



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Report Title: Clean Water Act Compliance Inspection Report
Inspection Date(s): 04/12/2022
Regulatory Program(s): National Pollutant Discharge Elimination System (NPDES)
Type of Activity: Wastewater
Facility Name: City of Salem Wastewater Treatment Plant
Permittee(s): City of, Salem
Facility Address: Salem, City of
PO Box 352
229 W Main Street
Salem, WV 26426
Latitude: 39.29054 **Longitude:** -80.52818
Permit Number: WV0020257 **SIC:** 4952
NAICS Code:
Receiving Waters: Salem Fork
Unique Project #: 3E22WN042A

Facility Representative(s):

Point of Contact

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Unique Project#: 3E22WN042A

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I. Introduction

On April 12, 2022, an inspector from the U.S. Environmental Protection Agency (“EPA”) Region III (hereinafter, “EPA Inspector”) conducted a Wastewater Inspection of the City of Salem’s Wastewater Treatment Plant (hereinafter, “the Facility”). The purpose of the inspection was to observe compliance with the Clean Water Act (CWA) and to verify compliance with the site’s National Pollutant Discharge Elimination System (NPDES) Permit No. WV0020257, hereinafter, the “Permit”, and applicable State and Federal regulations.

A. Inspection Opening Conference

The EPA Inspector arrived at the site at approximately 9:30 AM (EDT) for the inspection. The Inspector met with the site representatives. Monica Crosby displayed her credentials to Gary White at the outset of the inspection and explained the purpose of the inspection was to review compliance with the Permit. The EPA Inspector explained that any information that the Facility deemed to be confidential business information (“CBI”) should be identified to the EPA Inspector during the inspection and it would be handled as CBI according to EPA’s CBI procedures. Table 1 outlines the individuals that participated in the inspection.

Table 1. Inspection Attendee List

Name	Affiliation	Contact Information
U.S. EPA Region III		
Monica Crosby	Inspector - EPA Region III	Phone: (410) 305 - 2930 Email: Crosby.monica@epa.gov
West Virginia Department of Environmental Protection		
James McClain	Inspector - WVDEP	Phone: (304) 488 - 3523 Email: James.mcclain@wv.gov
Facility Representative		
Gary White	Chief Operator - Salem WWTP	Phone: (304) 695 – 2170 Email: salemwwtp@frontier.com
Boyd Pratt Jr.	Class II Operator -Salem WWTP	Phone: (304) 416 – 4040
Donald Fury	Class I Operator - Salem WWTP	Phone: (304) 838 – 3019 Email: Fatboys4@outlook.com

B. Weather and Precipitation Conditions

During the inspection, weather was mild and slightly damp. National Oceanic and Atmospheric Administration (NOAA) National Weather Service precipitation data for the date of the inspection and 5 days prior are provided in the Table 2 below:

Table 2. Precipitation Data

Station Name	Date	Precipitation Amount (inches) ¹
CLARKSBURG 1, WV USUSC00461677	4/07/2022	0.38
CLARKSBURG 1, WV USUSC00461677	4/08/2022	0.12
CLARKSBURG 1, WV USUSC00461677	4/09/2022	0.18
CLARKSBURG 1, WV USUSC00461677	4/10/2022	0.25
CLARKSBURG 1, WV USUSC00461677	4/11/2022	0.00
CLARKSBURG 1, WV USUSC00461677	4/12/2022	0.04

¹ Source: NOAA National Climatic Data Center (<http://www.ncdc.noaa.gov/>).

C. Summary of the Facility

The city of Salem operates and maintains a wastewater collection system and an oxidation ditch with a design flow of 0.40 million gallons per day (MGD). The wastewater treatment plant (WWTP) is comprised of a mechanical bar screen, three (3) brush rotors, a 47,000-gallon boat clarifier, ultraviolet (UV) disinfection, a 47,000-gallon sludge holding tank, and a sludge dewatering belt press. The WWTP serves a population of 4,000 persons within the City of Salem and its environs. Treated effluent discharges through Outlet No. 001 to Salem Fork, a tributary to Tenmile Creek which flows into the West Fork River and ultimately the Monongahela River. Under the meaning of Section 502(7) CWA, 33 U.S.C. § 1362(7), Salem Fork is considered a navigable water of the United States.

