Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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November 29, 2022

Mr. Michael Foeckler
VP of Operations and Facility Planning
Christendom Educational Corporation
Sent by Email (mfoeckler@christendom.edu)

NOTICE OF VIOLATION

Re: Notice of Violation No. W2022-11-V-0003
Christendom College STP
VPDES Permit No. VA0067067

Dear Mr. Foeckler:

This letter notifies you of information upon which the Department of Environmental Quality (Department or DEQ) may rely in order to institute an administrative or judicial enforcement action. Based on this information, DEQ has reason to believe that Christendom Educational Corporation may be in violation of the State Water Control Law, Regulations, and VPDES Permit No. VA0067067 (Permit) at Christendom College STP (Facility), located at 134 Christendom Drive, Front Royal, VA 22630.

This letter addresses conditions at the facility named above, and also cites compliance requirements of the State Water Control Law, Regulations, and Permit. Pursuant to Va. Code § 62.1-44.15 (8a), this letter is not a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 *et seq.* (APA).

OBSERVATIONS AND LEGAL REQUIREMENTS

On November 7, 2022, DEQ staff conducted a Compliance Evaluation Inspection of the Facility. The report for that inspection is enclosed. The following describe the staff's factual observations and identifies the applicable legal requirements:

Observation: An accumulation of solids was observed in the receiving stream downstream of Outfall 001.

Legal Requirements: Permit Part II.F states, "Except in compliance with this permit, or another permit issued by the Board, it shall be unlawful for any person to:

1. Discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances; or
2. Otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or to the use of such waters for domestic or industrial consumption, or for recreation, or for other uses."

Permit Part II.Q 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 conditions of this permit.

Observation: A current O&M Manual is not maintained for the Facility.

Legal Requirement: Permit Part I.D.4 requires the permittee to maintain a current O&M Manual for the treatment works that is in accordance with Virginia Pollutant Discharge Elimination System Regulations, 9VAC25-31 and (for sewage treatment plants) Sewage Collection and Treatment Regulations, 9VAC25-790.

Observation: Maintenance is not performed in accordance with the O&M Manual as indicated by the condition of the chlorine contact tank baffles.

Legal Requirement: Permit Part I.D.4 requires the permittee to operate the treatment works in accordance with the O&M Manual.

Observation: Documentation of compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts is not completed in accordance with the O&M Manual.

Legal Requirement: Permit Part I.D.4 requires the permittee to operate the treatment works in accordance with the O&M Manual.

ENFORCEMENT AUTHORITY

Va. Code § 62.1-44.23 of the State Water Control Law provides for an injunction for any violation of the State Water Control Law, any State Water Control Board rule or regulation, an order, permit condition, standard, or any certificate requirement or provision. Va. Code §§ 62.1-44.15 and 62.1-44.32 provide for a civil penalty up to $32,500 per day of each violation of the same. In addition, Va. Code § 62.1-44.15 authorizes the Department to issue orders to any person to comply with the State Water Control Law and regulations, including the imposition of a civil penalty for violations of up to $100,000. Also, Va. Code § 10.1-1186 authorizes the Director of DEQ to issue special orders to any person to comply with the State Water Control Law and regulations, and to impose a civil penalty. Va. Code §§ 62.1-44.32 (b) and 62.1-44.32 (c) provide for other additional penalties.

FUTURE ACTIONS

DEQ staff wish to discuss all aspects of their observations with you, including any actions needed to ensure compliance with state law and regulations, any relevant or related measures you plan to take or have taken, and a schedule, as needed, for further activities. In addition, please advise us if you dispute any of the observations recited herein or if there is other information of which DEQ should be aware. In order to avoid adversarial enforcement proceedings, Christendom Educational Corporation may be asked to enter into a Consent Order with the Department to formalize a plan and schedule of corrective action and to settle any outstanding issues regarding this matter, including the assessment of civil charges.

In the event that discussions with staff do not lead to a satisfactory conclusion concerning the contents of this letter, you may elect to participate in DEQ's Process for Early Dispute Resolution. Also, if informal discussions do not lead to a satisfactory conclusion, you may request in writing that DEQ take all necessary steps to issue a final decision or fact finding under the APA on whether or not a violation has occurred. For further information on the Process for Early Dispute Resolution, please see Agency Policy Statement No. 8-2005 posted on the Department's website under "Permits and Regulations," and "Enforcement,"" (https://townhall.virginia.gov/L/GetFile.cfm?File=C:%5CTownHall%5Cdocroot%5CGuidanceDocs%5C440%5CGDoc_DEQ_2672_v1.pdf) or ask the DEQ contact listed below.

Please contact Celeste Horton at (540) 830-4677 or celeste.horton@deq.virginia.gov by December 9, 2022, to discuss this matter and arrange a meeting.

Sincerely,

Brandon D. Kiracofe

Brandon D. Kiracofe
Regional Water Permits & Compliance Manager

cc: ECM Compliance
Linda Ferguson Davie – VRO (electronic)
Tiffany Severs – VRO (electronic)
Celeste Horton – VRO (electronic)
Inboden Environmental Services, Inc. (compliance@inbodenenv.com)

Virginia Department of Environmental Quality

Wastewater Facility Inspection Report

Preface

VPDES Permit No.	(Re)Issuance Date	Modification Date	Expiration Date
VA0067067	01/01/2019	--	12/31/2023

Facility Name	Address	Telephone Number
Christendom College STP	134 Christendom Drive, Front Royal, VA 22630	(540) 636-2900
Owner Name	**Address**	**Telephone Number**
Christendom Educational Corporation	134 Christendom Drive, Front Royal, VA 22630	(540) 636-2900
Responsible Official	**Title**	**Telephone Number**
Tom Heim (tom.heim@christendom.edu)	Director of Operations	(540) 636-2908
Additional Contact	**Title**	**Telephone Number**
Mike Foeckler (mfoeckler@christendom.edu)	VP of Operations & Facility Planning	(540) 636-2900
Responsible Operator	**Operator Certification Class/Number**	**Telephone Number**
Mark E. Inboden (minboden@Inbodenenv.com)	Class 1 / 19650095252	(540) 477-3300

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date or until the issuance of the Certificate to Operate (CTO) for the 0.04 MGD or 0.05 MGD facility, whichever occurs first, the permittee is authorized to discharge from Outfall 001.

This discharge shall be limited and monitored as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD) [a]	NL	NA	NA	NL	1/Day	Estimate
pH (standard units)	NA	NA	6.5	9.5	1/Day	Grab
CBOD5 [c,d]	24 mg/L 2.3 kg/d	36 mg/L 3.4 kg/d	NA	NA	1/Week	8 HC
Total Suspended Solids [c,d]	30 mg/L 2.8 kg/d	45 mg/L 4.3 kg/d	NA	NA	1/Week	8 HC
E. coli (N/100 mL) [b]	126 Geometric Mean	NA	NA	NA	4/Month in any month of each calendar year 10 a.m. to 4 p.m.	Grab
Total Residual Chlorine (TRC)(mg/L) [b,c]	0.0080	0.0098	NA	NA	1/Day	Grab
Dissolved Oxygen (mg/L)	NA	NA	6.0	NA	1/Day	Grab
Ammonia-N (Jun-Dec) (mg/L) [e]	1.6	2.4	NA	NA	1/Week	8 HC
Ammonia-N (Jan-May) (mg/L) [e]	2.2	3.1	NA	NA	1/Week	8 HC

NL = No Limitation, monitoring required NA = Not Applicable 8 HC = 8-Hour Composite
4/Month in any month of each calendar year = 4 samples taken, with at least 1 sample taken each calendar week, in any calendar month and reported no later than January 10th of every year

a. The design flow of this treatment facility is 0.025 MGD. See Part I.D.1 for additional requirements related to facility flows.
b. See Part I.B for disinfection requirements.
c. See Part I.C for additional monitoring and reporting instructions.
d. At least 85% removal for CBOD5 and TSS shall be attained for this discharge.
e. This facility has Total Nitrogen and Total Phosphorus calendar year load limits associated with this outfall included in the current Registration List under registration number VAN010131, enforceable under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.
f. There shall be no discharge of floating solids or visible foam in other than trace amounts.

Virginia Department of Environmental Quality

WASTEWATER FACILITY INSPECTION REPORT

FACILITY NAME: Christendom College STP		**INSPECTION DATE:** 11/07/2022	
		INSPECTOR Alex Wynn	
PERMIT No.: VA0067067		**REPORT DATE:** 11/18/2022	
TYPE OF FACILITY: ☑Municipal ☑ Small Minor ☐ Industrial ☐ Federal		**TIME OF INSPECTION:**	Arrival 10:00am / Departure 11:15am
		TOTAL TIME SPENT	3 days w/ travel & report
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?** ☑ Yes ☐ No	
REVIEWED BY: TAE, BDK			
PRESENT DURING INSPECTION: Mike Foeckler, Tom Heim, Mark Inboden (IES), Daniel Bradford (IES), Karl DeMay (IES), Celeste Horton (DEQ)			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments: Modifications were made to the aeration system and clarifier in 2021.	☐ Yes ☐ No ☑ NA
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: O&M Manual was last revised in 2018.	☐ Yes ☑ No ☐ NA
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No ☐ NA
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments: An IES operator is at the facility ~2 hours/day.	☑ Yes ☐ No ☐ NA
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No ☐ NA
6. Are preventive maintenance task schedules being met? Comments: Metals surfaces have not been cleaned and repainted yearly. All exposed steel has not been scraped and painted yearly.	☐ Yes ☑ No ☐ NA
7. Does the plant experience any organic or hydraulic overloading? Comments: Hydraulic and organic overloading. Both items are being addressed with future plant upgrades.	☑ Yes ☐ No ☐ NA
8. Has there been any bypassing or overflows since the last inspection? Comments: None reported.	☐ Yes ☑ No ☐ NA
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments:	☐ Yes ☐ No ☑ NA
10. Is the plant alarm system operational and tested regularly? Comments:	☐ Yes ☐ No ☑ NA

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? Comments: Sludge is hauled to Front Royal WWTP for further processing.	☑ Yes ☐ No ☐ NA
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? Comments:	☐ Yes ☑ No ☐ NA ☐ Yes ☐ No ☑ NA
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? Comments:	☑ Yes ☐ No ☐ NA

14. Which of the following records does the plant maintain?

☑ Operational logs ☑ Instrument maintenance & calibration

☑ Mechanical equipment maintenance ☐ Industrial waste contribution (Municipal facilities)

Comments:

15. What does the operational log contain?

☑ Visual observations ☑ Flow measurement ☑ Laboratory results ☑ Process adjustments

☐ Control calculations ☐ Other (specify):

Comments:

16. What do the mechanical equipment records contain?

☑ As built plans and specs ☑ Manufacturer's instructions ☑ Lubrication schedules

☑ Spare parts inventory ☑ Equipment/parts suppliers

☐ Other (specify):

Comments:

17. What do the industrial waste contribution records contain (Municipal only)?

☐ Waste characteristics ☐ Impact on plant ☐ Locations and discharge types

☐ Other (specify)

Comments: NA

18. Which of the following records are kept at the plant and available to personnel?

☑ Equipment maintenance records ☑ Operational log ☐ Industrial contributor records

☐ Instrumentation records ☑ Sampling and testing records

Comments: Field instrument sets are assigned to each operator. The operator keeps the instrumentation records and their IDC in their work vehicle.

19. List records not normally available to plant personnel and their location:

Comments: None

20. Are the records maintained for the required time period (three or five years)? Comments: Hard copies are stored at the facility. Electronic copies are stored at IES.	☑ Yes ☐ No

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping			
Flow Measurement (Influent)			
Screening/Comminution	X		
Grit Removal			
Oil/Water Separator			
Flow Equalization			
Ponds/Lagoons			
Imhoff Tank			
Primary Sedimentation			
Trickling Filter			
Septic Tank and Sand Filter			
Rotating Biological Contactor			
Activated Sludge Aeration	X		*Trouble with filamentous growth and grease.*
Biological Nutrient Removal			
Sequencing Batch Reactor			
Secondary Sedimentation	X		*Trouble with floating solids.*
Flocculation			
Tertiary Sedimentation			
Filtration			
Micro-Screening			
Activated Carbon Adsorption			
Chlorination	X	1	*CCT baffles are developing holes from corrosion.*
Dechlorination	X		
Ozonation			
Ultraviolet Disinfection			
Post Aeration	X		
Flow Measurement (Effluent)	X		
Land Application (Effluent)			
Plant Outfall	X	1,5	*Accumulation of solids in receiving stream*
Sludge Pumping			
Flotation Thickening (DAF)			
Gravity Thickening			
Aerobic Digestion	X		
Anaerobic Digestion			
Lime Stabilization			
Centrifugation			
Sludge Press			
Vacuum Filtration			
Drying Beds			*Not in use.*
Thermal Treatment			
Incineration			
Composting			
Land Application (Sludge)			

* Problem Codes

1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

The single train package plant was installed in 1985. The STP receives flow from Christendom College. Modifications were made to the STP in August 2021 to address flow and treatment concerns. See unit check lists for modification specifics.

Operations staff noted the STP experiences increased organic and hydraulic loading while the college is in session (August-May). Christendom College notified DEQ on 10/17/2022 they plan to install a temporary FEQ during the week of 11/14/2022.

Operation of the aeration basin has been modified to accommodate the peak flows and reduce solids washouts. During the inspection the aeration basin was in the "settle" mode. There is no aeration in the basin from 08:00am – 01:00pm. This mode of operation was implemented during the commencement of the 2022 academic year. Treatment efficiency is regularly impacted by influent grease loading and a variability of instantaneous flows.

The clarifier had a thick blanket of brown foam on the surface. The operator stated the foam is removed daily and reoccurs on the surface by the time the operator arrives the next day. The foam is removed manually by operating the scum collection system and using a hose to spray the foam into the scum collection pipe.

The chlorine contact tank (CCT) is pumped frequently to remove settled solids. The CCT's baffles have significant rust accumulation. Several baffles were starting to develop holes above the water surface. See camera images.

Sludge is frequently removed from the digester due to the STP's ongoing solids issues. Sludge was last hauled away by a contracted septic hauler on 10/31/22.

There was an accumulation of solids in the receiving stream. The bulk of the solids were retained by a fallen tree approximately 10 feet downstream of the outfall. See camera images.

A pole barn style building was installed in 2022 over the treatment system to prevent leaves and other debris from falling into the tanks. The building has a coarse screen wrapped around the sides with doors to access the STP.

See unit checklists for additional comments.

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS
EFFLUENT FIELD DATA:

Flow	MGD	**Dissolved Oxygen**	mg/L	**TRC (Contact Tank)**	mg/L
pH	S.U.	**Temperature**	˚C	**TRC (Final Effluent)**	mg/L

Was a Sampling Inspection conducted? ☐ Yes (see Sampling Inspection Report) ☑ No

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☑ Shore based ☐ Submerged Diffuser? ☐ Yes ☑ No
2. Are the outfall and supporting structures in good condition? ☑Yes ☐ No
3. Final Effluent (evidence of following problems): ☑ Sludge bar ☐ Grease
   ☐ Turbid effluent ☑ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☑ No
5. Receiving stream: ☐ No observed problems ☑ Indication of problems (explain below)
   Comments: Receiving stream has settled solids and foam. It was recorded in the operator's log that the creek had been hosed.

REQUEST for CORRECTIVE ACTION:

1. Update the O&M Manual to address the current standard of operations and the modifications made to the STP in August 2021. Ensure the O&M Manual includes a signed Part II K certification and effective date page. Submit a copy of the updated O&M Manual. [Permit Part I D.4]
2. Repair the corroding CCT baffles. [Permit Part II Q]
3. Provide the procedures used for documenting compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts. [Part I D.4.i]
4. Remove the accumulated solids from the receiving stream and dispose of in a proper manner. [Permit Part II F and R]
5. Cease hosing the creek. [Permit Part II F]

*****See the Laboratory Inspection Report for additional requests for corrective action.*****

NOTES and COMMENTS:

- Ensure no foam or solids are discharged to the receiving stream when the foam on the clarifier's surface is removed and/or sprayed into the scum collection pipe. [Permit Part II F]

UNIT PROCESS: Screening/Comminution

1. Number of Units:	Manual:	1	Mechanical:	1	
Number in operation:	Manual:	1	Mechanical:	1	
2. Bypass channel provided:			☑ Yes	☐ No	
Bypass channel in use:			☐ Yes	☑ No	
3. Area adequately ventilated:			☑ Yes	☐ No *	
4. Alarm system for equipment failure or overloads:			☐ Yes	☑ No	
5. Proper flow distribution between units:			☐ Yes	☐ No	☑ NA
6. How often are units checked and cleaned?			Daily		
7. Cycle of operation:			Continuous		
8. Volume of screenings removed:			NA		
9. General condition:			☑ Good	☐ Fair	☐ Poor

Comments:

- 3 HP comminutor motor

UNIT PROCESS: ACTIVATED SLUDGE AERATION

1. Number of units: 1 In operation: 1

2. Mode of operation: Extended aeration

3. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

4. Foam control operational: ☐ Yes ☐ No* ☑ NA

5. Scum control operational: ☐ Yes ☐ No* ☑ NA

6. Evidence of following problems:

a. dead spots	☐ Yes*	☑ No
b. excessive foam	☐ Yes*	☑ No
c. poor aeration	☐ Yes*	☑ No
d. excessive aeration	☐ Yes*	☑ No
e. excessive scum	☐ Yes*	☑ No
f. aeration equipment malfunction	☐ Yes*	☑ No
g. other (identify in comments)	☐ Yes*	☑ No

7. Mixed liquor characteristics (as available):

pH (s.u.)		SDI		Odor	None
DO (mg/L)		SVI		Color	Brown
MLSS (mg/L)		Settleability (mg/L)	650 mg/L	Others (identify)	

8. Return/waste sludge:

a. Return Rate:	Cont.	b. Waste Rate:	10-15 min	c. Frequency of Wasting:	1/2 days

9. Aeration system control: ☐ Manual ☐ Time clock ☐ Continuous ☑ Other (explain)

10. Effluent control devices working properly (oxidation ditches): ☐ Yes ☐ No* ☑ NA

11. General condition: ☐ Good ☑ Fair ☐ Poor

Comments:

- Aeration system control:
  - May-August: Continuous operation
  - September-May:
    - Air is off from 8:00am – 1:00pm during peak flows to the STP.
    - Aeration is continuous from 1:00pm – 8:00am.
- Polymer is added daily to assist with settling. 1 scoop of dry polymer is mixed with 5 gal. of water.
- BioRemove™ is added regularly to assist with treatment issues derived from oil & grease.
- Fine bubble diffusers were installed in the aeration basin in August 2021.

UNIT PROCESS: Sedimentation

☐ Primary ☑ Secondary ☐ Tertiary

1. Number of units 1	In operation: 1		
2. Proper flow distribution between units:	☐ Yes	☐ No*	☑ NA
3. Signs of short circuiting and/or overloads:	☑ Yes	☐ No	
4. Effluent weirs level:	☑ Yes	☐ No*	
Clean:	☑ Yes	☐ No*	
5. Scum collection system working properly:	☑ Yes	☐ No*	☐ NA
6. Sludge collection system working properly:	☑ Yes	☐ No*	
7. Influent, effluent baffle systems working properly:	☑ Yes	☐ No*	
8. Chemical addition:	☐ Yes	☑ No	
Chemicals: NA			
9. Effluent characteristics: Clear with mild pin-floc.			
10. General condition:	☐ Good	☑ Fair	☐ Poor

Comments:

- Thick, brown, foam floating on clarifier surface. The operator stated this occurs daily.
- The foam is removed manually by operating the scum collection system and using a hose to spray the foam into the scum collection pipe.
- The following modifications were made to the clarifier in August 2021:
    - Increased the length of the clarifier inlet weir to cover the entire width of the clarifier.
    - Installed a new scum collection system. The skimmer is the length of the clarifier width and is connected to a new air lift pump. The air lift pump sends the collected scum to the front of the aeration basin.
    - A Stamford baffle was installed to keep most floating scum and sludge away from the effluent weir.
    - Timers were installed to control the RAS/WAS air lift pumps.

UNIT PROCESS: Chlorination

1. No. of chlorinators: 1 In operation: 1
2. No. of evaporators: 0 In operation: 0
3. No. of chlorine contact tanks: 1 In operation: 1
4. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA
5. How is chlorine introduced into the wastewater?
   ☐ Perforated diffusers
   ☐ Injector with single entry point
   ☑ Other: Drips into start of CTT from tubing connected to a solution pump.
6. Chlorine residual in basin effluent: >2.20 mg/L on 10/6/22
7. Applied chlorine dosage: 2.5 gals/day
8. Contact basins adequately baffled: ☑ Yes ☐ No*
9. Adequate ventilation:
   a. cylinder storage area ☐ Yes ☐ No* ☑ NA
   b. equipment room ☑ Yes ☐ No*
10. Proper safety precautions used: ☑ Yes ☐ No*
11. General condition: ☐ Good ☑ Fair ☐ Poor

Comments:
- Sodium Hypochlorite (12.5%) is used.
- Chlorine is fed continuously to the CCT.
- CCT baffles have significant rust accumulation. Several baffles were starting to develop holes above the water surface. See camera images.

UNIT PROCESS: Dechlorination

1. Chemical used: ☐ Sulfur Dioxide ☑ Bisulfite ☐ Other

2. No. of sulfonators: 0 In operation: NA

3. No. of evaporators: 0 In operation: NA

4. No. of chemical feeders: 1 In operation: 1

5. No. of contact tanks: 0 In operation: NA

6. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

7. How is chemical introduced into the wastewater?
   ☐ Perforated diffusers
   ☐ Injector with single entry point?
   ☑ Other: 4-tube tablet feeder

8. Control system operational: ☑ Yes ☐ No*
   a. residual analyzers: ☐ Yes ☐ No* ☑ NA
   b. system adjusted: ☐ Automatic ☑ Manual ☐ Other:

9. Applied dechlorination dose: ~ 4 tablets/day

10. Chlorine residual in basin effluent: <0.10 mg/L on 10/6/22

11. Contact basins adequately baffled: ☐ Yes ☐ No ☑ NA

12. Adequate ventilation:
    a. cylinder storage area: ☐ Yes ☐ No* ☑ NA
    b. equipment room: ☐ Yes ☐ No* ☑ NA

13. Proper safety precautions used: ☑ Yes ☐ No*

14. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Post Aeration

1. Number of units: 1 In operation: 1

2. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

3. Evidence of following problems:

   a. dead spots ☐ Yes* ☑ No
   b. excessive foam ☐ Yes* ☑ No
   c. poor aeration ☐ Yes* ☑ No
   d. mechanical equipment failure ☐ Yes* ☐ No ☑ NA

4. How is the aerator controlled? ☐ Manual ☐ Time clock ☐ Continuous ☐ Other ☑ NA

5. What is the current operating schedule? Continuous

6. Step weirs level: ☑ Yes ☐ No ☐ NA

7. Effluent D.O. level: Not analyzed

8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:
- Cascade steps following the dechlorinator.

