valve between clarifiers is inoperable. If wastewater needs to be transfered between clarifiers, a skid pump is used.
- The WAS pump timer has not been working for approximately two to three weeks prior to the inspection. The facility was operating the pump manually at the time of the inspection.
- The UV system consists of five banks. Three of the five banks have operational issues. One bank has electrical issues, one bank has ballast issues, and one bank has been completely removed from the channel for unknown reasons.
- The polymer pump was inoperable at the time of the inspection. The facility estimated the pump failed the week before the inspection.
- Lift Station 2 experienced a collapse in May 2022. The collapse has not yet been remedied. The facility has operated a skid pump since the collapse as a temporary measure.

Recommendation 2 – The facility should consider monitoring the grit chamber for H_2S levels for the safety of the employees at the WWTP.

Finding 1 – **Failure to properly operate the WWTP and discharge of sludge, solids from the WWTP.** Standard Condition 6 (Facilities Operation) of Permit KS0082881 requires the permittee to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the permittee to achieve compliance with the requirements of this permit. Condition A (Effluent Limits and Monitoring Requirements) of Permit KS0082881 prohibits discharge of floating solids.

I noted operational issues (improper wasting). For approximately two to three weeks prior to the inspection, and during the inspection, sludge was only wasted while the operators were on-site

from approximately 7:00 AM to 3:30 PM. The WAS pump was turned off after hours and sludge was not being wasted from approximately 3:30 PM to 7:00 AM. Improper wasting caused a buildup of excessive sludge passing over the clarifier weir (Photos 29, 30), excessive sludge build up on surfaces in the UV channel (Photo 48-49) and sampling station surfaces (Photo 50-51), and sludge chunks on the effluent weir (Photo 57-59).

On day one of the inspection, I observed sludge particles adhering to the walls of the outfall structure, settled on algae, and deposited in the receiving stream (Photo 53-55). On day four of the inspection, I took a video documenting the volume of flow and sludge at the outfall (Video 60).

Finding 2 – Failure to meet effluent limits for TSS on July 25, 2023. Condition A (Effluent Limits and Monitoring Requirements) of Permit KS0082881 limits TSS in effluent discharges to 45 mg/L weekly average and 30 mg/L monthly average. The Pace Analytical Services Report of Laboratory Analysis for samples collected on July 25, 2023, documented the results of analysis for TSS at 274 mg/L. The value exceeded the effluent limit permit effluent limits for TSS.

Finding 3 – **Failure to meet hold times during analysis of *E . coli*.** Standard Condition 4 (Test Procedures) of Permit KS0082881 requires the permittee to conform to the requirements of 40 CFR Part 136. All Pace Laboratory Services Reports of Laboratory Analysis reviewed included qualifiers documenting that the eight-hour hold time was not met.

Finding 4 – Failure to meet the requirements of the permit Schedule of Compliance. Condition E. Schedule of Compliance of Permit KS0082881 requires the permittee to implement operational changes recommended by the technical assistance providers for nutrient removal. Based on observations during my inspection, the operational changes recommended by Nicholas Willis have not been implemented at the WWTP including conducting oxidation reduction potential monitoring, timing aeration with programmable timer controls, minimizing sludge residence time in the clarifiers, and following up with the technical assistance provider for further direction.

Finding 5 – Failure to take all necessary steps to minimize or prevent impact to the environment. Standard Condition 6 (Facilities Operation) of Permit KS0082881 requires the permittee to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the permittee to achieve compliance with the requirements of this permit. Additionally, Standard Condition 6 requires the permittee to take all necessary steps to minimize or prevent any adverse impact to human health or the environment resulting from noncompliance with any effluent limits specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. In May 2022, Lift Station 2 experienced a collapse, which resulted in a discharge of an estimated 150,000 gallons of untreated sewage lasting from May 21 to May 23 to an unnamed tributary to Wolf Creek. The flow of untreated sewage was not contained or redirected to prevent discharge to surface waters.

SUZANNE WARD
Digitally signed by SUZANNE WARD
Date: 2024.07.23 16:38:33 -05'00'

Suzanne Ward
Physical Scientist

NICOLE MORAN
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Date: 2024.07.24 09:30:48 -05'00'

Nicole Moran
Section Chief

ATTACHMENTS:

Attachment 1 – Photographs (28 pages)
Attachment 2 – Photo Log (4 pages)
Attachment 3 – Video 60. P5160346.MOV
Attachment 4 – WWTP Process Flow Diagram (1 page)
Attachment 5 – Aerial Map (1 page)
Attachment 6 – NPDES Permit KS0082881 (11 pages)
Attachment 7 – EPA Sample Analysis Results (20 pages)
Attachment 8 – Summary of Lift Station 2 Reported Incidents (1 page)
Attachment 9 – CBI Information Notice Signed (4 pages)
Attachment 10 – Notice of Preliminary Findings (number pages)
Attachment 11 – Facility NOPF Response (77 pages)
Attachment 12 – KDHE Inspection Report 04062021 (17 pages)
Attachment 13 – KDHE Inspection Report 12212021 (12 pages)
Attachment 14 – Flow and Weather Conditions 2023 to 2024 (17 pages)
Attachment 15 – DMR Data KDHE KEIMS 2021 to 2024 (49 pages)
Attachment 16 – Biosolids laboratory analysis (34 pages)
Attachment 17 – BOD and TSS percent removal calculations (1 page)
Attachment 18 – Nutrient Schedule of Compliance email communications (8 pages)
Attachment 19 – pH Meter Calibration Charts September 2023 to May 2024 (1 page)
Attachment 20 – Hach Meters Annual Service Certificates 2023 (12 pages)
Attachment 21 – Brill CSM Bakery lab analysis and billing (209 pages)
Attachment 22 – City Code. Article 3. Wastewater (Sanitary Sewer) Service (8 pages)
Attachment 23 – Wastewater Incident Report Forms (21 pages)
Attachment 24 – Effluent and Influent Lab Results logs 2021 to 2024 (67 pages)
Attachment 25 – Pace Analytical Services Reports of Laboratory Analysis WWTP May 2022 to April 2024 (549 pages)
Attachment 26 – Log of documents received from city of Bonner Springs (1 page)