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

for

Name of Facility: Department of Corrections – Augusta Correctional Center Wastewater Treatment Facility
Facility Address: 1821 Estaline Valley Road, Craigsville, VA, 24430
Mailing Address: 1821 Estaline Valley Road, Craigsville, VA, 24430

Report Prepared on: July 19, 2021 (*Date*) By: K H Rupnik, PG Environmental Scientist (PG Environmental) (*Signature*)

Report Final as of: 08/24/2021 (*Date*) By: MARK ZOLANDZ Digitally signed by MARK ZOLANDZ Date: 2021.08.24 11:34:39 -04'00', EPA (*Signature*)

General Information

Type of Inspection:	Wastewater Treatment Facility CEI
Owner:	Virginia Department of Corrections (DOC)
Operator:	Virginia DOC
Permittee:	Virginia DOC
NPDES Permit No:	VA0091821
NPDES Permit Effective Date:	September 1, 2018
NPDES Permit Expiration Date:	August 31, 2023
Receiving Water and/or MS4:	Smith Creek, a tributary of the James River
Latitude and Longitude:	38.060754 N, 79.374714 W

On-Site Facility Inspection Overview

On June 23, 2021, an EPA Contract Inspector on behalf of the U.S. Environmental Protection Agency ("EPA") Region III (hereinafter, "Inspector") conducted a Compliance Evaluation Inspection (CEI) of the Virginia Department of Corrections (DOC) – Augusta Correctional Center facility (hereinafter, "the Facility"). The purpose of the inspection was to observe compliance with the Clean Water Act (CWA) and to verify compliance with the Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0091821 (hereinafter, the "Permit") and applicable State and Federal regulations. A staff member from the Virginia Department of Environmental Quality (VDEQ) attended the inspection.

Approximate Entry Time: 10:00 AM (EDT) **Approximate Exit Time:** 2:20 PM (EDT)

Unique Project Identifier (UPI): 3E21WN140A

TABLE OF CONTENTS

Page

I. INTRODUCTION

On June 23, 2021, a U.S. Environmental Protection Agency (EPA) Region III Contract Inspector (hereinafter, Inspector) conducted a compliance evaluation inspection (CEI) of the Virginia Department of Corrections (DOC) – Augusta Correctional Center wastewater treatment facility (Facility). The purpose of the inspection was to observe the Facility's compliance with the Clean Water Act (CWA) and the accuracy and reliability of the DOC – Augusta Correctional Center's (Discharger's) self-monitoring and reporting program. A staff member from the Virginia Department of Environmental Quality (VDEQ) also attended the inspection.

The Facility provides secondary wastewater treatment for the Augusta County Department of Corrections Prison (Prison) and the Town of Craigsville (Town) prior to discharging to Smith Creek, which is within the Upper James River watershed and ultimately discharges to the Chesapeake Bay.

Activities at the site are regulated under Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0091821 (hereinafter, Permit), which became effective on September 1, 2018, and is scheduled to expire on August 31, 2023 (refer to Attachment C).

II. INSPECTION PROCESS

Inspection Opening Conference

The Inspector arrived at the Facility at 10:00 a.m. (EDT) for the inspection. Kettie Rupnik of PG Environmental displayed her CWA inspector credential to the Facility representatives at the outset of the inspection and explained that the purpose of the inspection was to observe compliance with the Permit. The Inspector explained that any information that the Facility deemed to be confidential business information ("CBI") should be identified to the Inspector during the inspection and it would be handled as CBI according to EPA's CBI procedures. Table 1 describes the individuals that participated in the inspection.