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall: ☑ Shore based ☐ Submerged
2. Type if shore based: ☐ Wingwall ☑ Headwall ☐ Rip Rap
3. Flapper valve: ☐ Yes ☐ No ☑ NA
4. Erosion of bank: ☐ Yes* ☑ No ☐ NA
5. Effluent plume visible? ☐ Yes* ☑ No
6. Condition of outfall and supporting structures: ☑ Good ☐ Fair ☐ Poor

7. Final effluent, evidence of following problems:
   a. oil sheen ☐ Yes* ☑ No
   b. grease ☐ Yes* ☑ No
   c. sludge bar ☑ Yes* ☐ No
   d. turbid effluent ☐ Yes* ☑ No
   e. visible foam ☑ Yes* ☐ No
   f. unusual color ☐ Yes* ☑ No

Comments:
- c) There was an accumulation of solids in the receiving stream. The bulk of the solids were retained by a fallen tree approximately 10 feet downstream of the outfall. Solids were identified as far down as 100 ft from the outfall.
- e) Foam was identified near the outfall. See camera images.

UNIT PROCESS: AEROBIC DIGESTION

1. Number of units: 1	In operation: 1			
2. Type of sludge treated	☐ Primary	☑ WAS	☐ Other	
3. Frequency of sludge application to digesters: Every other day.				
4. Supernatant return rate: Supernatant is manually pumped from the digester every other day.				
5. pH adjustment provided:	☐ Yes	☑ No		
Utilized:	☐ Yes	☐ No	☑ NA	
6. Tank contents well-mixed and relatively free of odors:	☑ Yes	☐ No*		
7. If diffused aeration is used, do diffusers require frequent cleaning?	☐ Yes	☑ No	☐ NA	
8. Location of supernatant return:	☑ Head	☐ Primary	☐ Other	
9. Process control testing:				
a. reduction of volatile solids	☐ Yes	☑ No	%	
b. pH	☐ Yes	☑ No	s.u.	
c. alkalinity	☐ Yes	☑ No	mg/l	
d. dissolved oxygen	☐ Yes	☑ No	mg/l	
10. Foaming problem present:	☐ Yes*	☑ No		
11. Signs of short-circuiting or overloads:	☑ Yes*	☐ No		
12. General condition:	☑ Good	☐ Fair	☐ Poor	

Comments:

- 11) Solids are frequently removed from the digester due to high volume of solids in the STP.
- The digester was recoated and reinforced as part of the August 2021 improvements.

UNIT PROCESS: Flow Measurement

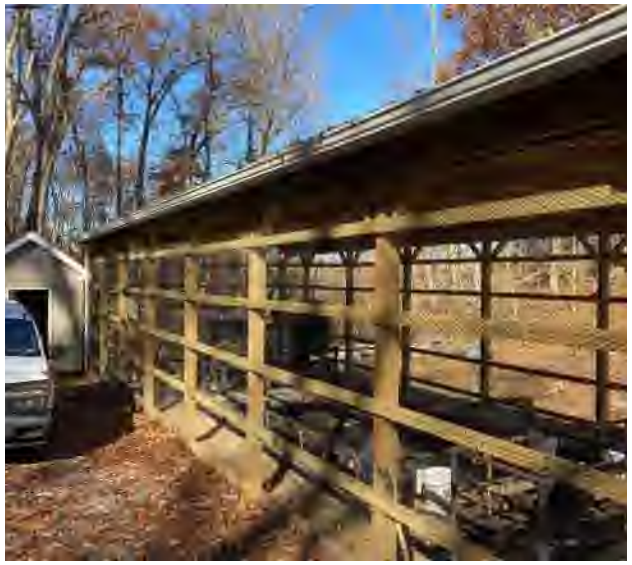
☐ Influent ☐ Intermediate ☑ Effluent

1. Type measuring device: Ultrasonic transponder at a 60° V-notch weir
2. Present reading: 10.93 GPM (10:43am, 11/7/22)
3. Bypass channel: ☐ Yes ☑ No
   Metered: ☐ Yes ☐ No ☑ NA
4. Return flows discharged upstream from meter: ☐ Yes ☑ No
   Identify:
5. Device operating properly: ☑ Yes ☐ No *
6. Date of last calibration: 01/26/2022
7. Evidence of following problems:
   a. obstructions ☐ Yes* ☑ No
   b. grease ☐ Yes* ☑ No
8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

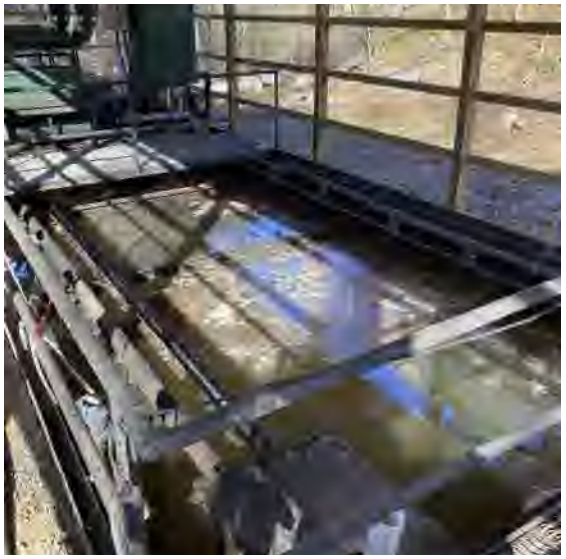
Christendom College STP
11/07/2022

VA0067067

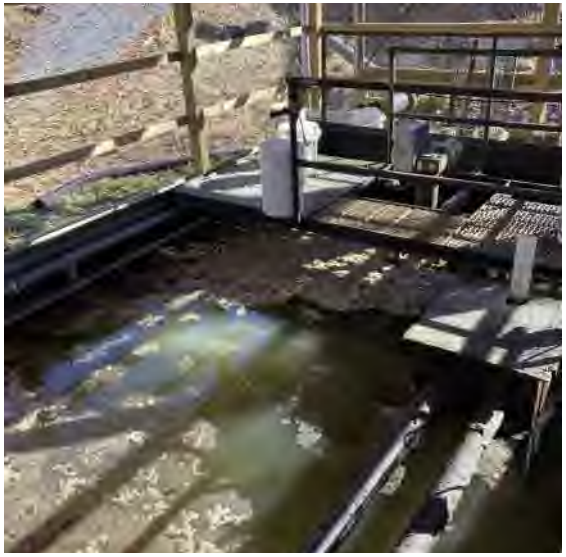


Christendom College STP

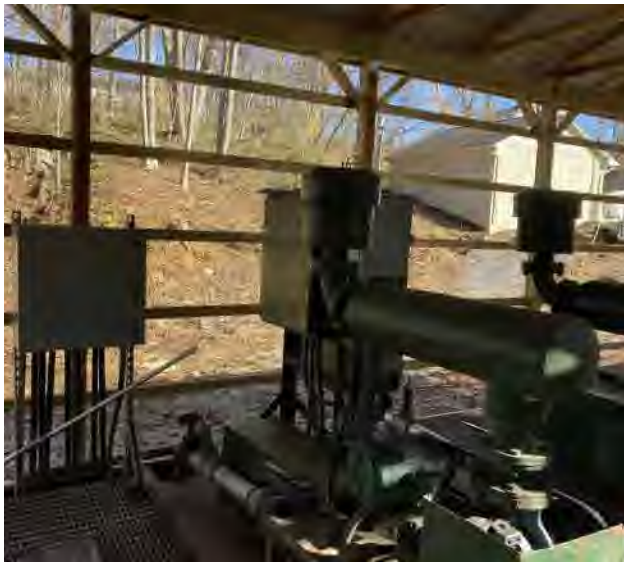
Comminutor



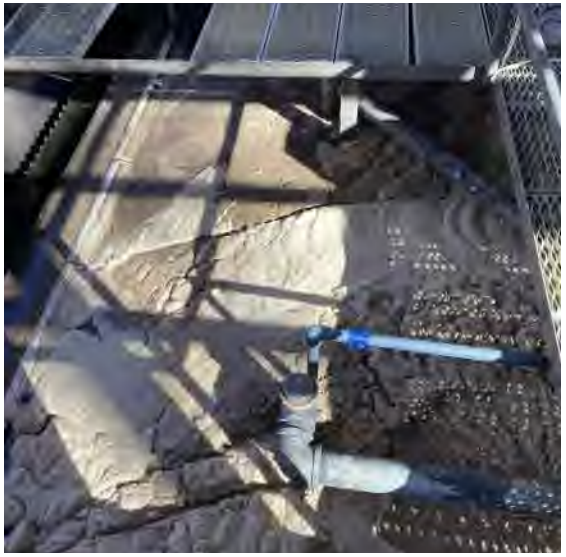
Aeration basin



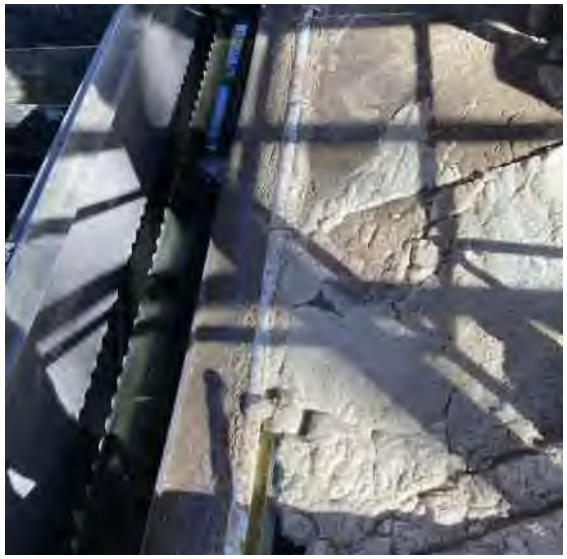
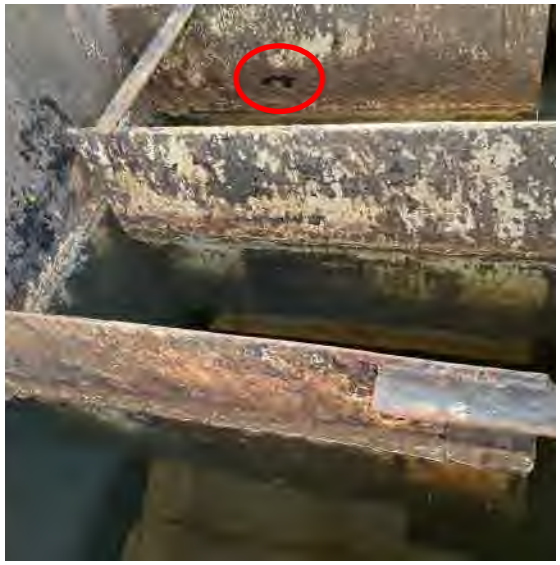
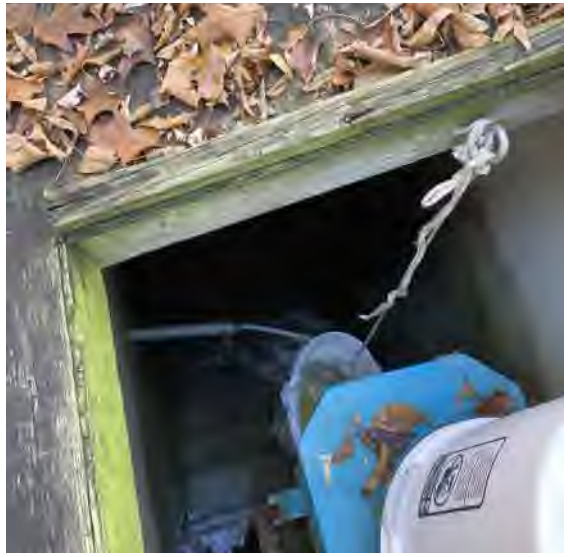
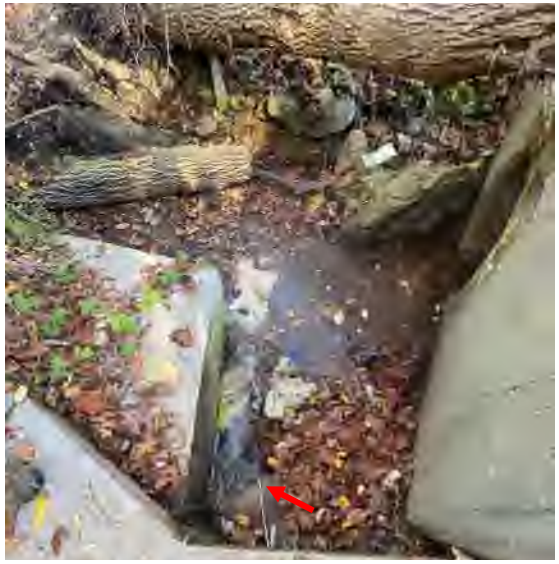
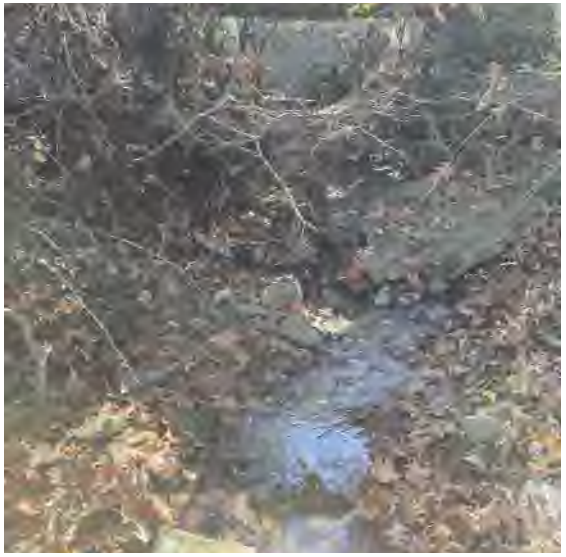
Aeration basin



Blowers and control panels



Clarifiers (2)

Christendom College STP **11/07/2022**		**VA0067067**
		
Scum collection pipe and clarifier weir	Chlorine contact tank, ultrasonic transponder, and weir.	Baffles of chlorine contact tank. Circled in red is a hole developing from rust.
		
Dechlor tablet feeder, sample collection point, and cascade steps.	Red arrow is pointing to Outfall 001. The photo also shows a storm drainage outlet and blockage in the stream caused by fallen trees.	Photo taken on the west side of the fallen trees, looking towards outfall 001.

Christendom College STP
11/07/2022

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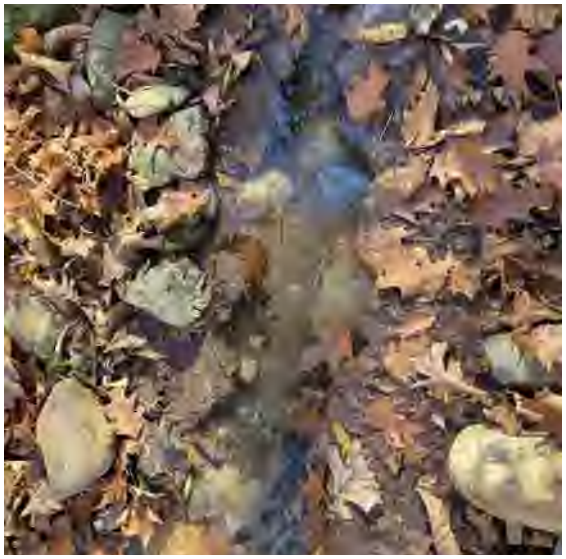


Photo of solids accumulation

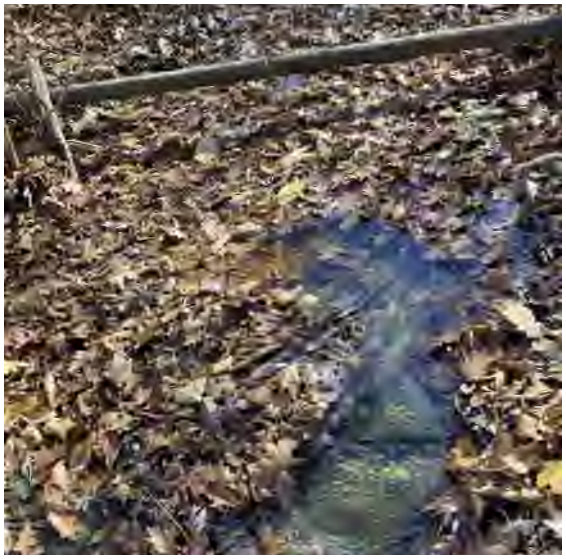


Photo looking downstream towards the west.

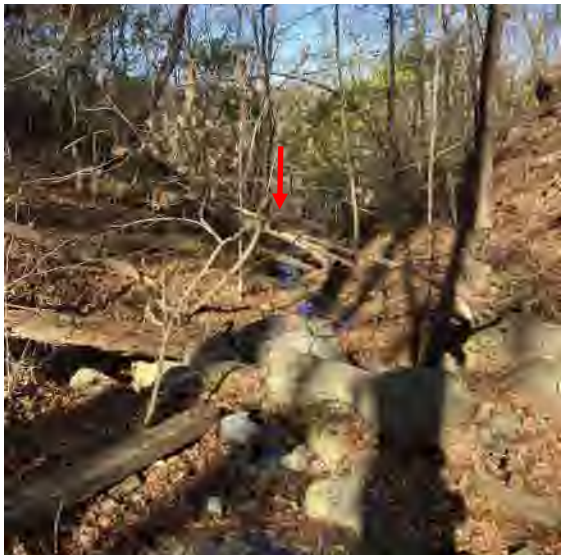
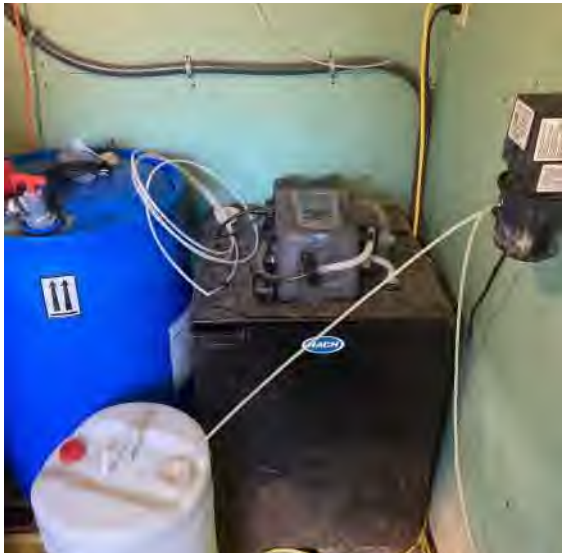
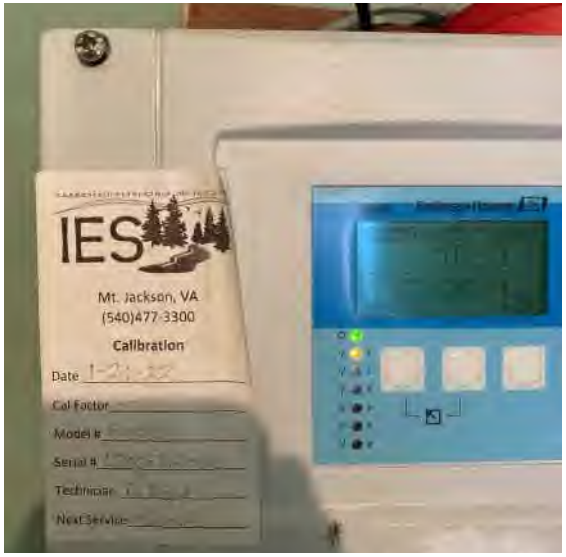


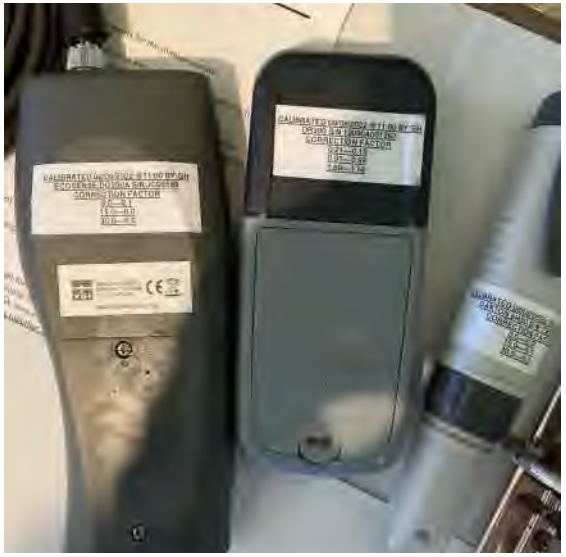
Photo looking downstream towards the west. The red arrow is pointing to the Shenandoah River.



Sodium Hypochlorite (12.5%) feed and composite sampler.



Endress-Hauser flow meter.



KD's field instruments.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT

11/2014

PERMIT #:	INSPECTION DATE:	PREVIOUS INSP. DATE:	PREVIOUS EVALUATION:	TIME SPENT:
VA0067067	11/07/2022	04/13/2018	--	3 days w/ travel & report

NAME/ADDRESS OF FACILITY:	FACILITY CLASS:	FACILITY TYPE:	UNANNOUNCED INSPECTION?
Christendom College STP 134 Christendom Drive Front Royal, VA 22630	☐ MAJOR ☐ MINOR ☑ MINOR (Small) ☐ VPA	☑ MUNICIPAL ☐ INDUSTRIAL ☐ FEDERAL	☑ YES ☐ NO **FFY-SCHEDULED INSPECTION?** ☑ YES ☐ NO

INSPECTOR(S):	REVIEWER(S):	PRESENT AT INSPECTION:
Alex Wynn	TAE, BDK	Mike Foeckler, Tom Heim, Mark Inboden (IES), Daniel Bradford (IES), Karl DeMay (IES), Celeste Horton (DEQ)

LABORATORY EVALUATION	DEFICIENCIES?	
	Yes	No
LABORATORY RECORDS	☐	☑
GENERAL SAMPLING AND ANALYSIS	☑	☐
pH PROCEDURE	☑	☐
TOTAL RESIDUAL CHLORINE PROCEDURE	☑	☐
DISSOLVED OXYGEN PROCEDURES	☑	☐
OTHER		

VELAP CERTIFICATION (on site Environmental Laboratory)	Yes	No	NA
Does the laboratory have VELAP certification (interim or final)?	☐	☐	☑
– Document the laboratory's VELAP laboratory number:			
– Document the effective date of the VELAP certification:			
– Document the expiration date of the VELAP certification:			
– List the certified parameters:			

VELAP ACCREDITATION (Commercial Environmental Laboratory)			Yes	No
IS A VELAP ACCREDITED LAB USED FOR OTHER PERMIT REQUIRED ANALYSES? VELAP#, LAB NAME, ADDRESS and LIST PARAMETERS:			☑	☐
VELAP # 460024	LAB NAME and ADDRESS Inboden Environmental Services, Inc. Mount Jackson, VA 22842	PARAMETERS TSS, CBOD5, E. coli, & Ammonia-N		
IF PERMIT REQUIRED SAMPLE ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE?			☑	☐

COPIES: ☑ DEQ - RO; ☑ Owner, ☑ Other: Inboden Environmental Services, Inc.