The Facility was first permitted under West Virginia NPDES Permit No. WV0020257 (hereinafter, Permit) on March 30, 1974. The Permit was reissued on February 11, 2019, with an effective date of April 01, 2019, and is set to expire on February 10, 2024 (refer to Appendix A). Under its Permit, the Facility is required to monitor flow continuously and sample and report monthly for the following parameters at Outfall 001: biological oxygen demand (BOD), total suspended solids (TSS), ammonia nitrogen, fecal coliform, total recoverable copper, and oil and grease. Semi-annual sampling and reporting are required for total hardness as calcium carbonate (CaCO₃). Yearly sampling and reporting are required for total recoverable lead, total recoverable zinc, and total recoverable aluminum. The Facility is also required to sample its sewage sludge semi-annually.

The Facility accepts non-domestic wastewater from the following industrial users (IUs): Salem Armory, Genesis Health Care, Salem International University, and Salem Correctional Center. Salem Armory is permitted as IU01, Genesis Health Care as IU03, Salem University as IU08, and Salem Correctional Center is permitted as IU09. Under its Permit, Salem Armory is required to estimate flow daily and sample and report quarterly for Total Suspended Solids (TSS), pH, and oil and grease. Genesis Health care, Salem University, and Salem Correctional Center are required to monitor flow daily and sample monthly for the following parameters: BOD, TSS, pH, temperature, chemical oxygen demand (COD), and oil and grease.

Should the Facility find it applicable, the U.S. EPA Small Business Resources Information Sheet can be found at <https://www.epa.gov/sites/production/files/2017-06/documents/smallbusinessinfo.pdf>.

II. Facility Activity

As part of the process, the EPA Inspector visually observed the Facility's wastewater treatment train and site conditions in the presence of the Facility's Chief Operator. The wastewater treatment train consists of:

- Lift station;
- Corkscrew grinder;
- Mechanical bar screen that is used in case the corkscrew grinder becomes inoperable for a period of time;
- Cyclone grit chamber;
- Secondary bar screen;
- Oxidation ditch equipped with three (3) brush rotors for aeration and mixing;
- Boat clarifier;
- Sludge holding tank;
- Ultra-violet (UV) Disinfection System; and
- Sludge dewatering belt press.

The observations from the inspection are described in detail below in the Observations section. Photographs were taken during the inspection by Monica Crosby and are provided in Appendix B.

Wastewater flows from the collection system via gravity to the influent pump station which has a duplex configuration equipped with two alternating fixed speed pumps that pump influent into the Plant headworks (refer to Appendix B, Photograph 1). A daily inspection checklist is maintained within the electrical control box at the lift station that includes the pump's current capacity, the rainfall measured by a rain gauge, the inspector's name, and any remarks noted during the inspection. Past daily inspection checklists are kept in a binder onsite (refer to Photograph 2). In addition to these daily checklists, the EPA Inspector also observed the chief operator's notebook where daily notes are taken on the status of the plant and any tasks that were completed that day. Separate logs are maintained for daily log data, such as centrifuge data, pH testing, and pH meter calibration. The EPA Inspector observed that pH buffers, a pH meter, a centrifuge, and a DO meter were onsite, but not in use during the time of the inspection. The pH buffers were all within the expiration dates at the time of the Inspection. The EPA Inspector also observed that the onsite daily flow meter was recently serviced and calibrated on March 23, 2022, by Buddy Haines of H&S Controls & Instrumentation, LLC of Grafton, WV (refer to Appendix B, Photograph 3).

The influent flows to the headworks of the plant which consists of a corkscrew grinder to break up any solids (refer to Appendix B, Photograph 4), a cyclone grit chamber (refer to Appendix B, Photograph 6), and a mechanical bar screen which is used in case the corkscrew grinder becomes inoperable for a period of the time (refer to Appendix B, Photograph 5). A second bar screen had been placed directly after the grit chamber to remove any excess solids which may have passed through the initial removal (refer to Appendix B, Photograph 8). The Chief Operator stated that the bar screens are checked twice daily. At the time of the Inspection, the mechanical bar screens were observed to be free of excess solids and floatables buildup. The cyclone grit chamber deposits all solids into large, burlap bags below the chamber. The bags were contained in a concrete block to collect any grit that may escape during the removal process (refer to Appendix B, Photograph 7). During the Inspection, the Chief Operator stated that the bags are replaced as needed and once full, are placed into the dumpster located directly adjacent to the grit chamber. At the time of the

Inspection, the dumpster valve was observed to be closed and the lids to the dumpster were shut.