Table 1: Inspection Attendee List

Name	Affiliation	Telephone	Email
EPA Region III Contractor			
Kettie Rupnik	PG Environmental	(720) 789-8035	kettie.rupnik@pgenv.com
Virginia Department of Environmental Quality			
William Maddox	Virginia DEQ	(540) 574-7831	William.Maddox@deq.virginia.gov
Facility Representatives			
Jermaine Niblett	Virginia DOC	(540) 997-3361	jermaine.niblett@vadoc.virginia.gov
Robert Tolbert	Virginia DOC	--	--
Matt Doxey	Virginia DOC	--	--

Weather and Precipitation Conditions

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

Table 2. Precipitation Data

Station Name	Date	Precipitation Amount (inches)[1]
Craigsville	6/18/21	0.00
Craigsville	6/19/21	0.00
Craigsville	6/20/21	0.00
Craigsville	6/21/21	0.00
Craigsville	6/22/21	Trace Amount
Craigsville	6/23/21	0.35

Facility Site Walk

As part of the process, the Inspector visually observed the treatment train and site conditions in the presence of VDEQ and Facility representatives. The treatment train consists of:

- Headworks (screening and grit removal);
- Pre-equalization basin;
- Sequence Batch Reactors (SBRs);
- Post-equalization basin;
- Cloth filter;
- Membrane filtration;
- UV disinfection;
- Post-aeration basin;
- Effluent flow meter channel;
- Outfall 001 to Smith Creek

Solids Processing

- Aerobic digesters;
- Rotary Fan Press

The Facility accepts domestic and light commercial wastewater for treatment. Wastewater from the DOC Prison contains domestic wastewater, food waste, and wastewater generated from the Prison sanitation and clothes laundering process. The Facility has a design dry-weather capacity of 0.435 million gallons per day (MGD) and receives an average flow of 0.293 MGD during dry weather conditions. The Facility representatives explained that the Facility can receive up to between 0.80 and 1.0 MGD of influent during wet weather events. The Facility representatives attribute this high influent flow to inflow and infiltration (I&I) issues occurring within the Town of Craigsville's (Town's) collection system.

Wastewater from the Town is transferred from the Town's pump station to the headworks from north of the Facility and wastewater from the Prison is gravity fed through an influent channel, which enters the headwords from the east. Influent from the Town is unmetered and influent flow from the Prison is measured at the influent channel, prior to the headworks.

The combined wastewater influent flows through a comminutor for grinding and solids removal prior to entering the pre-equalization basin. Wastewater is then treated through one of two SBRs which cycle through five phases (mix/fill for 60 minutes; react/fill for 110 minutes; react for 60 minutes; settle for 80 minutes; and decant for 30 minutes). After the SBRs, wastewater is pumped to the aerated post-

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

equalization basin and then to the filter building. Within the filter building, wastewater is treated by cloth filters, then collected in a feed tank prior to entering one of two trains of membrane filters (2 trains, 32 filters per train). After filtration, wastewater is collected in a permeate tank prior to going through ultraviolet (UV) light disinfection and post aeration. Final treated effluent is conveyed through a Parshall flume and ultimately discharged through Outfall 001 to Smith Creek. During wet weather events, flow from the pre-equalization basin may be pumped to one of two onsite ponds. After the wet weather event and associated flows subside, wastewater from the ponds is pumped to the headworks and through the treatment train.

During the inspection, the Inspector observed each step of the wastewater treatment process, beginning at the influent manhole and ending at Outfall 001. The Inspector also observed solids processing and collection system manholes along Grassy Run.

Records Review

The Inspector conducted a records review to further evaluate the Discharger's compliance with the Permit. Most of the records and reports required by the Permit were reviewed offsite. The Facility's discharge monitoring reports (DMRs) were provided electronically and reviewed offsite after the onsite inspection. The following documents were reviewed:

- O&M manual (2017)
- Calibration records (2018 – 2020 for pH meter, flow meter, dissolved oxygen meter, and thermometer)
- Bench sheets with daily readings (2018 -2021)
- DMRs (May 2020 – March 2021)
- Reports of noncompliance (2020 and 2021)
- Process control data (mixed liquor suspended solids, 2018 – 2021)
- Operations check list (2018 – 2020)
- Services Agreement with the Town

III. SUMMARY OF 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 monitoring and reporting documentation.

Effluent Exceedances

Part I.A.1 of the Permit includes discharge limitations and monitoring requirements.

Observation 1. Based on a review of the Facility's DMRs for May 2020 through March 2021, the Facility experienced several effluent concentration exceedances for ammonia and phosphorus, as highlighted in Table 3. According to EPA's Enforcement and Compliance History Online (ECHO) Database[2], the Facility was in a state of significant noncompliance (SNC) during the second quarter of 2020 and the first quarter of 2021.