PERMIT #: VA0067067

LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

☑	SAMPLING DATE	☑	ANALYSIS DATE	NA	CONT MONITORING CHART
☑	SAMPLING TIME	☑	ANALYSIS TIME	☑	INSTRUMENT CALIBRATION
☑	SAMPLE LOCATION	☑	TEST METHOD	☑	INSTRUMENT MAINTENANCE
				☑	CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

☐	SAMPLING SCHEDULES	☐	CALCULATIONS	☐	ANALYSIS PROCEDURES

	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	☑	☐	☐
DO BENCH SHEETS (or LOG BOOK) INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?	☑	☐	☐
IS THE DMR COMPLETE AND CORRECT? LIST MONTH(S) REVIEWED: Mar-Oct 2022	☑	☐	☐
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	☑	☐	☐
DOES CHAIN OF CUSTODY DOCUMENT PROPER SAMPLE PRESERVATION WAS MET?	☑	☐	☐
WHEN THE CERTIFICATE OF ANALYSIS CONTAINS FLAGGED DATA IS THE 'FLAG' REPORTED ON THE DMR?	☑	☐	☐

GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATIONS ACCORDING TO PERMIT REQUIREMENTS?	☑	☐	☐
ARE PERMIT REQUIRED SAMPLE COLLECTION PROCEDURES APPROPRIATE?	☐	☑	☐
ARE EFFLUENT SAMPLES REPRESENTATIVE OF THE MONITORED ACTIVITY?	☑	☐	☐
ARE PERMIT REQUIRED COMPOSITE SAMPLES FLOW PROPORTIONAL? **NOTE:** Equal volume composite aliquots are acceptable ***if the instantaneous flow is within ± 10% of the daily average flow during the monitoring period***. Some permits specify how the composite is to be taken (e.g., 5G/8HC).	☐	☑	☐
IS COLLECTION SAMPLE EQUIPMENT ADEQUATE?	☑	☐	☐
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	☑	☐	☐

DEPARTMENT OF ENVIRONMENTAL QUALITY – WATER DIVISION
LABORATORY INSPECTION REPORT SUMMARY

FACILITY NAME:	Christendom College STP	**Permit #:**	VA0067067	**INSPECTION DATE:**	11/07/2022

LABORATORY EVALUATION	☐	No required actions at this time
	☑	**REQUIRED CORRECTIVE ACTION(s) IDENTIFIED**

SUMMARY of REQUEST FOR CORRECTIVE ACTION

Lab Records

Laboratory Records section deficiency and required action:

1. None noted.

General Sampling and Analysis

General Sampling and Analysis section deficiency and required action:

1. Begin utilizing a thermometer in the facility's final effluent sample refrigerator. Ensure temperatures are recorded each time a composite sample is collected. The thermometer must be verified annually with a NIST certified thermometer. Provide documentation of the thermometer's implementation and of its verification with a NIST traceable thermometer. [Permit Part II B. & Q.]

pH Analysis

pH deficiency and required action:

1. Submit Initial Demonstration of Capabilities for the facility's operators. Maintain IDC documentation on site. [Permit Part II A.]

TRC Analysis

TRC deficiency and required action:

1. Submit Initial Demonstration of Capabilities for the facility's operators. Maintain IDC documentation on site. [Permit Part II A.]

2. Ensure the buffering capability check of DPD pillows is completed annually and the results are maintained onsite. [Permit Part II A.]

D.O. Analysis

D.O. deficiency and required action:

1. Submit Initial Demonstration of Capabilities for the facility's operators. Maintain IDC documentation on site. [Permit Part II A.]

OTHER – Comments or Observations

- None.

ANALYST:	Karl DeMay	VPDES NO	VA0067067

Meter: EcoSense DO200A

Parameter: Dissolved Oxygen
Method: Membrane Electrode
11/2014

METHOD OF ANALYSIS:

☐	21st Edition of Standard Methods (SM 21) – 4500-O G-2001 (SM 21 DO)
☑	22nd of Standard Methods, or Online Editions of Standard Methods (SM 22) – 4500-O G-2011 (SM 22 DO)

	Dissolved Oxygen (D.O.) is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	***Y***	***N***
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of air-saturated water. Recovery for each of the 4 samples must be +/- 4% of the calculated oxygen saturation for the altitude/barometric pressure and temperature of the samples. {Alternatively analyze 4 samples of water of known concentration (verified by iodometric titration procedure SM 21 or SM 22 4500-O C). Instrument measurements must agree within +/-0.1 mg/L of verified concentration.} [SM 21 or SM 22 1020 B.1 and 4020 B.1]	☐	☑
2)	Are calibration results (mg/L) within ± 4% of the barometric (or altitude) corrected oxygen saturated water value? [SM 21 B.2 or SM 22 1020 B.2.]	☑	☐
3)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [SM 21 DO or SM 22 B 3.]	☐	NA
4)	Are meter and electrode operable and providing consistent readings? [SM 21 DO G 2. or SM 22 DO G 2.]	☑	☐
5)	Is membrane in good condition without trapped air bubbles? **NOTE: No air bubbles ≥ 1/8 inch (total area of all bubbles).** [SM 21 DO G 3.b. or SM 22 DO G 3.b.]	☑	☐
6)	Is correct filling solution used in electrode? [Mfr.]	☑	☐
7	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	☑	☐
8)	Is meter calibrated before use or at least daily? [Mfr. & SM 21 1020 B 10.a. or SM 22 1020 B 11.a]	☑	☐
9)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	☑	☐
10)	Is sample stirred during analysis (or is there sufficient flow across probe's membrane surface)? [SM 21 DO or SM 22 DO G 3.b. and Mfr.]	☑	☐
11)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	☑	☐
12)	Is meter stabilized before reading D.O.? [Mfr.]	☑	☐
13)	Is electrode stored according to manufacturer's instructions? [Mfr.]	☑	☐

Comments:

- IDCs for the current operators were not available onsite.

ANALYST:	Karl DeMay	VPDES NO	VA0067067

Meter: Oakton pH 30

Parameter: Hydrogen Ion (pH)
Method: Electrometric
3/2015

METHOD OF ANALYSIS:

☐	21st Edition of Standard Methods (SM 21) – 4500-H^+ B-2000 (SM 21 pH)
☑	22nd Edition of Standard Methods (SM 22), or Online Editions of Standard Methods – 4500-H^+ B-2011 (SM 22 pH)

	pH is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of known pH; you may use an external source of buffers or other known standards (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be +/- 0.2 SU of the known concentration of the sample or within "Acceptable Range" specified by the PT provider. [SM 1020 B.1] **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	☐	☑
2)	**IF** a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]	☐	NA
3)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B.2 or SM 22 1020 B.3.] **NOTE:** LCS should be a purchased Proficiency Test (PT) sample or a different buffer other than ones used for calibration of the meter [with a ±0.2 SU acceptance range or within "Acceptable Range" specified by the PT provider].. **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	☑	☐
4)	Is the electrode in good condition (no chloride precipitate, scratches, deterioration, etc.)? [SM 21 pH or SM 22 pH 2.b./c. and 5.b.]	☑	☐
5)	Is electrode storage solution in accordance with manufacturer's instructions? [SM 21 pH or SM 22 pH 4.a. and Mfr.]	☑	☐
6)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [SM 21 pH or SM 22 pH 4.a.] **NOTE**: Start with Buffer 7 unless manufacturer's instructions state otherwise. [**NOTE:** If meter is not capable of 3 buffer calibration use 2 buffers bracketing the expected sample pH and then measure a 3rd buffer (the measurement value recorded must be ±0.1 SU), and then reread and record value of buffer 7 to ensure ±0.1 SU.]	☑	☐
7)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Verification measurement should be within +/- 0.1 SU. [SM 21 1020 B 10.c. or SM 22 1020 B 11.c.]	☑	☐
8)	Is calibration verification measurement repeated with every 10 samples and at the end of a series of samples? Verification measurement should be within +/- 0.1 SU. [SM 21 pH or SM 22 pH 4020 B 2.b.] **NOTE:** Not applicable if pH meter is calibrated before taking any measurement (e.g., if operator monitors daily pH at more than one facility and calibrates before each measurement).	☐	NA
9)	Do the buffer solutions appear to be free of contamination or growths? [SM 21 pH or SM 22 pH 3.a.]	☐	*
10)	Are buffer solutions within the listed shelf-life or have they been prepared within the last 4 weeks? [SM 21 pH or SM 22 pH 3.a.]	☐	*
11)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	☐	NA
12)	Is sample analyzed within 15 minutes of collections? [40 CFR Part 136]	☑	☐

13)	Is the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinsing solution.)? [SM 21 pH or SM 22 pH 4.a and 4.b]	☑	☐
14)	Is the sample stirred gently at a constant speed during measurement? [SM 21 pH or SM 22 pH 4.b.]	☑	☐
15)	Does the meter hold a steady reading after reaching equilibrium? [4.b.]	☑	☐

Comments:

- IDCs for the current operators were not available onsite.
- pH buffers were not inspected at this inspection. Buffers are stored at IES's office.

ANALYST:	Karl DeMay	VPDES NO.	VA0067067

Parameter: Total Residual Chlorine (TRC)
Method: DPD Colorimetric (HACH Pocket and Pocket II Colorimeter)
11/2014

METHOD OF ANALYSIS: **Instrument:** HACH DR300

☑	HACH Manufacturer's Instructions (Method 8167) plus an edition of *Standard Methods*
☐	21st Edition of *Standard Methods* 4500-Cl G-2000 (SM 21 Cl)
☑	22nd Edition of *Standard Methods* 4500-Cl G-2011 (SM 22 Cl)

		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE:** Analyze 4 samples of known TRC. Must use a lot number or source that is different from that used to prepare calibration standards. May not use Spec√ ™. Acceptance range is 70-130% recovery **and** 20% Relative Standard Deviation (RSD) **or** within PT specified acceptance range **and** 20% RSD. [SM 1020 B.1]	☐	☑
2)	Is calibration curve verification checked daily using a high and a low standard? **NOTE:** May use manufacturer's installed calibration and commercially available chlorine standards, or Spec√ ™, for daily calibration verifications. [SM 21 1020]	☑	☐
3)	**IF** a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]	☐	NA
4)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B. 2. or SM 22 1020 B 3.] **NOTE:** LCS should be a purchased Proficiency Test (PT) sample or if a known standard different from the calibration standards is used. Use the PT acceptance criteria when given or use 70-130% recovery **and** 20% Relative Standard Deviation (RSD) as the acceptance criteria.	☑	☐
5)	Are the DPD Powder Pillows stored in a cool, dry place? [Mfr.]	☑	☐
6)	Are the pillows within the manufacturer's expiration date? [Mfr.]	☑	☐
7	Are pillows appropriate for the sample size being analyzed and for Total Residual Chlorine	☑	☐
8)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Mfr.]	☐	☑
9)	When pH adjustment is required, is H_2SO_4 or NaOH used? [Hach 11.3.1]	☐	NA
10)	Are cells clean and in good condition? [Mfr]	☑	☐
11)	Is the Hach colorimeter program set to measure "TRC, mg/L"? [Mfr.]	☑	☐
12)	Is the low range (0.01 mg/L resolution) used for samples containing residuals from 0.1 mg/L - 2.00 mg/L? [Mfr.]	☑	☐
13)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	☑	☐
14)	Are samples analyzed within 15 minutes of collection? [40 CFR Part 136]	☑	☐
15)	Is meter zeroed correctly using sample for the blank analysis? [Mfr. and SM 21 1020 B.4. or SM 22 1020 B.5.]]	☑	☐
16)	Is the instrument light screen placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	☑	☐
17)	Is the DPD Total Chlorine Powder Pillow mixed into the sample? [Hach 11.1]	☑	☐

18)	Is the analysis made at least three minutes but not more than six minutes after Powder Pillow addition? [Hach 11.2]	☑	☐
19)	If read-out exceeds "2.19 mg/L", is the original sample diluted correctly, and then reanalyzed within 15 minutes of the original collection time? [Hach 1.2 & 2.0]	☑	☐

Comments:

- IDCs for the current operators were not available onsite.
- Results of the annual buffering capability of DPD pillows check were not available on site.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
SAMPLE ANALYSIS HOLDING TIME/CONTAINER/PRESERVATION CHECK SHEET
Revised 02/2015 [40 CFR, Part 136.3, Table II]

FACILITY NAME:	Christendom College STP	**VPDES NO**	VA0067067	**DATE:**	11/07/2022

HOLDING TIMES *[Note: Collection period (for composites) and Sample Collection time (end of collection period) must be recorded on the COC.]*						**SAMPLE CONTAINER**				**PRESERVATION** *[Note: Preservation is to occur within 15 minutes of the end of the collection period.]*				
PARAMETER	APPROVED	MET?		LOGGED?		ADEQ. VOLUME		APPROP. TYPE		APPROVED	MET?		CHECKED?	
		Y	N	Y	N	Y	N	Y	N		Y	N	Y	N
pH	15 MIN.	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
CHLORINE	15 MIN.	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
DISSOLVED O_2	15 MIN	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
BOD5 & CBOD5	48 HOURS									≤6° C	☑	☐	☑	☐
TSS	7 DAYS									≤6° C	☑	☐	☑	☐
E. coli	8 HRS									<10° C+0.008% $Na_2S_20_3$	☑	☐	☑	☐
AMMONIA	28 DAYS									DECHLOR ≤6° C+H_2S0_4 pH<2t	☑	☐	☑	☐

Comments:	**All chemical preservation should be noted by the Permittee on the Chain of Custody.**

Holding Times and Preservation References (VELAP except for Field Tests)

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
EQUIPMENT TEMPERATURE LOG/THERMOMETER VERIFICATION CHECK SHEET
11/2014

FACILITY NAME:	Christendom College STP				**PERMIT NO:**		VA0067067		**DATE:**	11/07/2022			
Equipment	**Preservation Range**	**In Range?**		**Inspector Reading**	**Checked & Logged Daily?**		**Correct Increment?**		**ANNUAL THERMOMETER VERIFICATION**				
									Is the NIST / NIST-Traceable Reference Thermometer within the manufacturer's expiration date or recertified yearly?		Yes ☑	No ☐	
		Yes	No	**ºC**	Yes	No	Yes	No	**Date Checked**	**Marked?** Yes	No	**Offset Value[1] (Correction)** ºC	**NIST Inspection Temp** °C
Auto Sampler	1-6° C	☐	☐		☐	☐	☐	☐		☐	☐		
pH Meter	± 1° C	☑	☐						08/08/2022	☑	☐	-0.3, -0.1, -0.2	0, 15, 30
D.O. Meter	± 1° C	☑	☐						08/08/2022	☑	☐	-0.1, 0.0, 0.0	0, 15, 30

Comments:

- There was not a NIST-traceable thermometer in the refrigerated auto sampler.

[1] Offset Value tolerances (reference **NIST 105-6**): Sampling Refrigerator and Auto Sampler, pH and D.O. meters must be within ±2°C (2 times tolerance value). Thermometers measuring Outfall permit compliance must be within ±1.0°C (2 times tolerance value).

Documents

PERMITTED FACILITY

Christendom College STP

134 Christendom Dr, Front Royal VA 22630

Permit Number: VA0067067

Permit Type: Minor Municipal

No Discharge: ☐

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

MONITORING PERIOD	
FROM	TO
8/1/2022	8/31/2022

RETURN TO

Department of Environmental Quality

Valley Regional Office

4411 Early Road, P.O. Box 3000, Harrisonburg VA 22801

(540) 574-7800

NOTE: READ PERMIT AND GENERAL INSTRUCTIONS BEFORE COMPLETING THIS FORM AND RETURNING IT.

Outfall Num: 001 **Reporting Frequency: Month** Run Date: Nov 15, 2022

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
001 FLOW	REPORTD	0.007	0.014		*********	*********	*********		0	1/DAY	
	REQRMNT	0.025	NL	MGD	*********	*********	*********			1/DAY	EST
002 pH	REPORTD	*********	*********		7.2	*********	8.4		0	1/DAY	
	REQRMNT	*********	*********		6.5	*********	9.5	SU		1/DAY	GRAB
004 TSS	REPORTD	0.11	0.23		*********	4.7	6.8		0	1/W	
	REQRMNT	2.8	4.3	KG/D	*********	30	45	MG/L		1/W	8HC
005 CL2, TOTAL	REPORTD	*********	*********		*********	<QL	<QL		0	1/DAY	
	REQRMNT	*********	*********		*********	0.0080	0.0098	MG/L		1/DAY	GRAB
007 DO	REPORTD	*********	*********		6.4	*********	*********		0	1/DAY	
	REQRMNT	*********	*********		6.0	*********	*********	MG/L		1/DAY	GRAB
157 CL2, TOTAL CONTACT	REPORTD	*********	*********		0.7	*********	*********		1	1/DAY	
	REQRMNT	*********	*********		1.0	*********	*********	MG/L	3	1/DAY	GRAB
159 CBOD5	REPORTD	0.27	0.54		*********	10	12		0	1/W	
	REQRMNT	2.3	3.4	KG/D	*********	24	36	MG/L		1/W	8HC
213 CL2, INST TECH MIN LIMIT	REPORTD	*********	*********		0.7	*********	*********		0	1/DAY	
	REQRMNT	*********	*********		0.6	*********	*********	MG/L		1/DAY	GRAB
353 AMMONIA, AS N JUN-DEC	REPORTD	*********	*********		*********	5.6	22.4		2	1/W	
	REQRMNT	*********	*********		*********	1.6	2.4	MG/L		1/W	8HC

Additional Permit Requirements: Submit daily operations log with DMR.

Outfall Comments:

Comments:

Christendom College

Wastewater Treatment Plant

Front Royal, VA

Monthly Log Report of Final Effluent

Month: August **Year:** 2022

VA0067067

DATE	Flow MGD	pH S.U.	D.O. m/gl	TRC, Cont. Conc. mg/L	TRC, Cont. Tech Min Lim mg/L	TRC, Final Conc. mg/L	CBOD5 Conc. mg/L	CBOD5 Week Ave., mg/L	CBOD5 Loading kg/d	CBOD5 Week Ave., kg/d	Total Suspended Solids Conc. mg/L	Total Suspended Solids Week Ave., mg/L	Total Suspended Solids Loading kg/d	Total Suspended Solids Week Ave., kg/d	Ammonia - N Conc. mg/L	Ammonia - N Week Ave., mg/L
1	0.0023	8.0	8.3	2.5		<0.10										
2	0.0023	8.1	7.8	1.0		<0.10										
3	0.0017	7.7	7.4	5.8		<0.10	7	7	0.05	0.05	4.8	4.8	0.03	0.03	0.0	0.0
4	0.0019	8.2	7.3	3.2		<0.10										
5	0.0014	8.2	7.5	5.6		<0.10										
6	0.0032	7.9	7.4	3.9		<0.10										
7	0.0031	7.9	7.5	3.2		<0.10										
8	0.0039	8.4	7.3	1.0		<0.10										
9	0.0037	8.2	7.9	2.6		<0.10										
10	0.0055	8.1	7.6	1.3		<0.10	12	12	0.25	0.25	6.8	6.8	0.14	0.14	0.0	0.0
11	0.0040	8.2	8.2	7.9		<0.10										
12	0.0067	8.2	8.1	1.3		<0.10										
13	0.0034	8.2	8.7	1.0		<0.10										
14	0.0064	8.4	8.5	7.9		<0.10										
15	0.0072	8.2	7.8	0.7	0.7	<0.10										
16	0.0087	8.0	8.4	6.6		<0.10										
17	0.0071	8.1	7.8	1.3		<0.10	9	9	0.24	0.24	2.1	2.1	0.06	0.06	0.0	0.0
18	0.0084	7.9	8.6	3.0		<0.10										
19	0.0087	7.8	9.2	1.4		<0.10										
20	0.0116	7.8	8.6	1.8		<0.10										
21	0.0124	7.6	7.9	2.0		<0.10										
22	0.0110	8.0	6.8	1.4		<0.10										
23	0.0121	8.0	7.1	2.6		<0.10										
24	0.0119	8.1	7.6	2.1		<0.10	12	12	0.54	0.54	5.0	5.0	0.23	0.23	22.4	22.4
25	0.0099	8.2	7.0	3.2		<0.10										
26	0.0135	8.0	6.7	1.3		<0.10										
27	0.0127	7.3	7.6	1.3		<0.10										
28	0.0118	7.2	7.9	1.1		<0.10										
29	0.0101	7.7	6.4	4.4		<0.10										
30	0.0127	7.6	6.7	6.2		<0.10										
31	0.0104	7.6	6.7	1.2		<0.10										
Tot	0.2297															
Max	0.014	8.4		7.9		<0.10	12	12	0.54	0.54	6.8	6.8	0.23	0.23	22.4	22.4
Min	0.001	7.2	6.4	0.7	0.7		7	7	0.05	0.05	2.1	2.1	0.03	0.03	0.0	0.0
Ave	0.007			2.9		<0.10	10	10	0.27	0.27	4.7	4.7	0.11	0.12	5.6	5.6

Note: "0" = "<QL". The Ammonia value given as zero tested below the Ammonia QL of 0.2 mg/L. A zero is inserted here instead of "<QL" for calculation purposes.
"0" = "<QL". The BOD value given as zero tested below the test QL of 2 mg/L. A zero is inserted here instead of "<QL" for calculation purposes.
"0" = "<QL". The TSS value given as zero tested below the test QL of 1.0 mg/L. A zero is inserted here instead of "<QL" for calculation purposes.

Lab QC:

9/10/2022

Mark E. Inboden Class 1, No. 1965009252 ***Date***

Inboden Environmental Services, Inc.

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Permit Number: VA0067067

QUALITY CONTROL & ASSURANCE

Onsite pH Instrument Calibration Confirmation Test

Analysis of pH 7 Buffer

MONTH: August **YEAR:** 2022

pH Meter Model:
pH Meter Thermistor Calibration Date:

DAY	DATE BUFFER REPLACED	PH 7 BUFFER CHECK	TIME	TEMPERATURE (degrees C)	INITIALS
1	✓	7.00	1206	24.7	
2		7.02	1118	25.3	
3		6.99	1403	28.6	
4		6.99	1254	26.6	
5		7.01	1316	28.4	
6		7.01	4:54	24.0	
7		7.03	1500	24.2	
8	✓	7.01	1207	27.9	
9		7.02	1354	28.8	
10		7.01	1559	28.9	
11		7.00	1621	28.3	
12		7.02	1309	23.7	
13		7.04	1434	23.3	
14		7.03	1428	24.9	
15	✓	7.05	1552	21.8	
16		7.03	1405	22.1	
17		7.03	1406	23.8	
18		7.06	1408	23.6	
19	✓	7.03	1457	26.7	
20		7.01	10:16	20.1	
21		7.02	~~10:33~~ 10:22	~~23.7~~ 23.0	
22		7.03	1244	24.8	
23		7.02	1145	25.5	
24		7.04	1226	26.7	
25		7.03	1446	26.7	
26		7.01	1220	26.9	
27	8/27/22	7.09	12:35	29.6	
28		7.09	12:36	28.5	
29	✓	7.02	1211	26.1	
30		7.05	1132	27.0	
31		7.04	1326	25.3	

NOTES: Instrument calibration performed in accordance with manufacterers' instructions.
pH Standard Method 4500 H+B - 2011

Christendom College STP

WASTEWATER TREATMENT

Inboden Environmental Services, Inc.