Following the headworks, the influent flows to the 560,000-gallon oxidation ditch that is composed of three brush rotors for aeration and mixing (refer to Appendix B, Photograph 9). Only one of the brush rotors was in use at the time of the Inspection. The Mixed Liquor Suspended Solid (MLSS) passing through the ditch was observed to be chocolate-brown in color and well aerated (refer to Appendix B, Photograph 10). All flow passing through the oxidation ditch empties into the clarifier for settling prior to UV disinfection. During the Inspection, the Chief Operator explained that a line was placed in the path the water takes to the clarifier to help divert floatable solids. Any solids that flow over this line are directed back into the headworks to reenter the treatment train (refer to Appendix B, Photograph 11). The MLSS then flows into the Facility's 47,000-gallon boat clarifier (refer to Appendix B, Photograph 12). The Chief Operator stated that the clarifier has big ports with 4-inch holes in the bottom where solids settle. During the Inspection, WVDEP stated that there is approximately a 3-foot sludge blanket at the bottom of the clarifier. When the Facility experiences high flow, it occasionally pushes the settled solids back into suspension. Flotables get pulled out via gravity and pass a manual skimmer that skims off flotables into the adjacent 47,000-gallon sludge holding tank (refer to Appendix B, Photographs 13 and 14). Any solids that manage to bypass this skimmer get sent back to the headworks and reenter treatment. At the time of the inspection, the Chief Operator explained that the boat clarifier is being replaced with two external clarifiers. The Facility has worked with engineers to finalize design plans, but at the time of the Inspection there was no date for planned construction. The Chief Operator stated that the tracks to the clarifier are sprayed and scrubbed every other day. During the inspection, clusters of denitrifying sludge were observed throughout the clarifier with a small amount of sediment and pin floc overtopping the weir at the end of the clarifier (refer to Appendix B, Photographs 15 through 19).

The sludge holding tank is pumped as necessary. During the Inspection, the Chief Operator stated that it takes about 30 decants for the sludge holding tank to have reached capacity and then the Facility will pump the sludge to the belt pressing station. The sludge holding tank is equipped with a manual valve that controls the drawing off of water during each decanting process (refer to Appendix B, Photographs 20 and 21). All decant water from the holding tanks is pumped back to the main lift station to reenter the treatment train. The solids slurry is pumped to the belt press for dewatering. The Chief Operator stated that a settleable test is taken every other morning.

After settling in the clarifier, water is pumped from the front of the boat clarifier to the UV disinfection system (refer to Appendix B, Photographs 22 and 23). The Chief Operator stated that this portion of the boat is pumped out twice a year and pumped back for treatment as a precautionary measure. Salem utilizes a Trojan UV 3000B system for disinfection. The UV system has seven UV ballasts with eight bulbs each. The Chief Operator stated that the lights are cleaned every month and the bulbs are replaced every 10,000-12,000 hours. At the time of the Inspection, the time of the UV bulbs was observed to be 9,364 hours. All lights were observed to be illuminated and no error or warning signs were present (refer to Observation 3). The EPA Inspector observed spare bulbs housed in the dewatering station. A Parshall flume reader and digital Endress+Hauser flow meter were present after UV disinfection (refer to Appendix B, Photographs 30 and 31). A calibration sticker was observed on the digital flow meter. The Facility inspects the UV system daily and keeps a daily checklist at the UV station that includes the date, inspector, and any remarks found during the Inspection (refer to Observation 3). All flow leaving

the flume appeared clear and free of any distinct odor at the time of the Inspection (refer to Appendix B, Photographs 28 and 29).

Following the UV disinfection system, the EPA Inspector observed the Facility's pressing station for dewatering. The press station is a Roediger belt press which was rebuilt in 2019. The Chief Operator explained that the sludge is pumped in and mixes with polymer where it then enters a basket that churns the mixture (refer to Appendix B, Photographs 33 through 34). Following this, the mixture is pressed and then works up a conveyer belt where it is emptied directly into a dump truck. The dump truck was observed to be parked in a covered parking area beside the belt press building before being taken to a landfill. The pressing station and the truck's loading area have floor drains which feed back to the main lift station preceding the headworks (refer to Observation 5). No pressed sludge was noted during the Inspection. The Chief Operator stated that the Facility hasn't been producing much sludge recently.