[2] EPA ECHO Detailed Facility Report: https://echo.epa.gov/detailed-facility-report?fid=110001890213

Table 3. Summary of Effluent Exceedances (Outfall 1, 2020 and 2021)

Permit #	Monitoring Period End Date	Outfall No.	Parameter Name	DMR Value	Permit Limit	Units	Limit Type
VA0091821	3/31/20	1	Ammonia, N	1.47	0.56	mg/L	Monthly Average
VA0091821	3/31/20	1	Ammonia, N	1.82	0.76	mg/L	Weekly Average
VA0091821	4/30/20	1	Ammonia, N	1.07	0.56	mg/L	Monthly Average
VA0091821	4/30/20	1	Ammonia, N	2.88	0.76	mg/L	Weekly Average
VA0091821	12/31/20	1	Phosphorus	0.47	0.30	mg/L	Calendar year
VA0091821	2/28/21	1	Ammonia, N	0.59	0.56	mg/L	Monthly Average
VA0091821	2/28/21	1	Ammonia, N	1.16	0.76	mg/L	Weekly Average

The Facility representatives explained that the phosphorous exceedance was attributed to sanitizing chemicals present in the influent coming from the Prison. The chemical contained red and green germacides that were being dumped from the Prison to the Facility approximately four times per day as a disinfection measure implemented in response to COVID-19. The Facility representatives had a meeting with the Prison staff requesting for the Prison to modify their cleaning processes and reduce the amount of cleaning chemical discharged to the Facility. The phosphorous exceedance related to the use of the germacides had been corrected at the time of the inspection. The Facility representatives attributed the ammonia spikes to the I&I issues in the Town's collection system during wet weather events. The ammonia spikes and I&I issues were ongoing and had not been corrected at the time of the inspection.

Written Notice and Plan of Action

Part I.E.1 of the Permit requires the Discharger to provide a written notice and a plan of action when the monthly average influent flow to the wastewater treatment facility reaches 95 percent of the design capacity for three consecutive months. The written notice shall be submitted within 30 days and the plan of action shall be received at the VDEQ-Valley Regional Office no later than 90 days from the third consecutive month for which the flow reached 95 percent of the design capacity. The plan shall include the necessary steps and a prompt schedule of implementation for controlling any current or reasonably anticipated problem resulting from high influent flows. Failure to submit an adequate plan in a timely manner shall be deemed a violation of the Permit.

Observation 2. At the time of the inspection, the Discharger was not documenting total influent flow to assess reaching the 95 percent design capacity. Specifically, the Facility has an influent flow meter to measure the flow contribution from the Prison but does not measure flow contributed from the Town. The Discharger has the ability to calculate the flow from the Town based on effluent discharge volumes. However, the Discharger does not regularly conduct or document these calculations to evaluate if the influent to the Facility is nearing 95 percent of the design capacity. The Facility has a design capacity of 0.453 MGD, 95 percent of the design capacity is 0.430 MGD. Based on effluent flow data, the Discharger was approaching the 95 percent design

capacity. The monthly average effluent flows reported on the DMRs are presented in Table 4.

Table 4. Summary of Reported Monthly Average Effluent Flows Reported for 2021

Month, Year	Reported Average Effluent Flow (MGD)
January 2021	0.312
February 2021	0.492
March 2021	0.413
April 2021	0.430
May 2021	0.315

The Facility representatives stated that during 2017, the influent flow at the Facility reached 95% of the flow design capacity for three consecutive months, which was reported to VDEQ, per the Permit requirements. In response, the Discharger re-purposed a solids settling pond and irrigation pond into surge ponds to hold wastewater during wet weather events. The Facility has the ability to pump wastewater from the pre-equalization basin to the ponds. Once wet weather events and subsequent flows subside, the Discharger pumps wastewater from the surge ponds to the headworks of the Facility for treatment.

Proper Operation and Maintenance

Part II.Q of the Permit requires the Discharger to at all times properly operate and maintain all facilities and systems of treatment and control.