Mt. Jackson, Va. 22842

Permit Number: VA0067067

MONTH August YEAR 2022

DAILY OPERATION

DAY	Chlorine Contact Tank: Tech.'s Initials	TRC Sample Time	TRC Test Time	TRC Result, mg/L	RPD % (+/- 20%)	Aeration: Sett. Solids %	D.O. Result mg/L	Digester: Sludge Hauled	Comments
1	JC	1218	1223	2.50					
2	JC	1155	1159	1.03		28			
3	JC	1408	1412	5.84					
4	JC	1249	1252	3.16		30			Slow wasted 5 min
5	JC	1510	1514	5.64					
6	JP	10:04	10:09	3.42					1.46 x 2
7	JP	10:07	10:12	3.24					1.62 x 2
8	JC	1204	1207	1.00					
9	JC	1354	1354	2.60		32			D.O. 8.08 PH 8.14
10	JC	1554	1557	1.30					
11	JC	1618	1621	7.88					
12	JC	1306	1309	1.34		29			
13	JC	1444	1449	1.03					
14	JC	1436	1439	7.88					
15	JC	1607	1610	0.70					
16	JC	1423	1428	6.60					
17	JC	1426	1430	1.25		29			
18	JC	1415	1419	3.04					
19	JC	1507	1510	1.41		30			Slow wasted 6 min
20	JP	10:25	10:28	1.80		30			
21	JP	10:38	10:42	4.99					
22	JC	1300	1303	1.36					
23	JC	1152	1155	2.58					
24	JC	1237	1241	2.14					
25	JC	1452	1455	3.22		55			wasted 10 min
26	JC	1232	1235	1.26		55			wasted 5 min
27	KH	12:34	12:37	1.32					Wasted 10 min
28	KH	13:02	13:05	1.06					
29	JC	1213	1217	~~3.30~~	4.40	60			wasted 10 min
30	JC	1126	1129	4.16		56			wasted 7 min
31	JC	1303	1307	1.22		77			

RPD % Calculation: Duplicate Difference / Duplicate Average X 100

All sampling performed during forward flow.

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

QUALITY CONTROL & ASSURANCE

Permit Number: VA0067067

MONTH: August **YEAR:** 2022

DAY	COLORIMETER CALIBRATION STANDARDS BLANK	S1	S2	S3	Acceptable	Time	Initials	DISSOLVED OXYGEN METER CALIBRATION D.O. mg/L	TEMP °C	Time	Initials	Membrane Replace	pH METER pH CALIBRATION pH BUFFERS REPLACED?	Date Replaced	BUFFERS 4	7	10	Temp.	7 check +/- 0.10	Time	INITIALS	PROBE CLEANED & REFILLED
1	0.00	0.15	0.83	1.58	✓	1016	JK	8.26	25.1	1205	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	23.0	7.00	1014	JK	N
2	0.00	0.17	0.83	1.58	✓	0934	JK	8.05	26.5	1113	JK	N	4 7 10		4.01	7.00	10.01	23.1	7.00	0935	JK	N
3	0.00	0.22	0.83	1.59	✓	1207	JK	7.16	29.6	1354	JK	N	4 7 10		4.01	7.00	10.01	24.9	7.01	1207	JK	N
4	0.00	0.21	0.85	1.61	✓	0938	JK	7.91	28.5	1353	JK	N	4 7 10		4.01	7.00	10.01	24.3	7.00	0941	JK	N
5	0.00	0.21	0.85	1.61	✓	1019	JK	7.76	28.9	1517	JK	N	4 7 10		4.01	7.00	10.01	23.7	7.02	1018	JK	N
6	0.00	0.21	0.87	1.49	✓	450	CD	7.90	26.0	958	CD	N	4 7 10		4.00	7.01	10.01	24.0	7.01	959	CD	N
7	0.06	0.20	0.87	1.48	✓	955	CD	7.67	24.6	1003	CD	N	4 7 10		4.01	7.00	10.00	24.2	7.03	1000	CD	N
8	0.00	0.21	0.84	1.59	✓	1036	JK	8.24	28.1	1204	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	25.8	7.02	1046	JK	N
9	0.00	0.20	0.87	1.59	✓	0938	JK	8.45	29.2	1353	JK	N	4 7 10		4.01	7.00	10.01	25.3	7.00	0942	JK	N
10	0.00	0.18	0.84	1.61	✓	1042	JK	8.20	27.8	1557	JK	N	4 7 10		4.01	7.00	10.01	24.9	7.02	1051	JK	N
11	0.00	0.19	0.85	1.64	✓	1031	JK	7.78	29.4	1619	JK	N	4 7 10		4.01	7.00	10.01	23.4	7.00	1032	JK	N
12	0.00	0.19	0.85	1.63	✓	0928	JK	8.25	25.0	1305	JK	N	4 7 10		4.01	7.00	10.01	20.8	7.00	0927	JK	N
13	0.00	0.20	0.88	1.70	✓	0931	JK	8.23	25.5	1430	JK	N	4 7 10		4.01	7.00	10.01	16.3	7.04	0928	JK	N
14	0.00	0.15	0.88	1.65	✓	0948	JK	7.36	26.7	1427	JK	N	4 7 10	✓	4.01	7.00	10.01	19.7	7.02	0944	JK	N
15	0.00	0.22	0.88	1.67	✓	1052	JK	8.31	21.7	1546	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	21.8	7.07	1650	JK	N
16	0.00	0.21	0.88	1.72	✓	0903	JK	8.09	21.9	1404	JK	N	4 7 10		4.01	7.00	10.01	18.8	7.03	0901	JK	N
17	0.00	0.24	0.89	1.73	✓	1045	JK	8.14	26.0	1406	JK	N	4 7 10		4.01	7.00	10.01	19.3	7.04	1048	JK	N
18	0.00	0.18	0.87	1.68	✓	0955	JK	8.09	26.2	1408	JK	N	4 7 10		4.00	7.00	10.01	18.2	7.03	0954	JK	N
19	0.00	0.18	0.88	1.65	✓	0958	JK	7.48	20.6	0955	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	21.2	7.04	0955	JK	N
20	0.00	0.21	0.84	1.48	✓	1012	CD	7.90	24.8	1020	CD	N	4 7 10		4.01	7.01	10.01	22.1	7.01	1016	CD	N
21	0.00	0.20	0.87	1.47	✓	1028	CD	7.86	23.9	1033	CD	N	4 7 10		4.01	7.02	10.01	23.0	7.02	1022	CD	N
22	0.00	0.19	0.88	1.68	✓	1048	JK	7.38	25.5	1243	JK	N	4 7 10		4.01	7.00	10.01	22.7	7.01	1046	JK	N
23	0.00	0.19	0.89	1.70	✓	1015	JK	7.89	27.4	1143	JK	N	4 7 10		4.01	7.00	10.01	23.1	7.00	1014	JK	N
24	0.00	0.18	0.88	1.68	✓	0825	JK	8.47	27.9	1225	JK	N	4 7 10		4.01	7.00	10.01	19.8	7.03	0838	JK	N
25	0.00	0.17	0.87	1.68	✓	1003	JK	7.73	28.4	1447	JK	N	4 7 10		4.01	7.00	10.01	21.7	7.03	1002	JK	N
26	0.00	0.19	0.85	1.63	✓	1014	JK	7.33	28.1	1213	JK	N	4 7 10		4.01	7.00	10.01	22.3	7.02	1003	JK	N
27	0.00	0.25	0.92	1.60	✓	0818	KM	7.40	29.4	1237	KM	N	(4) 7 10	8/27/22	4.00	7.00	10.01	25.3	7.04	0819	KM	N
28	0.00	0.25	0.93	1.61	✓	0825	KM	7.44	26.9	1228	KM	N	4 7 10		4.02	7.00	10.01	23.9	7.07	0822	KM	N
29	0.00	0.19	0.85	1.65	✓	0824	JK	7.57	27.2	1215	JK	N	(4) 7 10	✓	4.01	7.00	10.01	25.7	6.99	0827	JK	N
30	0.00	0.18	0.85	1.63	✓	0940	JK	8.28	27.3	1130	JK	N	4 7 10		4.01	7.00	10.01	22.7	7.01	0940	JK	N
31	0.00	0.19	0.85	1.65	✓	0943	JK	8.10	25.3	1322	JK	N	4 7 10		4.01	7.00	10.01	20.0	7.03	0942	JK	N

X 0.83

SPEC-CHECK Color Standards: S1 = ____ +/-
Lot #: ____ S2 = ____ +/-
Exp. Date: ____ S3 = ____ +/-

DPD Reagent Buffering Capability (1/year): Acceptance Range pH 6.00-7.00 SU
Reagent Lot #: Date:
Reagent Exp. Date: Time:
pH Result: Initials:

NOTES:
Instrument calibration performed in accordance with manufacturers' instructions.

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va 22842

Permit Number VA0067067

Month August Year 2022

Final - 001

Day	Flow Meter	Flow, Gallons	Techs Initials	Final Sample Time	pH Test Time	pH Result, Std. Unit	Temp. Result, °C	TRC Test Time	TRC Result, mg/L	D.O. Sample Time	D.O. Test Time	D.O. Result, mg/L
1	5374876	2304	[illegible]	12:13	1218	8.02	24.2	1216	0.02	1207	1207	8.37
2	5377180	2339	[illegible]	1119	1123	8.07	24.7	1123	0.00	1116	1117	7.76
3	5379519	2704	[illegible]	1403	1408	7.73	25.9	1406	0.01	1357	1357	7.43
4	5381223	1933	[illegible]	1303	1309	8.18	25.8	1307	0.00	1258	1259	7.30
5	5383156	1884	[illegible]	1520	1525	8.17	25.3	1524	0.00	1516	1517	7.46
6	5384540	3184	[illegible]	10:05	10:11	7.90	24.9	10:13	0.06	10:20	10:23	7.34
7	5387724	3084	[illegible]	10:08	10:14	7.87	25.1	10:15	0.01	10:23	10:26	251
8	5390808	3864	[illegible]	1213	1218	8.41	21.1	1216	0.00	1209	1209	7.31
9	5394672	3700	[illegible]	1401	1405	8.24	26.3	1404	0.02	1357	1357	7.91
10	5398372	5531	[illegible]	1603	1608	8.11	26.1	1607	0.00	1601	1601	7.56
11	5403903	4017	[illegible]	1632	1637	8.19	25.3	1635	0.00	1624	1624	8.16
12	5407920	6678	[illegible]	1116	1120	8.19	23.8	1319	0.00	1311	1312	8.13
13	5414598	3253	[illegible]	1436	1441	8.21	22.7	1440	0.00	1432	1433	8.71
14	5417951	6,443	[illegible]	1432	1437	8.35	22.9	1435	0.00	1429	1430	8.45
15	5424394	7,204	[illegible]	1555	1600	8.21	21.9	1558	0.01	1549	1550	7.78
16	5431598	8,662	[illegible]	1416	1421	7.95	22.2	1420	0.00	1410	1411	8.44
17	5440260	7,128	[illegible]	1420	1425	8.01	22.4	1423	0.00	1416	1417	7.82
18	5447388	8,936	[illegible]	1419	1425	7.55	22.7	1422	0.00	1411	1412	8.58
19	5455824	8,691	[illegible]	1501	1506	7.77	23.4	1506	0.02	1458	1459	7.15
20	5464515	11,611	[illegible]	10:31	10:34	7.79	23.0	10:35	0.01	10:40	10:43	8.60
21	5476126	12,350	[illegible]	10:39	10:44	7.60	23.8	10:45	0.01	10:51	10:58	7.90
22	5488482	12,356	[illegible]	1253	1259	8.00	24.6	1257	0.00	1248	1249	6.80
23	5499484	12,132	[illegible]	1148	1153	7.97	24.7	1151	0.02	1144	1144	7.07
24	5511616	11,880	[illegible]	1233	1239	8.11	25.0	1236	0.00	1229	1230	7.63
25	5523496	9,980	[illegible]	1459	1504	8.15	25.5	1502	0.00	1453	1454	6.95
26	5533476	12456	[illegible]	1221	1226	7.98	25.7	1225	0.01	1217	1218	6.72
27	5546932	13388	[illegible]	12:43	12:46	7.30	27.7	12:42	0.02	12:38	12:41	7.54
28	5559620	12688	[illegible]	12:54	12:57	7.19	27.2	12:53	0.03	12:47	12:50	7.85
29	5571436	10,100	[illegible]	1231	1238	7.71	26.3	1235	0.01	1220	1221	6.42
30	5581536	12,694	[illegible]	1135	1142	7.56	26.2	1140	0.00	1133	1133	6.73
31	5594230	10,436	[illegible]	1326	1331	7.62	25.4	1330	0.02	1323	1324	6.65
1st	5604666											

12738
12069

QA/QC NOTES: pH duplicate is to be +/- 0.10 SU - Initial pH result is to be reported
Initial TRC reported if duplicate performed
DO analysis is performed in-situ
Final discharge sampled during forward flow

Methods:

pH	SM 4500 H+B - 2011
DO	SM 4500-OG - 2011
TRC	Hach 8167 (SM 4500-Cl G - 2011)

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360

September 10, 2022

Ms. Linda Ferguson-Davie
Water Compliance Auditor
Valley Regional Office - DEQ
P. O. Box 3000
Harrisonburg, VA 22801

Re: Christendom College STP, Permit Number VA0067067
Letter of Explanation – Permit Violation, August 2022

Ms. Ferguson-Davie,

Inboden Environmental Services, Inc. (IES) is the contract operator for the Christendom College STP. This letter is part of Christendom College's August Discharge Monitoring Report and addresses the high ammonia result.

Exceedance: During this monitoring period, an effluent sample collected on 8/24 had an ammonia result of 22.4 mg/L. This ammonia result exceeded both the monthly average and weekly average permit limits.

Cause: IES suspects the high ammonia to be a result of grease build-up in the collection system and high influent temperatures. The final effluent temperatures were reported as >25 ° Celsius at the end of August, and it is believed that the aeration blowers were not able to provide enough aeration for nitrifier performance.

Remedy: The operator has removed floating grease from the treatment system and has turned the aeration blowers on high when the effluent temperatures are observed to be greater than 25° Celsius in order to maintain an adequate environment for nitrification.

If you have any questions or need additional information, please contact our office.

Sincerely,

Daniel Bradford, IES

CC: Mark Inboden, IES
Tom Heim, Christendom College
Mike Foeckler, Christendom College

Inboden Environmental Services, Inc.
5790 Main Street, Mt. Jackson, VA 22842

Analytical Report Form

Customer:	Christendom College 134 Christendom Drive Front Royal, VA 22630	**Report Date:**	8/12/2022
		Batch ID:	
		Received Date:	8/3/2022
Contact:	Mike Foeckler	**Sampler:**	Cannone, Jonathan
Special Notes:		**Sample Priority:**	Normal

Sample Location:	Final Effluent	**Sample Type:**	Composite - Wastewater
Sample ID Number:	2208040841	**Sample Date & Time:**	8/3/2022 8:00 AM

Parameter	Result	IES QL	Units	Method	Analysis Date	Analysis Time	Analyst
Ammonia as N	< 0.2	0.2	mg/L	*SM 4500-NH3 D-2011	8/9/2022	11:00	gh
CBOD5	7	2	mg/L	*SM 5210 B-2011	8/4/2022	10:30	gh
Total Suspended Solids	4.8	1	mg/L	*SM 2540 D-2011	8/4/2022	9:30	gh

Notes:

Analytes with an asterisk (*) present indicate NELAP accreditation. Analytes that have no asterisk(*) are not NELAP accredited.

IES Quantification Limit is the concentration of the lowest calibration standard above zero with a reliable signal.

Chain-of-Custody indicates complete composite sample collection time frame.

SM represents "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012.

Results shown relate only to samples.

Reviewed and approved for Inboden Environmental Services, Inc.

By: _____ Date: 8/12/2022

Mark E. Inboden, Laboratory Director

540-477-3300 • 1-800-648-1010 • Fax 540-477-3360
email: frontdesk@Inbodenenv.com
NELAP Accredited DCLS VA Laboratory ID# 460024

Inboden Environmental Services, Inc.

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

Inboden Environmental Services, Inc.
5790 Main Street, Mt. Jackson, VA 22842
tel: (540)477-3300 fax: (540)477-3360 toll free:1-800-648-1010
Email: frontdesk@4ies.com
A NELAP Accredited Laboratory: VELAP Laboratory ID# 460024

NELAP ACCREDITED LABORATORY

PLEASE USE PRINT TO FILL OUT THIS FORM. CORRECTION TAPE, PAINT, OR INK IS PROHIBITED. PLEASE USE BLUE OR BLACK INK.

Client Name: Christendom College
Address: 134 Christendom Drive
Front Royal, Va 22630
Contact: Mike Foeckler
Phone#: 540-636-2900
Fax#: 540-636-1655
Email:
Project Name:
Quote/PO#:

COMPLIANCE TYPE
VPDES/DMR/VPA ☒
PWSID: ☐
NON-COMPLIANCE ☐

MATRIX
Wastewater ☒ Drinking Water ☐
Solid Waste ☐

Turn Around Time (TAT):
Normal ☒ Rush ☐
Rush TAT subject to pre-approval and surcharge
Date Required: ___/___/___

METHOD OF PRESERVATION KEY:
(1) Cool, <6° (5) HCL (9) Ascorbic Acid
(2) H_2SO_4 (6) Na_2SO_3 (10) Filter
(3) HNO_3 (7) $Na_2S_2O_3$
(4) NaOH (8) None Other:_____

LAB USE ONLY
Received on Ice: (Y) / N
Correct bottles used: (Y) / N
COC/Labels on bottles agree: (Y) / N
Correct Preservation on all preserved bottles: (Y) / N
Cl_2 Check for Ammonia? Y / N -or- (N/A)
Total number of bottles: 2
Temp Instr. ID#____ Etekcity

SAMPLE INFORMATION / ANALYSIS REQUESTED

SAMPLE LOCATION	Composite Start Date	Composite Start Time	Composite End or Grab Date	Composite End or Grab Time	Samplers Initials	Sample Type* G -or- C	Bottle Type** G -or- P	PARAMETER	Preservative (See Key Above)	Receipt Temp.	Bottle Properly Preserved?
Final Effluent	8/3/22	0800	8/3/22	0800	JX	C	P	CBODS, TSS	1	0.9	Y
Final Effluent	8/3/22	0800	8/3/22	0800	JX	C	P	Ammonia	1,2	0.7	Y

Sampled by: Jonathan Cannone	Date 8/3/22	Time 1415	Received by:	Date	Time	COMMENTS
Relinquished by: Jonathan Cannone	Date 8/3/22	Time 1753	Received by: Rob	Date 8/3	Time 1753	
Relinquished by:	Date	Time	Received by:	Date	Time	
Relinquished by:	Date	Time	Received by:	Date	Time	

220804084 1

* G=Grab; C=Composite
**G=Glass; P=Plastic

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Permit Number: VA0067067

QUALITY CONTROL & ASSURANCE

Onsite pH Instrument Calibration Confirmation Test

Analysis of pH 7 Buffer

MONTH: **YEAR:**

pH Meter Model:
pH Meter Thermistor Calibration Date:

DAY	DATE BUFFER REPLACED	PH 7 BUFFER CHECK	TIME	TEMPERATURE (degrees C)	INITIALS
1		7.06	[illegible]	17.6	[illegible]
2		7.07	17:07	16.1	[illegible]
3		7.04	14:36	17.3	[illegible]
4		7.08	18:07	19.3	[illegible]
5		7.01	16:53	27.6	KH
6		7.02	11:18	22.5	[illegible]
7					
8					
9					
10					
11					
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14					
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17					
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31					

NOTES: Instrument calibration performed in accordance with manufacterers' instructions.
pH Standard Method 4500 H+B - 2011

Christendom College STP
WASTEWATER TREATMENT

Permit Number: VA0067067

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

IES

Month _____ Year _____

Final - 001

DAY	Flow Meter	Flow, Gallons	Techs Initials	Final Sample Time	pH Test Time	pH Result, Std. Unit	Temp. Result, °C	TRC Test Time	TRC Result, mg/L	D.O. Sample Time	D.O. Test Time	D.O. Result, mg/L
1	6249722	13133	[illegible]	15:00	15:02	7.61	17.8	15:05	0.02	15:10	15:14	6.81
2	6257855	11280	[illegible]	17:10	17:13	7.32	20.7	17:15	0.01	17:18	17:21	7.03
3	6268137	12135	[illegible]	14:41	14:43	7.59	19.6	14:45	0.00	14:47	14:50	7.13
4	6278772	10575	[illegible]	18:20	18:23	7.40	18.9	18:25	0.03	18:27	18:30	6.78
5	6293347	8105	KP	17:04	17:07	7.21	22.7	17:09	0.03	17:03	17:06	6.59
6	6301452		KP	11:46	11:49	7.37	22.6	11:44	0.02	11:43	11:46	6.52
7												
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29												
30												
31												
Tot												

QA/QC NOTES: pH duplicate is to be +/- 0.10 SU - initial pH result is to be reported
Initial TRC reported if duplicate performed
DO analysis is performed in-situ

Final discharge sampled during forward flow

Methods:

pH	SM 4500 H°B - 2011
DO	SM 4500-OG - 2011
TRC	Hach 8167 (SM 4500-Cl G - 2011)

pH Result: _____ Initials: _____

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Permit Number: VA0067067

QUALITY CONTROL & ASSURANCE

MONTH: YEAR:

DAY	COLORIMETER CALIBRATION STANDARDS BLANK	S1	S2	S3	Acceptable	Time	Initials	DISSOLVED OXYGEN METER CALIBRATION D.O. mg/L	TEMP °C	Time	Initials	Membrane Replace	pH METER pH BUFFERS REPLACED?	Date Replaced	pH CALIBRATION BUFFERS 4	7	10	Temp.	T check +/- 0.10	Time	INITIALS	PROBE CLEANED & REFILLED
1	0.00	0.23	0.88	1.65	✓	10:00	JP	8.58	20.1	14:55	JP	N	4 7 10		4.03	7.02	10.04	13.7	7.06	10:04	JP	N
2	0.00	0.22	0.89	1.66	✓	12:00	JP	9.31	16.7	17:01	JP	N	4 7 10		4.03	7.02	10.04	15.9	7.05	12:03	JP	N
3	0.00	0.16	0.86	1.67	✓	6:45	JP	8.46	19.8	14:38	JP	N	4 7 10		4.03	7.02	10.04	14.4	6.99	6:59	JP	N
4	0.00	0.16	0.86	1.62	✓	9:35	JP	8.09	23.8	18:06	JP	N	4 7 10		4.03	7.02	10.04	10.8	7.00	9:40	JP	N
5	0.00	0.23	0.96	1.65	✓	6:12	KH	8.11	24.6	16:58	KH	N	4 7 10	10/31/25	4.00	7.02	10.01	17.5	7.02	6:09	KH	N
6	0.00	0.21	0.91	1.60	✓	9:50	KH	8.60	21.6	11:21	KH	N	4 7 10		4.00	7.00	10.01	20.5	6.98	6:10	KH	N
7													4 7 10									
8													4 7 10									
9													4 7 10									
10													4 7 10									
11													4 7 10									
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31													4 7 10									

SPEC-CHECK Color Standards: S1 = ____ +/- 0.09
Lot #: _____ S2 = ____ +/- 0.10
Exp. Date: _____ S3 = ____ +/- 0.14

DPD Reagent Buffering Capability (1/month): Acceptance Range pH 6.00-7.00 SU
Reagent Lot #: Date:
Reagent Exp. Date Time:
pH Result: Initials:

NOTES:
Instrument calibration performed in accordance with manufacturers' instructions.