III. Records Review

The EPA Inspector conducted a records review to evaluate the Facility's compliance with the Permit. Most of the records and reports required by the Permit were available for review onsite and after the Inspection. The Plant's electronic Discharge Monitoring Reports (eDMRs) were obtained electronically and reviewed offsite after the onsite Inspection. The Facility had copies of these reports, as well as all its required attachments, onsite and housed in binders according to year. The following were reviewed:

- eDMR data during the period of April 01, 2019, through March 31, 2022;
- Inflow and Infiltration Report for the time period of October 2021 through December 2021;
- Sewage Sludge Management Records (April 01, 2019, through March 31, 2022);
- Sewage Sludge Monitoring Records (April 01, 2019 through March 31, 2022);
- Onsite laboratory calibration records;
- Daily handwritten operational checklists;
- Sample collection sheet; and
- Daily laboratory sheets.

IV. Observations

The following section summarizes the Inspector's observations relative to the Discharger's Permit requirements, including the status of certain treatment units, operation and maintenance practices, and the Discharger's monitoring and reporting documentation.

Observation #1

Effluent Limitations and Monitoring Requirements

Requirement:

Part A.001 of the Permit outlines discharge limitations and monitoring requirements for each of the Facility's (1) permitted points of discharge.

Observation:

Based on the Discharge Monitoring Reports (DMRs) provided by the Facility, the Facility has experienced fifty-nine (59) effluent exceedances from its permit reissuance in April 2019 to the present. The parameters exceeded include dissolved oxygen (DO), biological oxygen demand, 5-day (BOD5), total suspended solids (TSS), ammonia, copper, fecal coliform, BOD5 percent removal, and suspended solids percent removal.

Based on the DMRs provided by the Facility, IU03 (Genesis Health Care) has experienced thirty-five (35) exceedances from April 2019 to the present. The parameters exceeded include flow rate, BOD5, pH, TSS, and oil and grease. IU08 (Salem University) has experienced thirty-seven (37) exceedances from April 2019 to the present with parameters exceeded including pH, TSS, oil and grease, and BOD5. IU09 (Salem Correctional Center) has experienced fifty-four (54) exceedances from April 2019 to the present with parameters exceeded including flow, TSS, pH, BOD5, and oil and grease.

These exceedances are outlined in detail in Appendix C.

Observation #2

Infiltration and Inflow

Requirement:

Part C.12 of the Permit states that the Facility is to implement a program to identify and eliminate sources of inflow and infiltration (I/I). A written report shall be provided on a quarterly basis, as an attachment to the DMR, detailing what has been performed in relation to the implementation and accomplishments of the I/I elimination program.

Observation:

Facility representatives were unaware of this requirement prior to WVDEP's July 2021 inspection and thus had not been submitting quarterly reports prior to this date. Following WVDEP's inspection, the Facility submitted an I/I Report as an attachment to its DMR in December 2021 to account for Fiscal Year 2022, Quarter 1 (October-December) (refer to Appendix D). At the time of the Inspection, the Chief Operator stated he was in the process of working on the I/I report for Fiscal Year 2022, Quarter 2 (January-March). According to eDMR, this I/I report was not included as an attachment to the April nor May DMR.

Observation #3

UV Disinfection

Requirement:

Part C.21 of the Permit states that the Permittee shall perform daily inspection of the UV disinfection facilities. A written log recording the date of the inspection, the name of the individual performing the inspection, any deficiencies, and any corrective action implemented shall be maintained. The log shall be maintained at the site and available for review by Division personnel.

Observation:

During the Inspection, Facility representatives had a monthly log of daily UV inspections and maintenance housed at the UV system. The Chief Operator stated that the lights are cleaned every month and the bulbs are replaced every 10,000-12,000 hours. At the time of the Inspection, the UV bulbs were observed to be at 9,364 hours. All lights were illuminated at the time of the Inspection and no error or warning signs were present (refer to Appendix B, Photographs 24 through 27). All required log components were present (refer to Appendix B, Photograph 32). The inspection logs for previous months are kept in a binder onsite.

Observation #4
Sewage Sludge Management Reports

Requirement:

Permit Part D.1 requires the Permittee to monitor and report monthly on a Sewage Sludge Management Report form the quantity and quality of sewage sludge produced.

Permit Part D.3 requires the Permittee to submit a Sewage Sludge Monitoring Report form semiannually.

Permit Part D.8 requires that any sewage sludge disposed to a landfill must be a minimum of 20 percent solids. If the sewage sludge is not 20 percent solids, then a bulking agent may be used.