Observation 3. The Inspector observed several issues related to operation and maintenance at the Facility. The following conditions were observed during the inspection:

- The Inspector observed algae on the surface of the pond on the eastern side of the Facility (refer to Attachment A, Photographs P1010754 and P1010755). The Facility representatives explained that the pond is used to hold excess flow during wet weather events, which is then routed to the headworks of the plant after the wet weather event subsides. Part I.E.4.j of the Permit requires that the O&M manual contain "procedures for maintaining a minimum freeboard of two feet in the storm surge storage basin." The pond had limited available freeboard at the time of the inspection. Note that the inspection took place during dry weather (see Table 2).
- The Inspector observed plastic and debris on the surface of the wastewater in the pre-equalization basin (refer to Attachment A, Photograph P1010798).
- The Inspector observed solids and foam on the surface of the wastewater in SBR 2 during the decant phase (refer to Attachment A, Photograph P1010803).
- The permeate tank used for holding wastewater after cloth filtration and before the membrane filtration process was leaking, resulting in partially-treated wastewater collected on the floor of the filter building (refer to Attachment A, Photographs P1010840 and P1010841). The Inspector observed corrosion of the metal nuts, bolts, and plate flange on the permeate tank. The Facility representatives explained that the chemical feed system within the building had been designed with feed pipes that were too large for the system, contributing to

corrosion in the filter building. The Facility representatives stated that a new permeate tank had been ordered.

- The indicator lights of train 1 of the UV disinfection system were unilluminated, indicating that several of the UV bulbs were not operational (refer to Attachment A, Photograph P1010850). The Facility representatives explained that the indicator lights were not properly operating due to an electrical issue. This deficiency was also identified during VDEQ's inspection on January 15, 2020 (refer to Attachment B, Exhibit 1 for the 2020 Inspection Report). The Facility representatives also stated that Facility employees periodically remove the lights for cleaning and to evaluate whether the bulbs are operating properly.
- The Inspector observed algae growth along the sides of the post-equalization basin and on the rocks of the receiving water, immediately following the outfall (refer to Attachment A, Photographs P1010814 and P1010886).

Measuring Inflow and Infiltration

Observation 4. The Facility was experiencing high I&I during wet weather events. The Facility representatives explained that the Facility receives wastewater from the Town of Craigsville. The Town owns and is responsible for maintaining the collection system lines leading to the Facility. During wet weather, the Town's collection system feeds Imhoff tanks, which are pumped to a trough that gravity feeds to the Facility's influent manhole. The Facility representatives stated that during rain events, significant I&I issues occur, resulting in increased flows coming from the Town to the Facility. The Facility was constructed during 2015, and at that time, I&I issues were already present and have become more severe since the Facility has been in operation. The design capacity of the Facility is 0.435 MGD and the average dry-weather daily flow is approximately 0.293 MGD. According to the Facility representatives, during wet weather events the Facility receives flow as high as 0.80 MGD or 1.0 MGD. The Facility representatives also stated that it often takes between 4 and 5 days after a wet weather event for the Facility to return to base flow levels.

The Facility and Town have a Service Agreement, outlining wastewater treatment plant responsibilities. The Service Agreement was signed by the Facility and Town during June 2012 and requires the Discharger to build, operate, and maintain the Facility. The following statements are included in the Service Agreement (refer to Attachment B, Exhibit 2 for the entire Service Agreement).

Part 7.7 of the Service Agreement states, "Commencing with the date that the DOC WWTP is operational, the DOC shall treat wastewater of the Town at no cost to the Town for a thirty-six (36) month period in consideration of the transfer of the land, permits and engineering plans to DOC at no cost. Thereafter, DOC shall bill the Town for wastewater treatment based upon the metered consumption of water by customers of the Town at a rate equal to the lowest rate charged to customers of other wastewater treatment plants operated by DOC in the Commonwealth."

Part 7.8 of the Service Agreement states, "DOC shall measure wastewater flow into the DOC WWTP to ensure that the Town flows into the plant remain within the contracted level of 200,000 gallons per day [gpd] and that infiltration inflow on the Town's system is kept at an acceptable level. In the event that the measured wastewater flow exceeds 200,000 gallons per day during any month, then DOC shall promptly provide notification to the Town of such excess flow. In the event that wastewater flow through the meter exceeds the amount of 200,000 gallons per day for more than three (3) consecutive months, then DOC shall provide written notification to the Town of the excess and to require that the wastewater flow in excess of 200,000

gallons per day be used to calculate the monthly wastewater treatment cost until the problem has been rectified."