Christendom College STP

WASTEWATER TREATMENT

DAILY OPERATION

Permit Number: VA0067067

MONTH _____ YEAR _____

DAY	Chlorine Contact Tank					Aeration		Digester	Comments
	Tech.'s Initials	TRC Sample Time	TRC Test Time	TRC Result, mg/L	RPD % (+/- 20%)	Sett. Solids %	D.O. Result mg/L	Sludge Hauled	
1	[illegible]	15:14	15:18	2.15					
2	[illegible]	17:24	17:28	2.05					
3	[illegible]	14:54	14:58	1.87					
4	[illegible]	18:32	18:35	1.95					
5	[illegible]	16:55	16:58	3.51					
6	KH	11:19	11:22	4.74					Filled Cl_2 tank with 12½ Gallons Cl_2 1.5 lbs x 3
7									
8									
9									
10									
11									
12									
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14									
15									
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31									

RPD % Calculation: $\frac{\text{Duplicate Difference}}{\text{Duplicate Average}} \times 100$

All sampling performed during forward flow

11/6/22 Sunday 73° Cloudy DS/DS

- Calibrated Instrument
- Skimmed & Scrapped & Hosed Clarifier
- Skimmed 5 gals from Contact tank
- Added 2 Cl_2 Tablets to return Bay
- Added SO_2 tablets shock down
- Added H_2O mix with 1 Cup poly mer to aeration
- Added 3 bags OB GBugs
- Ran Daily Tests

10/30/22 Sunday 62°F Sunny
- Calibrated Instruments
- Skimmed Clarifier a lot
- Hosed Clarifier
- Change tube in Cl_2 Stenner pump
- unclogged Cl_2 [illegible] pull up line with new tubing
- added 2 Cl_2 tablets to return Box
- added 3 Bag O&G Bugs to aeration
- Run Daily Tests
- added SO_2 tablets & Shook down
- Left Blower on Hand

10/31/22 Monday 54°F Light rain
- Calibrated Instrument
- Skimmed Clarifier & Hosed down
- Skimmed some in contact tank
- added SO_2 tablets & Shook down
- added 3 bags O&G Bugs to aeration
- added 1 Cl_2 tablet to return Box

10/31/22 Continued

- wasted 10 mins
- First Choice pumped Contact tank & digestor
- Ran Daily Tests

Tuesday 11/1/22 Torsicio & Tracy
Change Braker for Blower #1
wire both blower to Normal

1-1-22

- Calibrated tools ; Wasted 10 min
- Skimmed Clarifier
- Shook down & Added Sea
- Added 3 bags of bugs
- Added 4 Clo tablets to Return
- Hosed clarifier
- Hosed creek
- Ran test

1-2-22

- Calibrated ; Skimmed, Hosed creek
- Wasted 10 min. Added 3 bags of bugs
- Skimmed clarifier & contact tank. Added 1 cup Poly
- Pumped contact tank. Bucket Broke off Auto Sam
- Hosed clarifier. Shook down Sea & Added -

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360
WEB: www.4ies.com

Thermometer Calibration Certificate

Client: IES Operator

Date: 08/08/2022
Time: 11:00 AM

Make	Model No.	Serial No.	Type	Range	Divisions, °C	Immersion	Length
Oakton	pH 30	T31108110	pH Meter	0 to 50 °C	0.1 °C	N/A	N/A

NIST Thermometer Reading	Thermometer Reading	Correction
0.0 °C	0.3 °C	-0.3 °C
15.0 °C	15.1 °C	-0.1 °C
30.0 °C	30.2 °C	-0.2 °C

NOTE: If above correction is preceded by a (+) sign, it should be added to the thermometer reading; if it is preceded by a (-) sign, it should be subtracted from the thermometer reading to obtain the correct temperature.

Calibration Instrument

Make	Model No.	Serial No.	Type	Range	Divisions, °C	Immersion	Length
Thermco	1011-3	1015	Glass nitrogen filled	-1 to 110 °C	0.2 °C	76 mm	457 mm

NIST thermometer checked with ice point. Pure distilled shaved ice used for ice point calibration.

Laboratory Technician
Gabriella Hensley

Inboden Environmental Services, Inc.

5790 Main Street
Mt Jackson, VA 22842
(540) 477-3300
TOLL-FREE (800) 648-1010
FAX. (540) 477-3360
WEB: www.4ies.com

INBODEN ENVIRONMENTAL SERVICES, Inc.

5790 Main St. Mt. Jackson, VA 22842

QUALITY CONTROL LOG
COLORIMETER INSTRUMENT CHECK

Client: IES Operations	Date: 08-08-2022

Instrument Identification: Hach DR300 S/N 19090A001360

DPD Chlorine Standard Lot: A0356 Exp. Date: DEC-2022

DPD Chlorine Standard	Standard Reading	Instrument Reading
Standard 1	0.21 ± 0.09	0.18
Standard 2	0.91 ± 0.10	0.88
Standard 3	1.60 ± 0.14	1.56
Accepted (YES or NO)		YES

Primary Check Standard

YSI Primary Standard Kit Lot: 200729 Exp Date: 08-31-2022

Standard Value:	Instrument Reading
1.49 ± 0.006	1.45
Accepted (YES or NO)	YES

* All values listed are in mg/L

Laboratory Technician
Gabriella Hensley

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360
WEB: www.4ies.com

Laboratory Secondary Control Standard Certificate

Date: 08/08/2022
Time: 11:00 AM

Client: IES Operator

Make	Model No.	Serial No.	Type	Range	Divisions, S.U.
Oakton	pH 30	T31108110	pH Meter	-1.00-15.00 S.U.	0.01 S.U.

pH Buffer 4 Identification	pH Buffer 7 Identification	pH Buffer 10 Identification	Temperature °C	Acceptable (YES or NO)
Manufacturer: BlueBook Lot No.:1GH1124 Reading: 3.99	Manufacturer: BlueBook Lot No.:1GF824 Reading: 7.00	Manufacturer: BlueBook Lot No.:1GG1079 Reading: 10.00	23.1	***YES***

Laboratory Standard	Standard Value	pH Meter Reading	Acceptable (YES or NO) pH within 0.10 of standard
Manufacturer: USABlueBook Lot No. :1GC844	7.00	6.97	***YES***

pH determined using SM4500-H+ B-2011

Laboratory Technician
Gabriella Hensley

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360
WEB: www.4ies.com

Thermometer Calibration Certificate

Date: 08/08/2022
Time: 11:00 AM

Client: IES Operations
5790 Main St. Mount Jackson, VA 22842

Make	Model No.	Serial No.	Type	Range, °C	Divisions, °C	Immersion	Length
EcoSense	DO200A	JC06598	Thermister	-6.0 to +46.0	0.1 °C	N/A	N/A

NIST Thermometer Reading	Thermometer Reading	Correction
0.0 °C	0.1 °C	-0.1 °C
15.0 °C	15.0 °C	0.0 °C
30.0 °C	30.0 °C	0.0 °C

NOTE: If above correction is preceded by a (+) sign, it should be added to the thermometer reading; if it is preceded by a (-) sign, it should be subtracted from the thermometer reading to obtain the correct temperature.

Calibration Instrument

Make	Model No.	Serial No.	Type	Range	Divisions, °C	Immersion	Length
Thermco	1011-3	1015	Glass nitrogen filled	-1 to 110 °C	0.2 °C	76 mm	457 mm

NIST thermometer checked with ice point. Pure distilled shaved ice used for ice point calibration.

Quality Control Technician
Gabriella Hensley

OPERATION AND MAINTENANCE MANUAL

Christendom College
Sewage Treatment Plant

July 1985

Prepared For:
Christendom College
134 Christendom Drive
Front Royal, VA 22630

Revised By:
Inboden Environmental Services, Inc.
5790 Main Street
Mount Jackson, VA 22842
(540) 477-3300

Revised:

November 1985

January 1991

March 9, 2009

June 19, 2018

IV. OPERATION OF TREATMENT FACILITY

The operation of the treatment facility shall be in accordance with the manufacturers recommendations, contained in Appendix "H" of this manual. A generalized check list for troubleshooting appears as Appendix "E" of this manual.

Sludge generated at the facility is disposed of in accordance with the approved Sludge Management Plan for VPDES Permit No: VA0067067 and involves pumping and hauling the wasted sludge to the Town of Front Royal STP.

The operation of sludge pump and supernatant pump station shall be on an as needed bases. The operation and maintenance of these pumps shall be in accordance with the manufacturers' recommendations, contained in Appendix "L" of this manual.

V. MAINTENANCE

Routine maintenance shall be performed by the plant operator. Major repairs and equipment replacements shall be performed by Inboden Environmental Services, Inc. or Kappe Associates, Inc.

Tools

Normal maintenance will be accomplished with common tools. These common tools shall be supplied by the College. Any special equipment will be supplied by the service representative.

Spare Parts

The following spare parts will be stored at the College:

1. 1 each: Spare blower (The spare blower shall have identical features to the blower furnished with the plant. The blower shall be less motors and accessories and be packaged for storage.)
2. 6 each: snap caps
3. 6 each: diffusers
4. 4 each: froth nozzle
5. 2 each: blower belts
6. 2 each: complete set of blower bearings

These parts shall be stored at a dry inside location readily accessible for replacement.

Maintenance Schedule

General

Daily	1. Check motors for overheating by hand
	2. Wash plant sidewalls
Weekly	1. Check effluent weir level
Monthly	1. Clean dust away from motor
Semi-Annually	1. Check valves for leaks
	2. Clean spray pump screen
Yearly	1. Repaint effluent weir
	2. Clean and repaint metal surfaces
	3. Scrape and paint all exposed steel

Electrical

Monthly	1. Inspect breakers, fuses, and resets
Yearly	1. Check electrical leads

Comminutor

Monthly	1. Check oil level
	2. Check cutting efficiency
Semi-Annually	1. Grease Comminutor

Aerator Blowers

Daily	1. Check air valve settings
Weekly	1. Inspect V-belt for slippage
Monthly	1. Check pully alignment
	2. Clean air filter
	3. Oil pressure relief valve
	4. Inspect V-belt for wear
	5. Check oil level

6. Grease bearings
7. Check motor mounting bolts

Clarifier

Daily
1. Clean tank walls
2. Skim scum from scum baffles
3. Hose down weirs and scum

Semi-annually
1. Take out of service and inspect all mechanical equipment wear and corrosion.
2. Check all moving parts for wear
3. Replace moving parts, if necessary
4. Check weirs to make sure they are level

Hypochlorinator

For all maintenance of the hypochlorinator see Appendix "J".

Cascade Aerator

Daily
1. Clean any deposits or debris

Maintenance Records

The College shall institute procedures for maintaining an equipment record system. Each major component of the plant shall have an equipment record maintained on it.

The Vice President of Operations shall have ultimate responsibility for the maintenance of the equipment record system and review the records at a minimum of once per year. The Vice President of Operations may day to day keeping of the equipment records to the designated operator.

The equipment records shall be kept in a 3-ring binder catalog in the office of the Vice President of Operations.

The maintenance record for each piece of equipment shall include the following:

1. Common Name:
2. Function:
3. Date of Purchase:
4. Manufacturer model number:
5. Serial Number:
6. Notes:
7. Listings of Corrective or Emergency Maintenance work: A detailed description of the problem, its source, and curative procedures shall be attached to the maintenance record for each piece of equipment.

Sample Maintenance Record Forms are shown in Appendix "G".

VI. SAMPLING AND LABORATORY TESTING

All field monitoring and sampling shall be done by the contract operator. Required field monitoring and sample types are listed on the VPDES permit.

Sampling: Influent and other process control samples may be taken at any time to diagnose a biological issue or quantify various parameters within the treatment waste. All effluent samples are taken from a point following the cascade aerator. All samples are either classified as "composite" or "grab" samples. A "composite" sample is composited from many individual samples collected at regular intervals over a period of time. The volume of each sample is taken proportional to the flow a rate at the time of sampling. A "grab" sample is a single sample collected at one individual sampling event and does not reflect the current flow rate. Required sampling parameters and frequencies are specified in the VPDES Permit No: VA0067067. Sample results must be reported within the Discharge Monitoring Report (DMR) and sent to DEQ each month. A copy of the DMR is included as Appendix "B".

The following principles are to be followed in order to collect a representative sample:

1. Samples should be taken after post-aeration.
2. Sample are to be preserved and cooled properly.
3. Sample containers shall be clean and not contaminated during sampling.

Christendom College STP

WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Foam Log

MONTH

VA0067067

Are floating solids or is visible foam present beyond a trace (barely noticeable) amount?

Month and Year:

	Sample Pt.		Stream		If so, check for cause. action to be taken (if any):
Day	YES	NO	YES	NO	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
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28					
29					
30					
31					

Can foam be created by turbulence upstream of outfall?

Virginia Department of Environmental Quality

Wastewater Facility Inspection Report

Preface

VPDES Permit No.	(Re)Issuance Date	Modification Date	Expiration Date
VA0067067	01/01/2019	--	12/31/2023

Facility Name	Address	Telephone Number
Christendom College STP	134 Christendom Drive, Front Royal, VA 22630	(540) 636-2900
Owner Name	**Address**	**Telephone Number**
Christendom Educational Corporation	134 Christendom Drive, Front Royal, VA 22630	(540) 636-2900
Responsible Official	**Title**	**Telephone Number**
Tom Heim (tom.heim@christendom.edu)	Director of Operations	(540) 636-2908
Additional Contact	**Title**	**Telephone Number**
Mike Foeckler (mfoeckler@christendom.edu)	VP of Operations & Facility Planning	(540) 636-2900
Responsible Operator	**Operator Certification Class/Number**	**Telephone Number**
Mark E. Inboden (minboden@Inbodenenv.com)	Class 1 / 19650095252	(540) 477-3300

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date or until the issuance of the Certificate to Operate (CTO) for the 0.04 MGD or 0.05 MGD facility, whichever occurs first, the permittee is authorized to discharge from Outfall 001.

This discharge shall be limited and monitored as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD) [a]	NL	NA	NA	NL	1/Day	Estimate
pH (standard units)	NA	NA	6.5	9.5	1/Day	Grab
CBOD5 [c,d]	24 mg/L 2.3 kg/d	36 mg/L 3.4 kg/d	NA	NA	1/Week	8 HC
Total Suspended Solids [c,d]	30 mg/L 2.8 kg/d	45 mg/L 4.3 kg/d	NA	NA	1/Week	8 HC
E. coli (N/100 mL) [b]	126 Geometric Mean	NA	NA	NA	4/Month in any month of each calendar year 10 a.m. to 4 p.m.	Grab
Total Residual Chlorine (TRC)(mg/L) [b,c]	0.0080	0.0098	NA	NA	1/Day	Grab
Dissolved Oxygen (mg/L)	NA	NA	6.0	NA	1/Day	Grab
Ammonia-N (Jun-Dec) (mg/L) [e]	1.6	2.4	NA	NA	1/Week	8 HC
Ammonia-N (Jan-May) (mg/L) [e]	2.2	3.1	NA	NA	1/Week	8 HC

NL = No Limitation, monitoring required NA = Not Applicable 8 HC = 8-Hour Composite
4/Month in any month of each calendar year = 4 samples taken, with at least 1 sample taken each calendar week, in any calendar month and reported no later than January 10th of every year

a. The design flow of this treatment facility is 0.025 MGD. See Part I.D.1 for additional requirements related to facility flows.
b. See Part I.B for disinfection requirements.
c. See Part I.C for additional monitoring and reporting instructions.
d. At least 85% removal for CBOD5 and TSS shall be attained for this discharge.
e. This facility has Total Nitrogen and Total Phosphorus calendar year load limits associated with this outfall included in the current Registration List under registration number VAN010131, enforceable under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.
f. There shall be no discharge of floating solids or visible foam in other than trace amounts.

Virginia Department of Environmental Quality

WASTEWATER FACILITY INSPECTION REPORT

FACILITY NAME: Christendom College STP		**INSPECTION DATE:** 11/07/2022	
		INSPECTOR Alex Wynn	
PERMIT No.: VA0067067		**REPORT DATE:** 11/18/2022	
TYPE OF FACILITY: ☑Municipal ☑ Small Minor ☐ Industrial ☐ Federal		**TIME OF INSPECTION:**	Arrival 10:00am / Departure 11:15am
		TOTAL TIME SPENT	3 days w/ travel & report
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?** ☑ Yes ☐ No	
REVIEWED BY: TAE, BDK			
PRESENT DURING INSPECTION: Mike Foeckler, Tom Heim, Mark Inboden (IES), Daniel Bradford (IES), Karl DeMay (IES), Celeste Horton (DEQ)			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments: Modifications were made to the aeration system and clarifier in 2021.	☐ Yes ☐ No ☑ NA
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: O&M Manual was last revised in 2018.	☐ Yes ☑ No ☐ NA
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No ☐ NA
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments: An IES operator is at the facility ~2 hours/day.	☑ Yes ☐ No ☐ NA
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No ☐ NA
6. Are preventive maintenance task schedules being met? Comments: Metals surfaces have not been cleaned and repainted yearly. All exposed steel has not been scraped and painted yearly.	☐ Yes ☑ No ☐ NA
7. Does the plant experience any organic or hydraulic overloading? Comments: Hydraulic and organic overloading. Both items are being addressed with future plant upgrades.	☑ Yes ☐ No ☐ NA
8. Has there been any bypassing or overflows since the last inspection? Comments: None reported.	☐ Yes ☑ No ☐ NA
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments:	☐ Yes ☐ No ☑ NA
10. Is the plant alarm system operational and tested regularly? Comments:	☐ Yes ☐ No ☑ NA

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? Comments: Sludge is hauled to Front Royal WWTP for further processing.	☑ Yes ☐ No ☐ NA
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? Comments:	☐ Yes ☑ No ☐ NA ☐ Yes ☐ No ☑ NA
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? Comments:	☑ Yes ☐ No ☐ NA

14. Which of the following records does the plant maintain?

☑ Operational logs ☑ Instrument maintenance & calibration

☑ Mechanical equipment maintenance ☐ Industrial waste contribution (Municipal facilities)

Comments:

15. What does the operational log contain?

☑ Visual observations ☑ Flow measurement ☑ Laboratory results ☑ Process adjustments

☐ Control calculations ☐ Other (specify):

Comments:

16. What do the mechanical equipment records contain?

☑ As built plans and specs ☑ Manufacturer's instructions ☑ Lubrication schedules

☑ Spare parts inventory ☑ Equipment/parts suppliers

☐ Other (specify):

Comments:

17. What do the industrial waste contribution records contain (Municipal only)?

☐ Waste characteristics ☐ Impact on plant ☐ Locations and discharge types

☐ Other (specify)

Comments: NA

18. Which of the following records are kept at the plant and available to personnel?

☑ Equipment maintenance records ☑ Operational log ☐ Industrial contributor records

☐ Instrumentation records ☑ Sampling and testing records

Comments: Field instrument sets are assigned to each operator. The operator keeps the instrumentation records and their IDC in their work vehicle.

19. List records not normally available to plant personnel and their location:

Comments: None

20. Are the records maintained for the required time period (three or five years)? Comments: Hard copies are stored at the facility. Electronic copies are stored at IES.	☑ Yes ☐ No

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping			
Flow Measurement (Influent)			
Screening/Comminution	X		
Grit Removal			
Oil/Water Separator			
Flow Equalization			
Ponds/Lagoons			
Imhoff Tank			
Primary Sedimentation			
Trickling Filter			
Septic Tank and Sand Filter			
Rotating Biological Contactor			
Activated Sludge Aeration	X		*Trouble with filamentous growth and grease.*
Biological Nutrient Removal			
Sequencing Batch Reactor			
Secondary Sedimentation	X		*Trouble with floating solids.*
Flocculation			
Tertiary Sedimentation			
Filtration			
Micro-Screening			
Activated Carbon Adsorption			
Chlorination	X	1	*CCT baffles are developing holes from corrosion.*
Dechlorination	X		
Ozonation			
Ultraviolet Disinfection			
Post Aeration	X		
Flow Measurement (Effluent)	X		
Land Application (Effluent)			
Plant Outfall	X	1,5	*Accumulation of solids in receiving stream*
Sludge Pumping			
Flotation Thickening (DAF)			
Gravity Thickening			
Aerobic Digestion	X		
Anaerobic Digestion			
Lime Stabilization			
Centrifugation			
Sludge Press			
Vacuum Filtration			
Drying Beds			*Not in use.*
Thermal Treatment			
Incineration			
Composting			
Land Application (Sludge)			

* Problem Codes

1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

The single train package plant was installed in 1985. The STP receives flow from Christendom College. Modifications were made to the STP in August 2021 to address flow and treatment concerns. See unit check lists for modification specifics.

Operations staff noted the STP experiences increased organic and hydraulic loading while the college is in session (August-May). Christendom College notified DEQ on 10/17/2022 they plan to install a temporary FEQ during the week of 11/14/2022.

Operation of the aeration basin has been modified to accommodate the peak flows and reduce solids washouts. During the inspection the aeration basin was in the "settle" mode. There is no aeration in the basin from 08:00am – 01:00pm. This mode of operation was implemented during the commencement of the 2022 academic year. Treatment efficiency is regularly impacted by influent grease loading and a variability of instantaneous flows.

The clarifier had a thick blanket of brown foam on the surface. The operator stated the foam is removed daily and reoccurs on the surface by the time the operator arrives the next day. The foam is removed manually by operating the scum collection system and using a hose to spray the foam into the scum collection pipe.

The chlorine contact tank (CCT) is pumped frequently to remove settled solids. The CCT's baffles have significant rust accumulation. Several baffles were starting to develop holes above the water surface. See camera images.

Sludge is frequently removed from the digester due to the STP's ongoing solids issues. Sludge was last hauled away by a contracted septic hauler on 10/31/22.

There was an accumulation of solids in the receiving stream. The bulk of the solids were retained by a fallen tree approximately 10 feet downstream of the outfall. See camera images.

A pole barn style building was installed in 2022 over the treatment system to prevent leaves and other debris from falling into the tanks. The building has a coarse screen wrapped around the sides with doors to access the STP.

See unit checklists for additional comments.

VA DEQ Wastewater Facility Inspection Report

Permit #	VA0067067

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS
EFFLUENT FIELD DATA:

Flow	MGD	**Dissolved Oxygen**	mg/L	**TRC (Contact Tank)**	mg/L
pH	S.U.	**Temperature**	˚C	**TRC (Final Effluent)**	mg/L

Was a Sampling Inspection conducted? ☐ Yes (see Sampling Inspection Report) ☑ No

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☑ Shore based ☐ Submerged Diffuser? ☐ Yes ☑ No
2. Are the outfall and supporting structures in good condition? ☑Yes ☐ No
3. Final Effluent (evidence of following problems): ☑ Sludge bar ☐ Grease
   ☐ Turbid effluent ☑ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☑ No
5. Receiving stream: ☐ No observed problems ☑ Indication of problems (explain below)
   Comments: Receiving stream has settled solids and foam. It was recorded in the operator's log that the creek had been hosed.