Observation:

According to eDMR, the Facility has listed that the monitoring frequency of the Sewage Sludge Management Form is semiannually, rather than the required frequency of monthly. Despite this, the Facility appears to have been submitting both the Sewage Sludge Management Form and Sewage Sludge Monitoring Form monthly.

In the review of the Sewage Sludge Management Forms from April 2019 to the present, some discrepancies exist. No forms were submitted for the months of April 2019, November 2019, February 2020, May 2020, June 2020, September 2020, October 2020, and November 2020. Additional discrepancies include: the July 2019 report has a 'sewage sludge produced year to date' (YTD) that matches the June 2019 report, despite reporting 0.11 Tons being produced during that reporting period; a 2015 report was submitted in place of the September 2019 report; the March 2020 report was submitted but appears to be signed from April 2019; and the January 2022 report was submitted and signed but appears to be filled in with outdated information.

According to the submitted Sewage Sludge Management Forms, 4 loads with less than 20 percent solids were sent to the landfill in 2019, 4 loads with less than 20 percent solids were sent to the landfill in 2020, 11 loads with less than 20 percent were sent to the landfill in 2021, and as of this report, 2 loads with less than 20 percent solids were sent to the landfill in 2022 (refer to Appendix E).

Observation #5
Sewage Sludge Protection of Contaminants

Requirement:

Permit Part D.6 states that areas used for processing, curing, and/or storage of sewage sludge shall be designed, constructed, and operated to prevent the release of contaminants to the groundwater and/or surface water.

Observation:

The dump truck used to carry dewatered and pressed sludge was observed to be parked in a covered parking area beside the belt press station (refer to Appendix B, Photographs 37). At the time of the Inspection, the EPA Inspector observed a white substance and other staining underneath the dump truck (refer to, Appendix B, Photograph 38). When asked what the white substance was, the Chief Operator stated it was most likely limestone. The pressing station and the truck's loading area have floor drains which feed back to the main lift station preceding the headworks (refer to Appendix B, Photographs 39 and 40).

Observation #6
Average Daily Design Flow

Requirement:

Part C.12 states that the average daily design flow of the POTW has been established at 0.4 MGD.

Observation:

According to the Facility's daily flow sheet that is kept onsite, the Facility routinely treats more than 0.4 MGD (refer to Appendix B, Photographs 41 and 42).

Observation #7
Operation and Maintenance

Requirement:

Part II.1 of the permit requires the operation of back-up auxiliary facilities or similar systems

Observation:

At the time of the Inspection, the Facility had one generator onsite, and one located at the Facility's lift station (refer to Appendix B, Photograph 43).

Observation #5
Industrial Users

Requirement:

Part E.4 of the Permit states that if any of the Permittee's Industrial Users (IUs) fail to comply with the specific terms and conditions set forth in that IUs permit, the Permittee shall take all reasonable, escalating enforcement steps, up to and including disallowing the continued acceptance of the nondomestic wastewater from the IU, to keep the IU compliant with the terms and conditions of the permit. Also, the Permittee shall immediately inform the Agency of any current noncompliance by IUs by attaching a written summary of these violations, the cause of each violation, and the steps taken to prevent their recurrence with the submitted DMR. Should the permittee take all these enforcement steps outlined above, these actions may be used as a mitigating factor to any enforcement actions taken against the Permittee for the noncompliance by the IU. However, the burden of proof in relation to the use of these mitigating factors shall lie exclusively upon the permittee.

Observation:

At the time of the Inspection, the Facility Representatives expressed that many of their exceedances were due to Inflow and Infiltration caused by the Industrial Users. Specifically, according to eDMR, the Industrial Users have collectively been responsible for 126 effluent violations from April 2019 to the present (refer to Observation 1). During the Inspection, Facility Representatives expressed how they did not feel well-equipped with resources to take proper enforcement against the IUs. According to eDMR records, there have been no attachments to the submitted DMRs summarizing violations made by the IUs, the cause of each violation, and the steps taken to prevent their recurrence.

V. Closing Conference

At the conclusion of the onsite Inspection, the EPA Inspector conducted a closing conference with the site representatives and shared preliminary observations. The EPA Inspector reiterated to the site representatives that all preliminary observations discussed were not compliance determinations. Any and all preliminary observations shared were subject to further investigation by EPA upon the additional review of records and documentation. Additional observations may be contained in this inspection report that were not identified at the time of the closing conference after EPA reviewed additional materials following the inspection.

The inspection concluded at approximately 1:00 PM (EDT).