The Facility does not have an influent meter to measure the flow from the Town, nor does the Facility charge the Town for wastewater treatment services. It is unclear how the Discharger ensures that flows from the Town do not exceed 200,000 gpd, as the Discharger does not maintain documentation of flow rates from the Town.

Valves or flow regulation devices are not present on the line leading to the Facility's influent manhole, making it difficult for the Discharger to control flows from the Town. Neither the Town nor Facility have conducted an I&I study or televised lines to assess the severity of the I&I issues. The Facility representatives stated that the Town claims to be resource-limited and has not set aside funding to address the I&I issues associated with their collection system infrastructure.

The Inspector also observed manholes upstream of the influent manhole that are part of the Town's collection system. The manholes were located along Grassy Run and were subject to flooding during wet weather events (refer to Attachment A, Photographs P1010910, P1010912, and P1010916). The Inspector also observed a collection system line within the creek bed of Grassy Run, leading to the Facility (refer to Attachment A, Photograph P1010920).

Updating the Operations and Maintenance Manual

Part I.E.4 of the Permit requires the Discharger to maintain a current O&M manual for the treatment works. Any changes in the practices and procedures followed by the Discharger shall be documented in the O&M Manual within 90 days of the effective date of the changes.

Observation 5. The Inspector observed inconsistencies between the operations identified in the Facility's 2017 O&M manual and what was occurring onsite. The following inconsistencies were observed:

- The amount of time for each phase of SBR operation provided in the 2017 O&M manual was inconsistent with the phase times reported during the inspection, as presented in Table 5. The Plant Supervisor explained that during wet weather events, the phase times for the SBRs are modified. The 2017 O&M manual does not describe how to adjust the phase times of the plant to operate during wet weather events.

Table 5. Comparison of Phase Times provided in 2017 O&M Manual and Reported Onsite.

SBR Phase	Phase Time (O&M Manual)	Phase Time (reported onsite)
Mix Fill	60 minutes	60 minutes
React Fill	120 minutes	110 minutes
React	60 minutes	60 minutes
Settle	60 minutes	80 minutes
Decant	60 minutes	30 minutes

- The version of the Permit provided in Appendix I of the 2017 O&M manual was outdated. The version of the Permit attached to the 2017 O&M manual was issued in 2013, while the current and most recent version of the Permit was issued in 2018.

Maintaining Freeboard

Part I.E.4 of the Permit requires that the O&M Manual contain specific elements (refer to Attachment C for the full permit requirement).

Observation 6. The Discharger's 2017 O&M manual did not include all elements required by the Permit. Permit Part I.E.4.j requires that the O&M manual contain "procedures for maintaining a minimum freeboard of two feet in the storm surge storage basin." Information detailing processes for maintaining two feet of freeboard at the storm surge storage basin were not included in the 2017 O&M Manual provided to the Inspector. The Inspector observed limited freeboard in the pond at the time of the inspection (refer to Attachment A, Photographs P1010754 and P1010755).

Monitoring

Part II.A.1 of the Permit requires samples and measurements taken as required by the Permit to be taken at the permit designated or approved location and be representative of the monitored activity.

Observation 7. The Discharger was double counting influent flows coming from the Prison when pumping flows from the surge ponds through the influent flow channel. The Plant Supervisor explained that during wet weather events, influent flows may be pumped from the pre-equalization basin (downstream of the Prison flow meter) to the surge ponds. After the wet weather event subsides, wastewater from the ponds are pumped to the influent channel where influent flow is measured from the Prison. Flows from the Prison that are pumped from the ponds to the influent channel are measured twice, which would not be representative of the influent flow to the Facility.

Closing Conference

After the Facility site walk, the Inspector met with the Facility representatives for a closing conference and shared preliminary observations. The Inspector reiterated that all preliminary observations discussed were not compliance determinations. Any and all preliminary observations shared were subject to further investigation by the Inspector and 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 the additional review of materials following the inspection.

The inspection concluded at approximately 2:19 PM (EDT).