REQUEST for CORRECTIVE ACTION:

1. Update the O&M Manual to address the current standard of operations and the modifications made to the STP in August 2021. Ensure the O&M Manual includes a signed Part II K certification and effective date page. Submit a copy of the updated O&M Manual. [Permit Part I D.4]
2. Repair the corroding CCT baffles. [Permit Part II Q]
3. Provide the procedures used for documenting compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts. [Part I D.4.i]
4. Remove the accumulated solids from the receiving stream and dispose of in a proper manner. [Permit Part II F and R]
5. Cease hosing the creek. [Permit Part II F]

*****See the Laboratory Inspection Report for additional requests for corrective action.*****

NOTES and COMMENTS:

- Ensure no foam or solids are discharged to the receiving stream when the foam on the clarifier's surface is removed and/or sprayed into the scum collection pipe. [Permit Part II F]

UNIT PROCESS: Screening/Comminution

1. Number of Units:	Manual:	1	Mechanical:	1	
Number in operation:	Manual:	1	Mechanical:	1	
2. Bypass channel provided:			☑ Yes	☐ No	
Bypass channel in use:			☐ Yes	☑ No	
3. Area adequately ventilated:			☑ Yes	☐ No *	
4. Alarm system for equipment failure or overloads:			☐ Yes	☑ No	
5. Proper flow distribution between units:			☐ Yes	☐ No	☑ NA
6. How often are units checked and cleaned?			Daily		
7. Cycle of operation:			Continuous		
8. Volume of screenings removed:			NA		
9. General condition:			☑ Good	☐ Fair	☐ Poor

Comments:

- 3 HP comminutor motor

UNIT PROCESS: ACTIVATED SLUDGE AERATION

1. Number of units: 1 In operation: 1

2. Mode of operation: Extended aeration

3. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

4. Foam control operational: ☐ Yes ☐ No* ☑ NA

5. Scum control operational: ☐ Yes ☐ No* ☑ NA

6. Evidence of following problems:

a. dead spots	☐ Yes*	☑ No
b. excessive foam	☐ Yes*	☑ No
c. poor aeration	☐ Yes*	☑ No
d. excessive aeration	☐ Yes*	☑ No
e. excessive scum	☐ Yes*	☑ No
f. aeration equipment malfunction	☐ Yes*	☑ No
g. other (identify in comments)	☐ Yes*	☑ No

7. Mixed liquor characteristics (as available):

pH (s.u.)		SDI		Odor	None
DO (mg/L)		SVI		Color	Brown
MLSS (mg/L)		Settleability (mg/L)	650 mg/L	Others (identify)	

8. Return/waste sludge:

a. Return Rate:	Cont.	b. Waste Rate:	10-15 min	c. Frequency of Wasting:	1/2 days

9. Aeration system control: ☐ Manual ☐ Time clock ☐ Continuous ☑ Other (explain)

10. Effluent control devices working properly (oxidation ditches): ☐ Yes ☐ No* ☑ NA

11. General condition: ☐ Good ☑ Fair ☐ Poor

Comments:

- Aeration system control:
  - May-August: Continuous operation
  - September-May:
    - Air is off from 8:00am – 1:00pm during peak flows to the STP.
    - Aeration is continuous from 1:00pm – 8:00am.
- Polymer is added daily to assist with settling. 1 scoop of dry polymer is mixed with 5 gal. of water.
- BioRemove™ is added regularly to assist with treatment issues derived from oil & grease.
- Fine bubble diffusers were installed in the aeration basin in August 2021.

UNIT PROCESS: Sedimentation

☐ Primary ☑ Secondary ☐ Tertiary

1. Number of units 1	In operation: 1		
2. Proper flow distribution between units:	☐ Yes	☐ No*	☑ NA
3. Signs of short circuiting and/or overloads:	☑ Yes	☐ No	
4. Effluent weirs level:	☑ Yes	☐ No*	
Clean:	☑ Yes	☐ No*	
5. Scum collection system working properly:	☑ Yes	☐ No*	☐ NA
6. Sludge collection system working properly:	☑ Yes	☐ No*	
7. Influent, effluent baffle systems working properly:	☑ Yes	☐ No*	
8. Chemical addition:	☐ Yes	☑ No	
Chemicals: NA			
9. Effluent characteristics: Clear with mild pin-floc.			
10. General condition:	☐ Good	☑ Fair	☐ Poor

Comments:

- Thick, brown, foam floating on clarifier surface. The operator stated this occurs daily.
- The foam is removed manually by operating the scum collection system and using a hose to spray the foam into the scum collection pipe.
- The following modifications were made to the clarifier in August 2021:
    - Increased the length of the clarifier inlet weir to cover the entire width of the clarifier.
    - Installed a new scum collection system. The skimmer is the length of the clarifier width and is connected to a new air lift pump. The air lift pump sends the collected scum to the front of the aeration basin.
    - A Stamford baffle was installed to keep most floating scum and sludge away from the effluent weir.
    - Timers were installed to control the RAS/WAS air lift pumps.

UNIT PROCESS: Chlorination

1. No. of chlorinators: 1 In operation: 1
2. No. of evaporators: 0 In operation: 0
3. No. of chlorine contact tanks: 1 In operation: 1
4. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA
5. How is chlorine introduced into the wastewater?
   ☐ Perforated diffusers
   ☐ Injector with single entry point
   ☑ Other: Drips into start of CTT from tubing connected to a solution pump.
6. Chlorine residual in basin effluent: >2.20 mg/L on 10/6/22
7. Applied chlorine dosage: 2.5 gals/day
8. Contact basins adequately baffled: ☑ Yes ☐ No*
9. Adequate ventilation:
   a. cylinder storage area ☐ Yes ☐ No* ☑ NA
   b. equipment room ☑ Yes ☐ No*
10. Proper safety precautions used: ☑ Yes ☐ No*
11. General condition: ☐ Good ☑ Fair ☐ Poor

Comments:
- Sodium Hypochlorite (12.5%) is used.
- Chlorine is fed continuously to the CCT.
- CCT baffles have significant rust accumulation. Several baffles were starting to develop holes above the water surface. See camera images.

UNIT PROCESS: Dechlorination

1. Chemical used: ☐ Sulfur Dioxide ☑ Bisulfite ☐ Other

2. No. of sulfonators: 0 In operation: NA

3. No. of evaporators: 0 In operation: NA

4. No. of chemical feeders: 1 In operation: 1

5. No. of contact tanks: 0 In operation: NA

6. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

7. How is chemical introduced into the wastewater?
   ☐ Perforated diffusers
   ☐ Injector with single entry point?
   ☑ Other: 4-tube tablet feeder

8. Control system operational: ☑ Yes ☐ No*
   a. residual analyzers: ☐ Yes ☐ No* ☑ NA
   b. system adjusted: ☐ Automatic ☑ Manual ☐ Other:

9. Applied dechlorination dose: ~ 4 tablets/day

10. Chlorine residual in basin effluent: <0.10 mg/L on 10/6/22

11. Contact basins adequately baffled: ☐ Yes ☐ No ☑ NA

12. Adequate ventilation:
    a. cylinder storage area: ☐ Yes ☐ No* ☑ NA
    b. equipment room: ☐ Yes ☐ No* ☑ NA

13. Proper safety precautions used: ☑ Yes ☐ No*

14. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Post Aeration

1. Number of units: 1 In operation: 1

2. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

3. Evidence of following problems:

   a. dead spots ☐ Yes* ☑ No
   b. excessive foam ☐ Yes* ☑ No
   c. poor aeration ☐ Yes* ☑ No
   d. mechanical equipment failure ☐ Yes* ☐ No ☑ NA

4. How is the aerator controlled? ☐ Manual ☐ Time clock ☐ Continuous ☐ Other ☑ NA

5. What is the current operating schedule? Continuous

6. Step weirs level: ☑ Yes ☐ No ☐ NA

7. Effluent D.O. level: Not analyzed

8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:
- Cascade steps following the dechlorinator.

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall: ☑ Shore based ☐ Submerged
2. Type if shore based: ☐ Wingwall ☑ Headwall ☐ Rip Rap
3. Flapper valve: ☐ Yes ☐ No ☑ NA
4. Erosion of bank: ☐ Yes* ☑ No ☐ NA
5. Effluent plume visible? ☐ Yes* ☑ No
6. Condition of outfall and supporting structures: ☑ Good ☐ Fair ☐ Poor

7. Final effluent, evidence of following problems:
   a. oil sheen ☐ Yes* ☑ No
   b. grease ☐ Yes* ☑ No
   c. sludge bar ☑ Yes* ☐ No
   d. turbid effluent ☐ Yes* ☑ No
   e. visible foam ☑ Yes* ☐ No
   f. unusual color ☐ Yes* ☑ No

Comments:
- c) There was an accumulation of solids in the receiving stream. The bulk of the solids were retained by a fallen tree approximately 10 feet downstream of the outfall. Solids were identified as far down as 100 ft from the outfall.
- e) Foam was identified near the outfall. See camera images.

UNIT PROCESS: AEROBIC DIGESTION

1. Number of units: 1	In operation: 1			
2. Type of sludge treated	☐ Primary	☑ WAS	☐ Other	
3. Frequency of sludge application to digesters: Every other day.				
4. Supernatant return rate: Supernatant is manually pumped from the digester every other day.				
5. pH adjustment provided:	☐ Yes	☑ No		
Utilized:	☐ Yes	☐ No	☑ NA	
6. Tank contents well-mixed and relatively free of odors:	☑ Yes	☐ No*		
7. If diffused aeration is used, do diffusers require frequent cleaning?	☐ Yes	☑ No	☐ NA	
8. Location of supernatant return:	☑ Head	☐ Primary	☐ Other	
9. Process control testing:				
a. reduction of volatile solids	☐ Yes	☑ No	%	
b. pH	☐ Yes	☑ No	s.u.	
c. alkalinity	☐ Yes	☑ No	mg/l	
d. dissolved oxygen	☐ Yes	☑ No	mg/l	
10. Foaming problem present:	☐ Yes*	☑ No		
11. Signs of short-circuiting or overloads:	☑ Yes*	☐ No		
12. General condition:	☑ Good	☐ Fair	☐ Poor	

Comments:

- 11) Solids are frequently removed from the digester due to high volume of solids in the STP.
- The digester was recoated and reinforced as part of the August 2021 improvements.

UNIT PROCESS: Flow Measurement

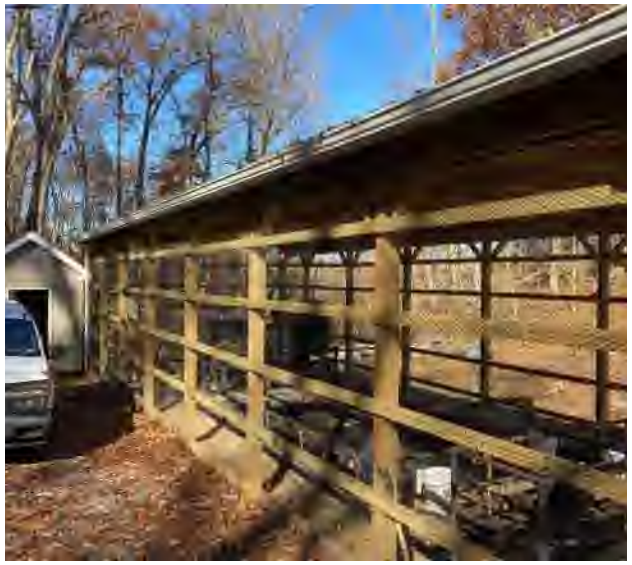
☐ Influent ☐ Intermediate ☑ Effluent

1. Type measuring device: Ultrasonic transponder at a 60° V-notch weir
2. Present reading: 10.93 GPM (10:43am, 11/7/22)
3. Bypass channel: ☐ Yes ☑ No
   Metered: ☐ Yes ☐ No ☑ NA
4. Return flows discharged upstream from meter: ☐ Yes ☑ No
   Identify:
5. Device operating properly: ☑ Yes ☐ No *
6. Date of last calibration: 01/26/2022
7. Evidence of following problems:
   a. obstructions ☐ Yes* ☑ No
   b. grease ☐ Yes* ☑ No
8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

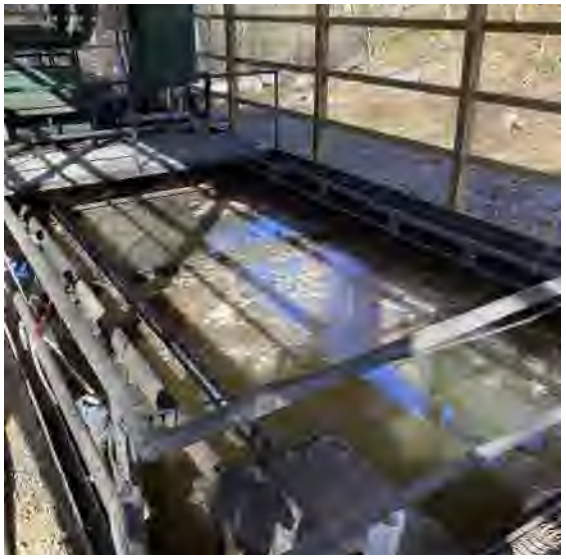
Christendom College STP
11/07/2022

VA0067067

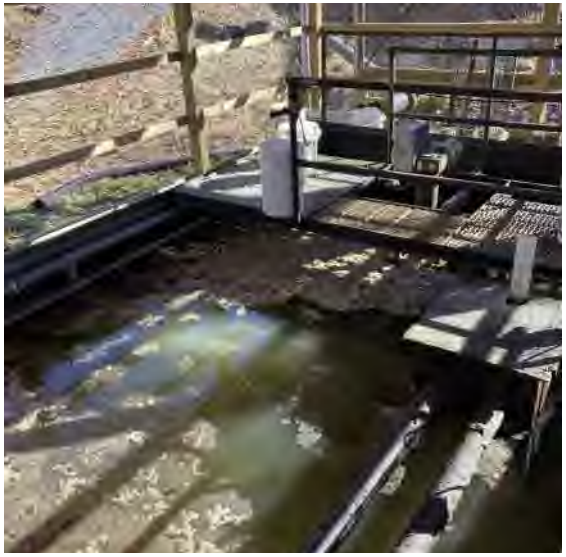


Christendom College STP

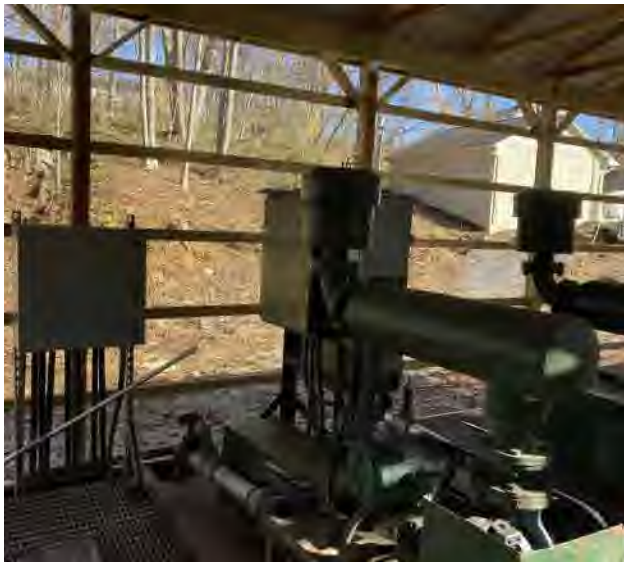
Comminutor



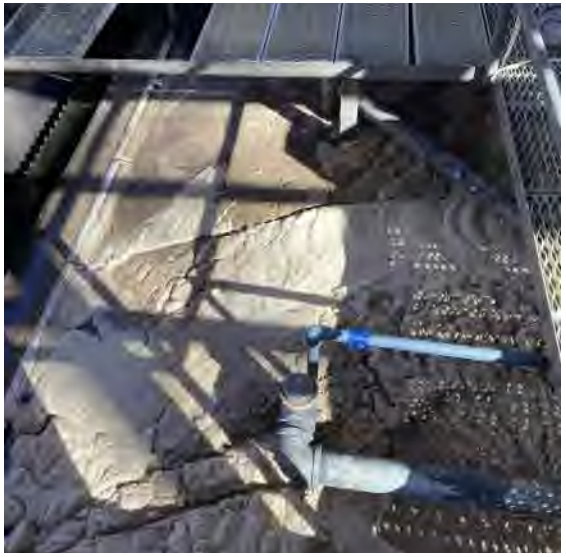
Aeration basin



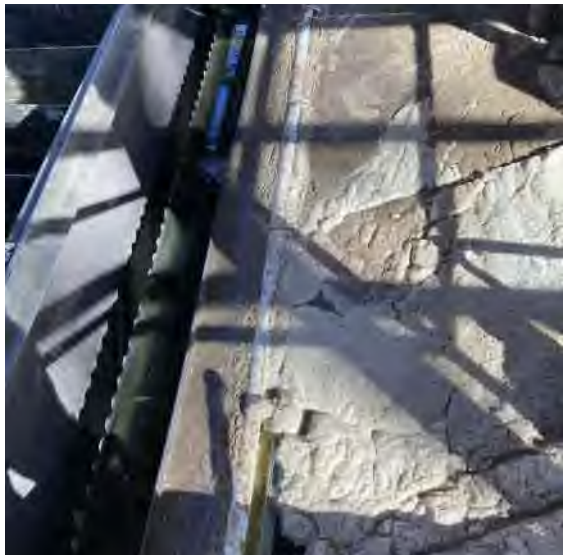
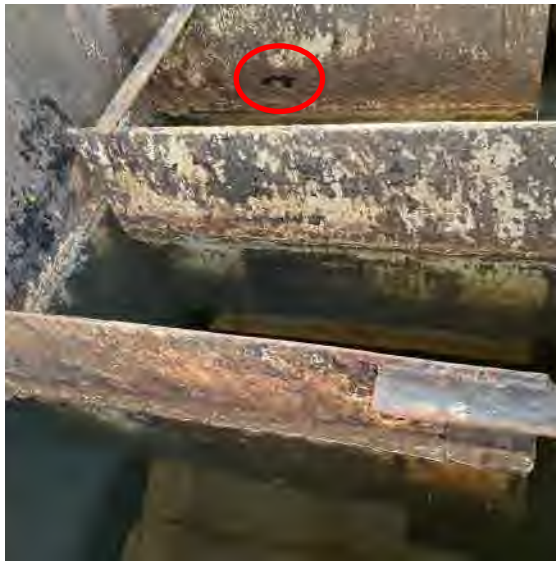
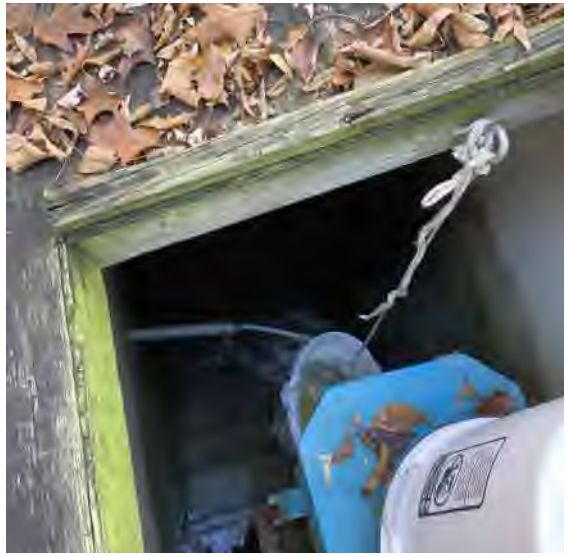
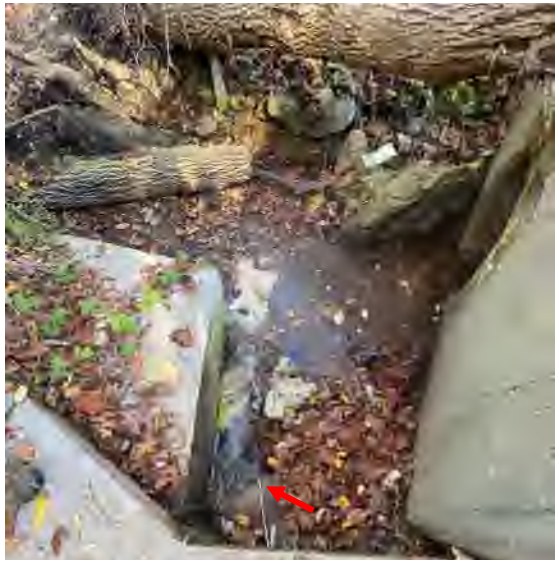
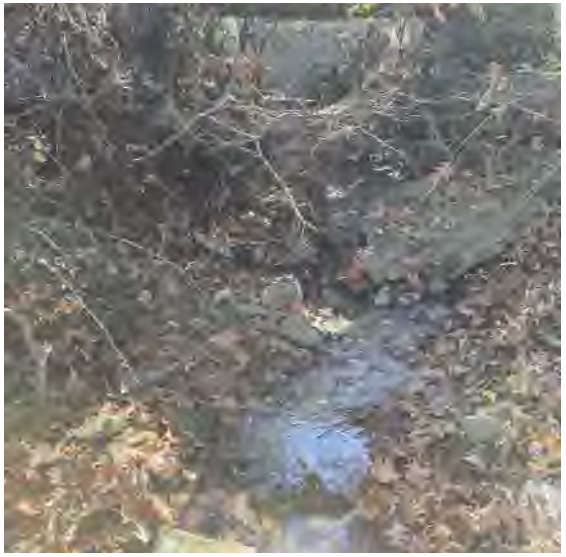
Aeration basin



Blowers and control panels



Clarifiers (2)

Christendom College STP **11/07/2022**		**VA0067067**
		
Scum collection pipe and clarifier weir	Chlorine contact tank, ultrasonic transponder, and weir.	Baffles of chlorine contact tank. Circled in red is a hole developing from rust.
		
Dechlor tablet feeder, sample collection point, and cascade steps.	Red arrow is pointing to Outfall 001. The photo also shows a storm drainage outlet and blockage in the stream caused by fallen trees.	Photo taken on the west side of the fallen trees, looking towards outfall 001.

Christendom College STP
11/07/2022

VA0067067

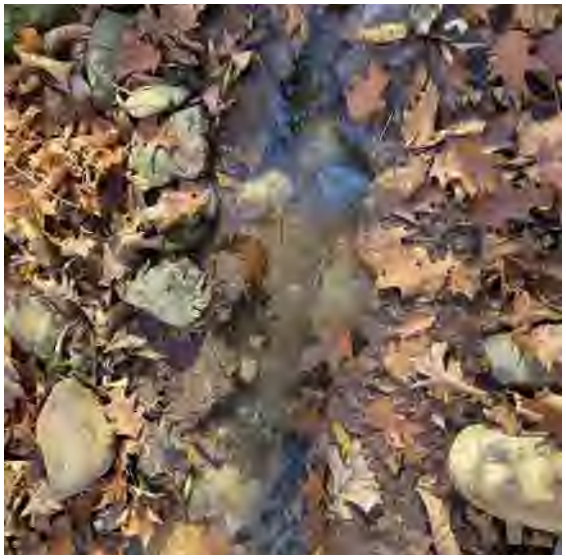


Photo of solids accumulation

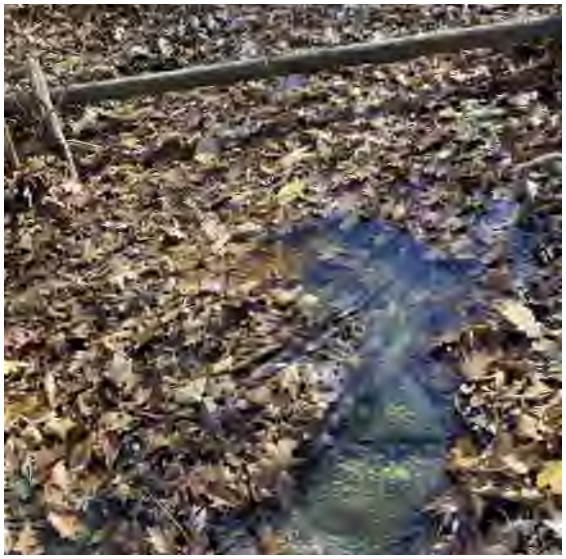


Photo looking downstream towards the west.

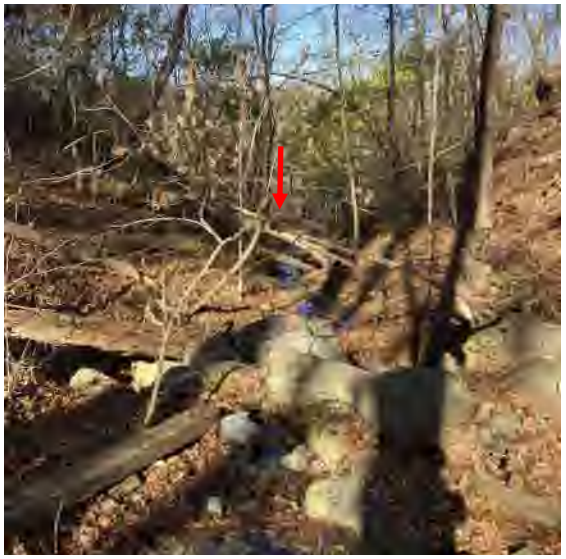
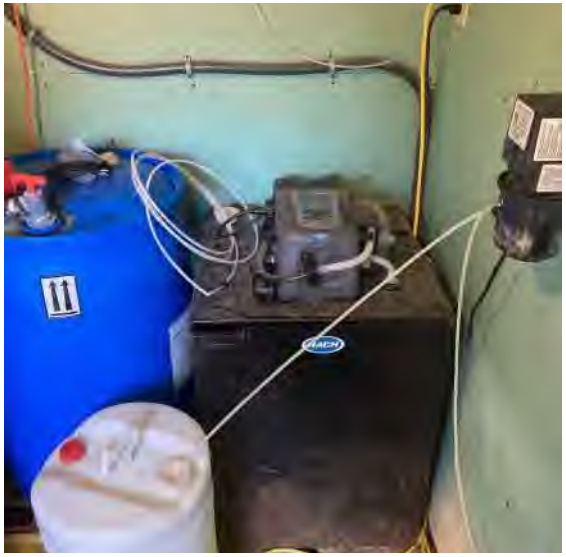
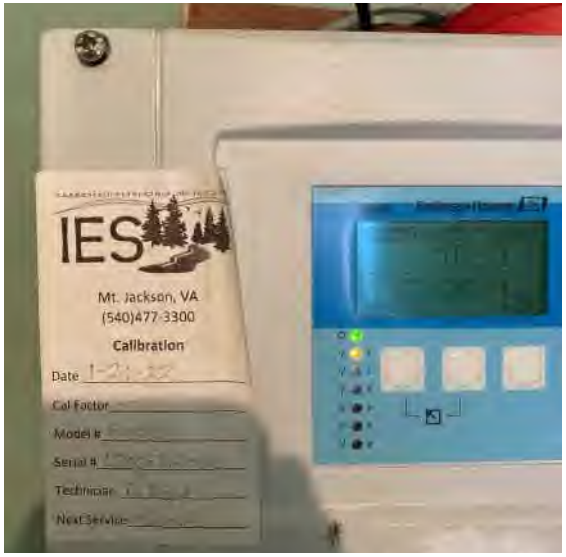


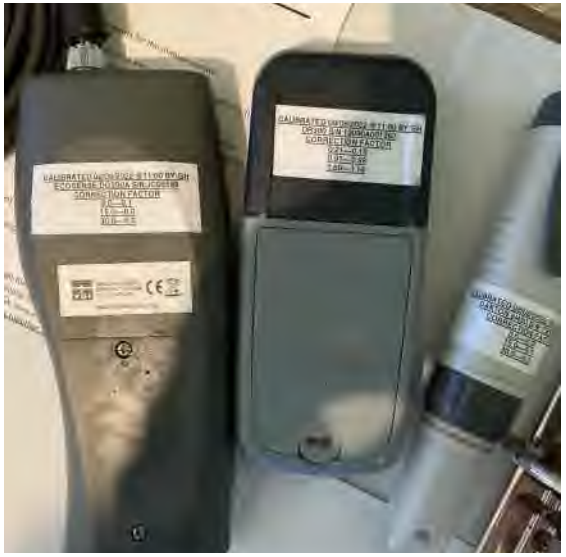
Photo looking downstream towards the west. The red arrow is pointing to the Shenandoah River.



Sodium Hypochlorite (12.5%) feed and composite sampler.



Endress-Hauser flow meter.



KD's field instruments.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT

11/2014

PERMIT #:	INSPECTION DATE:	PREVIOUS INSP. DATE:	PREVIOUS EVALUATION:	TIME SPENT:
VA0067067	11/07/2022	04/13/2018	--	3 days w/ travel & report

NAME/ADDRESS OF FACILITY:	FACILITY CLASS:	FACILITY TYPE:	UNANNOUNCED INSPECTION?
Christendom College STP 134 Christendom Drive Front Royal, VA 22630	☐ MAJOR ☐ MINOR ☑ MINOR (Small) ☐ VPA	☑ MUNICIPAL ☐ INDUSTRIAL ☐ FEDERAL	☑ YES ☐ NO **FFY-SCHEDULED INSPECTION?** ☑ YES ☐ NO

INSPECTOR(S):	REVIEWER(S):	PRESENT AT INSPECTION:
Alex Wynn	TAE, BDK	Mike Foeckler, Tom Heim, Mark Inboden (IES), Daniel Bradford (IES), Karl DeMay (IES), Celeste Horton (DEQ)

LABORATORY EVALUATION	DEFICIENCIES?	
	Yes	No
LABORATORY RECORDS	☐	☑
GENERAL SAMPLING AND ANALYSIS	☑	☐
pH PROCEDURE	☑	☐
TOTAL RESIDUAL CHLORINE PROCEDURE	☑	☐
DISSOLVED OXYGEN PROCEDURES	☑	☐
OTHER		

VELAP CERTIFICATION (on site Environmental Laboratory)	Yes	No	NA
Does the laboratory have VELAP certification (interim or final)?	☐	☐	☑
– Document the laboratory's VELAP laboratory number:			
– Document the effective date of the VELAP certification:			
– Document the expiration date of the VELAP certification:			
– List the certified parameters:			

VELAP ACCREDITATION (Commercial Environmental Laboratory)			Yes	No
IS A VELAP ACCREDITED LAB USED FOR OTHER PERMIT REQUIRED ANALYSES? VELAP#, LAB NAME, ADDRESS and LIST PARAMETERS:			☑	☐
VELAP # 460024	LAB NAME and ADDRESS Inboden Environmental Services, Inc. Mount Jackson, VA 22842	PARAMETERS TSS, CBOD5, E. coli, & Ammonia-N		
IF PERMIT REQUIRED SAMPLE ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE?			☑	☐

COPIES: ☑ DEQ - RO; ☑ Owner, ☑ Other: Inboden Environmental Services, Inc.

PERMIT #: VA0067067

LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

☑	SAMPLING DATE	☑	ANALYSIS DATE	NA	CONT MONITORING CHART
☑	SAMPLING TIME	☑	ANALYSIS TIME	☑	INSTRUMENT CALIBRATION
☑	SAMPLE LOCATION	☑	TEST METHOD	☑	INSTRUMENT MAINTENANCE
				☑	CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

☐	SAMPLING SCHEDULES	☐	CALCULATIONS	☐	ANALYSIS PROCEDURES

	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	☑	☐	☐
DO BENCH SHEETS (or LOG BOOK) INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?	☑	☐	☐
IS THE DMR COMPLETE AND CORRECT? LIST MONTH(S) REVIEWED: Mar-Oct 2022	☑	☐	☐
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	☑	☐	☐
DOES CHAIN OF CUSTODY DOCUMENT PROPER SAMPLE PRESERVATION WAS MET?	☑	☐	☐
WHEN THE CERTIFICATE OF ANALYSIS CONTAINS FLAGGED DATA IS THE 'FLAG' REPORTED ON THE DMR?	☑	☐	☐

GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATIONS ACCORDING TO PERMIT REQUIREMENTS?	☑	☐	☐
ARE PERMIT REQUIRED SAMPLE COLLECTION PROCEDURES APPROPRIATE?	☐	☑	☐
ARE EFFLUENT SAMPLES REPRESENTATIVE OF THE MONITORED ACTIVITY?	☑	☐	☐
ARE PERMIT REQUIRED COMPOSITE SAMPLES FLOW PROPORTIONAL? **NOTE:** Equal volume composite aliquots are acceptable ***if the instantaneous flow is within ± 10% of the daily average flow during the monitoring period***. Some permits specify how the composite is to be taken (e.g., 5G/8HC).	☐	☑	☐
IS COLLECTION SAMPLE EQUIPMENT ADEQUATE?	☑	☐	☐
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	☑	☐	☐

DEPARTMENT OF ENVIRONMENTAL QUALITY – WATER DIVISION
LABORATORY INSPECTION REPORT SUMMARY

FACILITY NAME:	Christendom College STP	**Permit #:**	VA0067067	**INSPECTION DATE:**	11/07/2022

LABORATORY EVALUATION	☐	No required actions at this time
	☑	**REQUIRED CORRECTIVE ACTION(s) IDENTIFIED**

SUMMARY of REQUEST FOR CORRECTIVE ACTION

Lab Records

Laboratory Records section deficiency and required action:

1. None noted.

General Sampling and Analysis

General Sampling and Analysis section deficiency and required action:

1. Begin utilizing a thermometer in the facility's final effluent sample refrigerator. Ensure temperatures are recorded each time a composite sample is collected. The thermometer must be verified annually with a NIST certified thermometer. Provide documentation of the thermometer's implementation and of its verification with a NIST traceable thermometer. [Permit Part II B. & Q.]

pH Analysis

pH deficiency and required action:

1. Submit Initial Demonstration of Capabilities for the facility's operators. Maintain IDC documentation on site. [Permit Part II A.]

TRC Analysis

TRC deficiency and required action:

1. Submit Initial Demonstration of Capabilities for the facility's operators. Maintain IDC documentation on site. [Permit Part II A.]

2. Ensure the buffering capability check of DPD pillows is completed annually and the results are maintained onsite. [Permit Part II A.]

D.O. Analysis

D.O. deficiency and required action:

1. Submit Initial Demonstration of Capabilities for the facility's operators. Maintain IDC documentation on site. [Permit Part II A.]

OTHER – Comments or Observations

- None.

ANALYST:	Karl DeMay	VPDES NO	VA0067067

Meter: EcoSense DO200A

Parameter: Dissolved Oxygen
Method: Membrane Electrode
11/2014

METHOD OF ANALYSIS:

☐	21st Edition of Standard Methods (SM 21) – 4500-O G-2001 (SM 21 DO)
☑	22nd of Standard Methods, or Online Editions of Standard Methods (SM 22) – 4500-O G-2011 (SM 22 DO)

	Dissolved Oxygen (D.O.) is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	***Y***	***N***
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of air-saturated water. Recovery for each of the 4 samples must be +/- 4% of the calculated oxygen saturation for the altitude/barometric pressure and temperature of the samples. {Alternatively analyze 4 samples of water of known concentration (verified by iodometric titration procedure SM 21 or SM 22 4500-O C). Instrument measurements must agree within +/-0.1 mg/L of verified concentration.} [SM 21 or SM 22 1020 B.1 and 4020 B.1]	☐	☑
2)	Are calibration results (mg/L) within ± 4% of the barometric (or altitude) corrected oxygen saturated water value? [SM 21 B.2 or SM 22 1020 B.2.]	☑	☐
3)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [SM 21 DO or SM 22 B 3.]	☐	NA
4)	Are meter and electrode operable and providing consistent readings? [SM 21 DO G 2. or SM 22 DO G 2.]	☑	☐
5)	Is membrane in good condition without trapped air bubbles? **NOTE: No air bubbles ≥ 1/8 inch (total area of all bubbles).** [SM 21 DO G 3.b. or SM 22 DO G 3.b.]	☑	☐
6)	Is correct filling solution used in electrode? [Mfr.]	☑	☐
7	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	☑	☐
8)	Is meter calibrated before use or at least daily? [Mfr. & SM 21 1020 B 10.a. or SM 22 1020 B 11.a]	☑	☐
9)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	☑	☐
10)	Is sample stirred during analysis (or is there sufficient flow across probe's membrane surface)? [SM 21 DO or SM 22 DO G 3.b. and Mfr.]	☑	☐
11)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	☑	☐
12)	Is meter stabilized before reading D.O.? [Mfr.]	☑	☐
13)	Is electrode stored according to manufacturer's instructions? [Mfr.]	☑	☐

Comments:

- IDCs for the current operators were not available onsite.

ANALYST:	Karl DeMay	VPDES NO	VA0067067

Meter: Oakton pH 30

Parameter: Hydrogen Ion (pH)
Method: Electrometric
3/2015

METHOD OF ANALYSIS:

☐	21st Edition of Standard Methods (SM 21) – 4500-H^+ B-2000 (SM 21 pH)
☑	22nd Edition of Standard Methods (SM 22), or Online Editions of Standard Methods – 4500-H^+ B-2011 (SM 22 pH)

	pH is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of known pH; you may use an external source of buffers or other known standards (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be +/- 0.2 SU of the known concentration of the sample or within "Acceptable Range" specified by the PT provider. [SM 1020 B.1] **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	☐	☑
2)	**IF** a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]	☐	NA
3)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B.2 or SM 22 1020 B.3.] **NOTE:** LCS should be a purchased Proficiency Test (PT) sample or a different buffer other than ones used for calibration of the meter [with a ±0.2 SU acceptance range or within "Acceptable Range" specified by the PT provider].. **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	☑	☐
4)	Is the electrode in good condition (no chloride precipitate, scratches, deterioration, etc.)? [SM 21 pH or SM 22 pH 2.b./c. and 5.b.]	☑	☐
5)	Is electrode storage solution in accordance with manufacturer's instructions? [SM 21 pH or SM 22 pH 4.a. and Mfr.]	☑	☐
6)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [SM 21 pH or SM 22 pH 4.a.] **NOTE**: Start with Buffer 7 unless manufacturer's instructions state otherwise. [**NOTE:** If meter is not capable of 3 buffer calibration use 2 buffers bracketing the expected sample pH and then measure a 3rd buffer (the measurement value recorded must be ±0.1 SU), and then reread and record value of buffer 7 to ensure ±0.1 SU.]	☑	☐
7)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Verification measurement should be within +/- 0.1 SU. [SM 21 1020 B 10.c. or SM 22 1020 B 11.c.]	☑	☐
8)	Is calibration verification measurement repeated with every 10 samples and at the end of a series of samples? Verification measurement should be within +/- 0.1 SU. [SM 21 pH or SM 22 pH 4020 B 2.b.] **NOTE:** Not applicable if pH meter is calibrated before taking any measurement (e.g., if operator monitors daily pH at more than one facility and calibrates before each measurement).	☐	NA
9)	Do the buffer solutions appear to be free of contamination or growths? [SM 21 pH or SM 22 pH 3.a.]	☐	*
10)	Are buffer solutions within the listed shelf-life or have they been prepared within the last 4 weeks? [SM 21 pH or SM 22 pH 3.a.]	☐	*
11)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	☐	NA
12)	Is sample analyzed within 15 minutes of collections? [40 CFR Part 136]	☑	☐

13)	Is the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinsing solution.)? [SM 21 pH or SM 22 pH 4.a and 4.b]	☑	☐
14)	Is the sample stirred gently at a constant speed during measurement? [SM 21 pH or SM 22 pH 4.b.]	☑	☐
15)	Does the meter hold a steady reading after reaching equilibrium? [4.b.]	☑	☐

Comments:

- IDCs for the current operators were not available onsite.
- pH buffers were not inspected at this inspection. Buffers are stored at IES's office.

ANALYST:	Karl DeMay	VPDES NO.	VA0067067

Parameter: Total Residual Chlorine (TRC)
Method: DPD Colorimetric (HACH Pocket and Pocket II Colorimeter)
11/2014

METHOD OF ANALYSIS: **Instrument:** HACH DR300

☑	HACH Manufacturer's Instructions (Method 8167) plus an edition of *Standard Methods*
☐	21st Edition of *Standard Methods* 4500-Cl G-2000 (SM 21 Cl)
☑	22nd Edition of *Standard Methods* 4500-Cl G-2011 (SM 22 Cl)

		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE:** Analyze 4 samples of known TRC. Must use a lot number or source that is different from that used to prepare calibration standards. May not use Spec√ ™. Acceptance range is 70-130% recovery **and** 20% Relative Standard Deviation (RSD) **or** within PT specified acceptance range **and** 20% RSD. [SM 1020 B.1]	☐	☑
2)	Is calibration curve verification checked daily using a high and a low standard? **NOTE:** May use manufacturer's installed calibration and commercially available chlorine standards, or Spec√ ™, for daily calibration verifications. [SM 21 1020]	☑	☐
3)	**IF** a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]	☐	NA
4)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B. 2. or SM 22 1020 B 3.] **NOTE:** LCS should be a purchased Proficiency Test (PT) sample or if a known standard different from the calibration standards is used. Use the PT acceptance criteria when given or use 70-130% recovery **and** 20% Relative Standard Deviation (RSD) as the acceptance criteria.	☑	☐
5)	Are the DPD Powder Pillows stored in a cool, dry place? [Mfr.]	☑	☐
6)	Are the pillows within the manufacturer's expiration date? [Mfr.]	☑	☐
7	Are pillows appropriate for the sample size being analyzed and for Total Residual Chlorine	☑	☐
8)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Mfr.]	☐	☑
9)	When pH adjustment is required, is H_2SO_4 or NaOH used? [Hach 11.3.1]	☐	NA
10)	Are cells clean and in good condition? [Mfr]	☑	☐
11)	Is the Hach colorimeter program set to measure "TRC, mg/L"? [Mfr.]	☑	☐
12)	Is the low range (0.01 mg/L resolution) used for samples containing residuals from 0.1 mg/L - 2.00 mg/L? [Mfr.]	☑	☐
13)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	☑	☐
14)	Are samples analyzed within 15 minutes of collection? [40 CFR Part 136]	☑	☐
15)	Is meter zeroed correctly using sample for the blank analysis? [Mfr. and SM 21 1020 B.4. or SM 22 1020 B.5.]]	☑	☐
16)	Is the instrument light screen placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	☑	☐
17)	Is the DPD Total Chlorine Powder Pillow mixed into the sample? [Hach 11.1]	☑	☐

18)	Is the analysis made at least three minutes but not more than six minutes after Powder Pillow addition? [Hach 11.2]	☑	☐
19)	If read-out exceeds "2.19 mg/L", is the original sample diluted correctly, and then reanalyzed within 15 minutes of the original collection time? [Hach 1.2 & 2.0]	☑	☐

Comments:

- IDCs for the current operators were not available onsite.
- Results of the annual buffering capability of DPD pillows check were not available on site.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
SAMPLE ANALYSIS HOLDING TIME/CONTAINER/PRESERVATION CHECK SHEET
Revised 02/2015 [40 CFR, Part 136.3, Table II]

FACILITY NAME:	Christendom College STP	**VPDES NO**	VA0067067	**DATE:**	11/07/2022

HOLDING TIMES *[Note: Collection period (for composites) and Sample Collection time (end of collection period) must be recorded on the COC.]*						**SAMPLE CONTAINER**				**PRESERVATION** *[Note: Preservation is to occur within 15 minutes of the end of the collection period.]*				
PARAMETER	APPROVED	MET?		LOGGED?		ADEQ. VOLUME		APPROP. TYPE		APPROVED	MET?		CHECKED?	
		Y	N	Y	N	Y	N	Y	N		Y	N	Y	N
pH	15 MIN.	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
CHLORINE	15 MIN.	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
DISSOLVED O_2	15 MIN	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
BOD5 & CBOD5	48 HOURS									≤6° C	☑	☐	☑	☐
TSS	7 DAYS									≤6° C	☑	☐	☑	☐
E. coli	8 HRS									<10° C+0.008% $Na_2S_20_3$	☑	☐	☑	☐
AMMONIA	28 DAYS									DECHLOR ≤6° C+H_2S0_4 pH<2t	☑	☐	☑	☐

Comments:	**All chemical preservation should be noted by the Permittee on the Chain of Custody.**

Holding Times and Preservation References (VELAP except for Field Tests)

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
EQUIPMENT TEMPERATURE LOG/THERMOMETER VERIFICATION CHECK SHEET
11/2014

FACILITY NAME:	Christendom College STP				**PERMIT NO:**		VA0067067		**DATE:**	11/07/2022			
Equipment	**Preservation Range**	**In Range?**		**Inspector Reading**	**Checked & Logged Daily?**		**Correct Increment?**		**ANNUAL THERMOMETER VERIFICATION**				
									Is the NIST / NIST-Traceable Reference Thermometer within the manufacturer's expiration date or recertified yearly?		Yes ☑	No ☐	
		Yes	No	**ºC**	Yes	No	Yes	No	**Date Checked**	**Marked?** Yes	No	**Offset Value[1] (Correction)** ºC	**NIST Inspection Temp** °C
Auto Sampler	1-6° C	☐	☐		☐	☐	☐	☐		☐	☐		
pH Meter	± 1° C	☑	☐						08/08/2022	☑	☐	-0.3, -0.1, -0.2	0, 15, 30
D.O. Meter	± 1° C	☑	☐						08/08/2022	☑	☐	-0.1, 0.0, 0.0	0, 15, 30

Comments:

- There was not a NIST-traceable thermometer in the refrigerated auto sampler.

[1] Offset Value tolerances (reference **NIST 105-6**): Sampling Refrigerator and Auto Sampler, pH and D.O. meters must be within ±2°C (2 times tolerance value). Thermometers measuring Outfall permit compliance must be within ±1.0°C (2 times tolerance value).

Documents

PERMITTED FACILITY

Christendom College STP

134 Christendom Dr, Front Royal VA 22630

Permit Number: VA0067067

Permit Type: Minor Municipal

No Discharge: ☐

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

MONITORING PERIOD	
FROM	TO
8/1/2022	8/31/2022

RETURN TO

Department of Environmental Quality

Valley Regional Office

4411 Early Road, P.O. Box 3000, Harrisonburg VA 22801

(540) 574-7800

NOTE: READ PERMIT AND GENERAL INSTRUCTIONS BEFORE COMPLETING THIS FORM AND RETURNING IT.

Outfall Num: 001 **Reporting Frequency: Month** Run Date: Nov 15, 2022

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
001 FLOW	REPORTD	0.007	0.014		*********	*********	*********		0	1/DAY	
	REQRMNT	0.025	NL	MGD	*********	*********	*********			1/DAY	EST
002 pH	REPORTD	*********	*********		7.2	*********	8.4		0	1/DAY	
	REQRMNT	*********	*********		6.5	*********	9.5	SU		1/DAY	GRAB
004 TSS	REPORTD	0.11	0.23		*********	4.7	6.8		0	1/W	
	REQRMNT	2.8	4.3	KG/D	*********	30	45	MG/L		1/W	8HC
005 CL2, TOTAL	REPORTD	*********	*********		*********	<QL	<QL		0	1/DAY	
	REQRMNT	*********	*********		*********	0.0080	0.0098	MG/L		1/DAY	GRAB
007 DO	REPORTD	*********	*********		6.4	*********	*********		0	1/DAY	
	REQRMNT	*********	*********		6.0	*********	*********	MG/L		1/DAY	GRAB
157 CL2, TOTAL CONTACT	REPORTD	*********	*********		0.7	*********	*********		1	1/DAY	
	REQRMNT	*********	*********		1.0	*********	*********	MG/L	3	1/DAY	GRAB
159 CBOD5	REPORTD	0.27	0.54		*********	10	12		0	1/W	
	REQRMNT	2.3	3.4	KG/D	*********	24	36	MG/L		1/W	8HC
213 CL2, INST TECH MIN LIMIT	REPORTD	*********	*********		0.7	*********	*********		0	1/DAY	
	REQRMNT	*********	*********		0.6	*********	*********	MG/L		1/DAY	GRAB
353 AMMONIA, AS N JUN-DEC	REPORTD	*********	*********		*********	5.6	22.4		2	1/W	
	REQRMNT	*********	*********		*********	1.6	2.4	MG/L		1/W	8HC

Additional Permit Requirements: Submit daily operations log with DMR.

Outfall Comments:

Comments:

Christendom College

Wastewater Treatment Plant

Front Royal, VA

Monthly Log Report of Final Effluent

Month: August **Year:** 2022

VA0067067

DATE	Flow MGD	pH S.U.	D.O. m/gl	TRC, Cont. Conc. mg/L	TRC, Cont. Tech Min Lim mg/L	TRC, Final Conc. mg/L	CBOD5 Conc. mg/L	CBOD5 Week Ave., mg/L	CBOD5 Loading kg/d	CBOD5 Week Ave., kg/d	Total Suspended Solids Conc. mg/L	Total Suspended Solids Week Ave., mg/L	Total Suspended Solids Loading kg/d	Total Suspended Solids Week Ave., kg/d	Ammonia - N Conc. mg/L	Ammonia - N Week Ave., mg/L
1	0.0023	8.0	8.3	2.5		<0.10										
2	0.0023	8.1	7.8	1.0		<0.10										
3	0.0017	7.7	7.4	5.8		<0.10	7	7	0.05	0.05	4.8	4.8	0.03	0.03	0.0	0.0
4	0.0019	8.2	7.3	3.2		<0.10										
5	0.0014	8.2	7.5	5.6		<0.10										
6	0.0032	7.9	7.4	3.9		<0.10										
7	0.0031	7.9	7.5	3.2		<0.10										
8	0.0039	8.4	7.3	1.0		<0.10										
9	0.0037	8.2	7.9	2.6		<0.10										
10	0.0055	8.1	7.6	1.3		<0.10	12	12	0.25	0.25	6.8	6.8	0.14	0.14	0.0	0.0
11	0.0040	8.2	8.2	7.9		<0.10										
12	0.0067	8.2	8.1	1.3		<0.10										
13	0.0034	8.2	8.7	1.0		<0.10										
14	0.0064	8.4	8.5	7.9		<0.10										
15	0.0072	8.2	7.8	0.7	0.7	<0.10										
16	0.0087	8.0	8.4	6.6		<0.10										
17	0.0071	8.1	7.8	1.3		<0.10	9	9	0.24	0.24	2.1	2.1	0.06	0.06	0.0	0.0
18	0.0084	7.9	8.6	3.0		<0.10										
19	0.0087	7.8	9.2	1.4		<0.10										
20	0.0116	7.8	8.6	1.8		<0.10										
21	0.0124	7.6	7.9	2.0		<0.10										
22	0.0110	8.0	6.8	1.4		<0.10										
23	0.0121	8.0	7.1	2.6		<0.10										
24	0.0119	8.1	7.6	2.1		<0.10	12	12	0.54	0.54	5.0	5.0	0.23	0.23	22.4	22.4
25	0.0099	8.2	7.0	3.2		<0.10										
26	0.0135	8.0	6.7	1.3		<0.10										
27	0.0127	7.3	7.6	1.3		<0.10										
28	0.0118	7.2	7.9	1.1		<0.10										
29	0.0101	7.7	6.4	4.4		<0.10										
30	0.0127	7.6	6.7	6.2		<0.10										
31	0.0104	7.6	6.7	1.2		<0.10										
Tot	0.2297															
Max	0.014	8.4		7.9		<0.10	12	12	0.54	0.54	6.8	6.8	0.23	0.23	22.4	22.4
Min	0.001	7.2	6.4	0.7	0.7		7	7	0.05	0.05	2.1	2.1	0.03	0.03	0.0	0.0
Ave	0.007			2.9		<0.10	10	10	0.27	0.27	4.7	4.7	0.11	0.12	5.6	5.6

Note: "0" = "<QL". The Ammonia value given as zero tested below the Ammonia QL of 0.2 mg/L. A zero is inserted here instead of "<QL" for calculation purposes.
"0" = "<QL". The BOD value given as zero tested below the test QL of 2 mg/L. A zero is inserted here instead of "<QL" for calculation purposes.
"0" = "<QL". The TSS value given as zero tested below the test QL of 1.0 mg/L. A zero is inserted here instead of "<QL" for calculation purposes.

Lab QC:

9/10/2022

Mark E. Inboden Class 1, No. 1965009252 ***Date***

Inboden Environmental Services, Inc.

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Permit Number: VA0067067

QUALITY CONTROL & ASSURANCE

Onsite pH Instrument Calibration Confirmation Test

Analysis of pH 7 Buffer

MONTH: August **YEAR:** 2022

pH Meter Model:
pH Meter Thermistor Calibration Date:

DAY	DATE BUFFER REPLACED	PH 7 BUFFER CHECK	TIME	TEMPERATURE (degrees C)	INITIALS
1	✓	7.00	1206	24.7	
2		7.02	1118	25.3	
3		6.99	1403	28.6	
4		6.99	1254	26.6	
5		7.01	1316	28.4	
6		7.01	4:54	24.0	
7		7.03	1500	24.2	
8	✓	7.01	1207	27.9	
9		7.02	1354	28.8	
10		7.01	1559	28.9	
11		7.00	1621	28.3	
12		7.02	1309	23.7	
13		7.04	1434	23.3	
14		7.03	1428	24.9	
15	✓	7.05	1552	21.8	
16		7.03	1405	22.1	
17		7.03	1406	23.8	
18		7.06	1408	23.6	
19	✓	7.03	1457	26.7	
20		7.01	10:16	20.1	
21		7.02	~~10:33~~ 10:22	~~23.7~~ 23.0	
22		7.03	1244	24.8	
23		7.02	1145	25.5	
24		7.04	1226	26.7	
25		7.03	1446	26.7	
26		7.01	1220	26.9	
27	8/27/22	7.09	12:35	29.6	
28		7.09	12:36	28.5	
29	✓	7.02	1211	26.1	
30		7.05	1132	27.0	
31		7.04	1326	25.3	

NOTES: Instrument calibration performed in accordance with manufacterers' instructions.
pH Standard Method 4500 H+B - 2011

Christendom College STP

WASTEWATER TREATMENT

Inboden Environmental Services, Inc.

Mt. Jackson, Va. 22842

Permit Number: VA0067067

MONTH August YEAR 2022

DAILY OPERATION

DAY	Chlorine Contact Tank: Tech.'s Initials	TRC Sample Time	TRC Test Time	TRC Result, mg/L	RPD % (+/- 20%)	Aeration: Sett. Solids %	D.O. Result mg/L	Digester: Sludge Hauled	Comments
1	JC	1218	1223	2.50					
2	JC	1155	1159	1.03		28			
3	JC	1408	1412	5.84					
4	JC	1249	1252	3.16		30			Slow wasted 5 min
5	JC	1510	1514	5.64					
6	JP	10:04	10:09	3.42					1.46 x 2
7	JP	10:07	10:12	3.24					1.62 x 2
8	JC	1204	1207	1.00					
9	JC	1354	1354	2.60		32			D.O. 8.08 PH 8.14
10	JC	1554	1557	1.30					
11	JC	1618	1621	7.88					
12	JC	1306	1309	1.34		29			
13	JC	1444	1449	1.03					
14	JC	1436	1439	7.88					
15	JC	1607	1610	0.70					
16	JC	1423	1428	6.60					
17	JC	1426	1430	1.25		29			
18	JC	1415	1419	3.04					
19	JC	1507	1510	1.41		30			Slow wasted 6 min
20	JP	10:25	10:28	1.80		30			
21	JP	10:38	10:42	4.99					
22	JC	1300	1303	1.36					
23	JC	1152	1155	2.58					
24	JC	1237	1241	2.14					
25	JC	1452	1455	3.22		55			wasted 10 min
26	JC	1232	1235	1.26		55			wasted 5 min
27	KH	12:34	12:37	1.32					Wasted 10 min
28	KH	13:02	13:05	1.06					
29	JC	1213	1217	~~3.30~~	4.40	60			wasted 10 min
30	JC	1126	1129	4.16		56			wasted 7 min
31	JC	1303	1307	1.22		77			

RPD % Calculation: Duplicate Difference / Duplicate Average X 100

All sampling performed during forward flow.

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

QUALITY CONTROL & ASSURANCE

Permit Number: VA0067067

MONTH: August **YEAR:** 2022

DAY	COLORIMETER CALIBRATION STANDARDS BLANK	S1	S2	S3	Acceptable	Time	Initials	DISSOLVED OXYGEN METER CALIBRATION D.O. mg/L	TEMP °C	Time	Initials	Membrane Replace	pH METER pH CALIBRATION pH BUFFERS REPLACED?	Date Replaced	BUFFERS 4	7	10	Temp.	7 check +/- 0.10	Time	INITIALS	PROBE CLEANED & REFILLED
1	0.00	0.15	0.83	1.58	✓	1016	JK	8.26	25.1	1205	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	23.0	7.00	1014	JK	N
2	0.00	0.17	0.83	1.58	✓	0934	JK	8.05	26.5	1113	JK	N	4 7 10		4.01	7.00	10.01	23.1	7.00	0935	JK	N
3	0.00	0.22	0.83	1.59	✓	1207	JK	7.16	29.6	1354	JK	N	4 7 10		4.01	7.00	10.01	24.9	7.01	1207	JK	N
4	0.00	0.21	0.85	1.61	✓	0938	JK	7.91	28.5	1353	JK	N	4 7 10		4.01	7.00	10.01	24.3	7.00	0941	JK	N
5	0.00	0.21	0.85	1.61	✓	1019	JK	7.76	28.9	1517	JK	N	4 7 10		4.01	7.00	10.01	23.7	7.02	1018	JK	N
6	0.00	0.21	0.87	1.49	✓	450	CD	7.90	26.0	958	CD	N	4 7 10		4.00	7.01	10.01	24.0	7.01	959	CD	N
7	0.06	0.20	0.87	1.48	✓	955	CD	7.67	24.6	1003	CD	N	4 7 10		4.01	7.00	10.00	24.2	7.03	1000	CD	N
8	0.00	0.21	0.84	1.59	✓	1036	JK	8.24	28.1	1204	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	25.8	7.02	1046	JK	N
9	0.00	0.20	0.87	1.59	✓	0938	JK	8.45	29.2	1353	JK	N	4 7 10		4.01	7.00	10.01	25.3	7.00	0942	JK	N
10	0.00	0.18	0.84	1.61	✓	1042	JK	8.20	27.8	1557	JK	N	4 7 10		4.01	7.00	10.01	24.9	7.02	1051	JK	N
11	0.00	0.19	0.85	1.64	✓	1031	JK	7.78	29.4	1619	JK	N	4 7 10		4.01	7.00	10.01	23.4	7.00	1032	JK	N
12	0.00	0.19	0.85	1.63	✓	0928	JK	8.25	25.0	1305	JK	N	4 7 10		4.01	7.00	10.01	20.8	7.00	0927	JK	N
13	0.00	0.20	0.88	1.70	✓	0931	JK	8.23	25.5	1430	JK	N	4 7 10		4.01	7.00	10.01	16.3	7.04	0928	JK	N
14	0.00	0.15	0.88	1.65	✓	0948	JK	7.36	26.7	1427	JK	N	4 7 10	✓	4.01	7.00	10.01	19.7	7.02	0944	JK	N
15	0.00	0.22	0.88	1.67	✓	1052	JK	8.31	21.7	1546	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	21.8	7.07	1650	JK	N
16	0.00	0.21	0.88	1.72	✓	0903	JK	8.09	21.9	1404	JK	N	4 7 10		4.01	7.00	10.01	18.8	7.03	0901	JK	N
17	0.00	0.24	0.89	1.73	✓	1045	JK	8.14	26.0	1406	JK	N	4 7 10		4.01	7.00	10.01	19.3	7.04	1048	JK	N
18	0.00	0.18	0.87	1.68	✓	0955	JK	8.09	26.2	1408	JK	N	4 7 10		4.00	7.00	10.01	18.2	7.03	0954	JK	N
19	0.00	0.18	0.88	1.65	✓	0958	JK	7.48	20.6	0955	JK	N	(4) 7 (10)	✓	4.01	7.00	10.01	21.2	7.04	0955	JK	N
20	0.00	0.21	0.84	1.48	✓	1012	CD	7.90	24.8	1020	CD	N	4 7 10		4.01	7.01	10.01	22.1	7.01	1016	CD	N
21	0.00	0.20	0.87	1.47	✓	1028	CD	7.86	23.9	1033	CD	N	4 7 10		4.01	7.02	10.01	23.0	7.02	1022	CD	N
22	0.00	0.19	0.88	1.68	✓	1048	JK	7.38	25.5	1243	JK	N	4 7 10		4.01	7.00	10.01	22.7	7.01	1046	JK	N
23	0.00	0.19	0.89	1.70	✓	1015	JK	7.89	27.4	1143	JK	N	4 7 10		4.01	7.00	10.01	23.1	7.00	1014	JK	N
24	0.00	0.18	0.88	1.68	✓	0825	JK	8.47	27.9	1225	JK	N	4 7 10		4.01	7.00	10.01	19.8	7.03	0838	JK	N
25	0.00	0.17	0.87	1.68	✓	1003	JK	7.73	28.4	1447	JK	N	4 7 10		4.01	7.00	10.01	21.7	7.03	1002	JK	N
26	0.00	0.19	0.85	1.63	✓	1014	JK	7.33	28.1	1213	JK	N	4 7 10		4.01	7.00	10.01	22.3	7.02	1003	JK	N
27	0.00	0.25	0.92	1.60	✓	0818	KM	7.40	29.4	1237	KM	N	(4) 7 10	8/27/22	4.00	7.00	10.01	25.3	7.04	0819	KM	N
28	0.00	0.25	0.93	1.61	✓	0825	KM	7.44	26.9	1228	KM	N	4 7 10		4.02	7.00	10.01	23.9	7.07	0822	KM	N
29	0.00	0.19	0.85	1.65	✓	0824	JK	7.57	27.2	1215	JK	N	(4) 7 10	✓	4.01	7.00	10.01	25.7	6.99	0827	JK	N
30	0.00	0.18	0.85	1.63	✓	0940	JK	8.28	27.3	1130	JK	N	4 7 10		4.01	7.00	10.01	22.7	7.01	0940	JK	N
31	0.00	0.19	0.85	1.65	✓	0943	JK	8.10	25.3	1322	JK	N	4 7 10		4.01	7.00	10.01	20.0	7.03	0942	JK	N

X 0.83

SPEC-CHECK Color Standards: S1 = ____ +/-
Lot #: ____ S2 = ____ +/-
Exp. Date: ____ S3 = ____ +/-

DPD Reagent Buffering Capability (1/year): Acceptance Range pH 6.00-7.00 SU
Reagent Lot #: Date:
Reagent Exp. Date: Time:
pH Result: Initials:

NOTES:
Instrument calibration performed in accordance with manufacturers' instructions.

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va 22842

Permit Number VA0067067

Month August Year 2022

Final - 001

Day	Flow Meter	Flow, Gallons	Techs Initials	Final Sample Time	pH Test Time	pH Result, Std. Unit	Temp. Result, °C	TRC Test Time	TRC Result, mg/L	D.O. Sample Time	D.O. Test Time	D.O. Result, mg/L
1	5374876	2304	[illegible]	12:13	1218	8.02	24.2	1216	0.02	1207	1207	8.37
2	5377180	2339	[illegible]	1119	1123	8.07	24.7	1123	0.00	1116	1117	7.76
3	5379519	2704	[illegible]	1403	1408	7.73	25.9	1406	0.01	1357	1357	7.43
4	5381223	1933	[illegible]	1303	1309	8.18	25.8	1307	0.00	1258	1259	7.30
5	5383156	1884	[illegible]	1520	1525	8.17	25.3	1524	0.00	1516	1517	7.46
6	5384540	3184	[illegible]	10:05	10:11	7.90	24.9	10:13	0.06	10:20	10:23	7.34
7	5387724	3084	[illegible]	10:08	10:14	7.87	25.1	10:15	0.01	10:23	10:26	251
8	5390808	3864	[illegible]	1213	1218	8.41	21.1	1216	0.00	1209	1209	7.31
9	5394672	3700	[illegible]	1401	1405	8.24	26.3	1404	0.02	1357	1357	7.91
10	5398372	5531	[illegible]	1603	1608	8.11	26.1	1607	0.00	1601	1601	7.56
11	5403903	4017	[illegible]	1632	1637	8.19	25.3	1635	0.00	1624	1624	8.16
12	5407920	6678	[illegible]	1116	1120	8.19	23.8	1319	0.00	1311	1312	8.13
13	5414598	3253	[illegible]	1436	1441	8.21	22.7	1440	0.00	1432	1433	8.71
14	5417951	6,443	[illegible]	1432	1437	8.35	22.9	1435	0.00	1429	1430	8.45
15	5424394	7,204	[illegible]	1555	1600	8.21	21.9	1558	0.01	1549	1550	7.78
16	5431598	8,662	[illegible]	1416	1421	7.95	22.2	1420	0.00	1410	1411	8.44
17	5440260	7,128	[illegible]	1420	1425	8.01	22.4	1423	0.00	1416	1417	7.82
18	5447388	8,936	[illegible]	1419	1425	7.55	22.7	1422	0.00	1411	1412	8.58
19	5455824	8,691	[illegible]	1501	1506	7.77	23.4	1506	0.02	1458	1459	7.15
20	5464515	11,611	[illegible]	10:31	10:34	7.79	23.0	10:35	0.01	10:40	10:43	8.60
21	5476126	12,350	[illegible]	10:39	10:44	7.60	23.8	10:45	0.01	10:51	10:58	7.90
22	5488482	12,356	[illegible]	1253	1259	8.00	24.6	1257	0.00	1248	1249	6.80
23	5499484	12,132	[illegible]	1148	1153	7.97	24.7	1151	0.02	1144	1144	7.07
24	5511616	11,880	[illegible]	1233	1239	8.11	25.0	1236	0.00	1229	1230	7.63
25	5523496	9,980	[illegible]	1459	1504	8.15	25.5	1502	0.00	1453	1454	6.95
26	5533476	12456	[illegible]	1221	1226	7.98	25.7	1225	0.01	1217	1218	6.72
27	5546932	13388	[illegible]	12:43	12:46	7.30	27.7	12:42	0.02	12:38	12:41	7.54
28	5559620	12688	[illegible]	12:54	12:57	7.19	27.2	12:53	0.03	12:47	12:50	7.85
29	5571436	10,100	[illegible]	1231	1238	7.71	26.3	1235	0.01	1220	1221	6.42
30	5581536	12,694	[illegible]	1135	1142	7.56	26.2	1140	0.00	1133	1133	6.73
31	5594230	10,436	[illegible]	1326	1331	7.62	25.4	1330	0.02	1323	1324	6.65
1st	5604666											

12738
12069

QA/QC NOTES: pH duplicate is to be +/- 0.10 SU - Initial pH result is to be reported
Initial TRC reported if duplicate performed
DO analysis is performed in-situ
Final discharge sampled during forward flow

Methods:

pH	SM 4500 H+B - 2011
DO	SM 4500-OG - 2011
TRC	Hach 8167 (SM 4500-Cl G - 2011)

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360

September 10, 2022

Ms. Linda Ferguson-Davie
Water Compliance Auditor
Valley Regional Office - DEQ
P. O. Box 3000
Harrisonburg, VA 22801

Re: Christendom College STP, Permit Number VA0067067
Letter of Explanation – Permit Violation, August 2022

Ms. Ferguson-Davie,

Inboden Environmental Services, Inc. (IES) is the contract operator for the Christendom College STP. This letter is part of Christendom College's August Discharge Monitoring Report and addresses the high ammonia result.

Exceedance: During this monitoring period, an effluent sample collected on 8/24 had an ammonia result of 22.4 mg/L. This ammonia result exceeded both the monthly average and weekly average permit limits.

Cause: IES suspects the high ammonia to be a result of grease build-up in the collection system and high influent temperatures. The final effluent temperatures were reported as >25 ° Celsius at the end of August, and it is believed that the aeration blowers were not able to provide enough aeration for nitrifier performance.

Remedy: The operator has removed floating grease from the treatment system and has turned the aeration blowers on high when the effluent temperatures are observed to be greater than 25° Celsius in order to maintain an adequate environment for nitrification.

If you have any questions or need additional information, please contact our office.

Sincerely,

Daniel Bradford, IES

CC: Mark Inboden, IES
Tom Heim, Christendom College
Mike Foeckler, Christendom College

Inboden Environmental Services, Inc.
5790 Main Street, Mt. Jackson, VA 22842

Analytical Report Form

Customer:	Christendom College 134 Christendom Drive Front Royal, VA 22630	**Report Date:**	8/12/2022
		Batch ID:	
		Received Date:	8/3/2022
Contact:	Mike Foeckler	**Sampler:**	Cannone, Jonathan
Special Notes:		**Sample Priority:**	Normal

Sample Location:	Final Effluent	**Sample Type:**	Composite - Wastewater
Sample ID Number:	2208040841	**Sample Date & Time:**	8/3/2022 8:00 AM

Parameter	Result	IES QL	Units	Method	Analysis Date	Analysis Time	Analyst
Ammonia as N	< 0.2	0.2	mg/L	*SM 4500-NH3 D-2011	8/9/2022	11:00	gh
CBOD5	7	2	mg/L	*SM 5210 B-2011	8/4/2022	10:30	gh
Total Suspended Solids	4.8	1	mg/L	*SM 2540 D-2011	8/4/2022	9:30	gh

Notes:

Analytes with an asterisk (*) present indicate NELAP accreditation. Analytes that have no asterisk(*) are not NELAP accredited.

IES Quantification Limit is the concentration of the lowest calibration standard above zero with a reliable signal.

Chain-of-Custody indicates complete composite sample collection time frame.

SM represents "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012.

Results shown relate only to samples.

Reviewed and approved for Inboden Environmental Services, Inc.

By: _____ Date: 8/12/2022

Mark E. Inboden, Laboratory Director

540-477-3300 • 1-800-648-1010 • Fax 540-477-3360
email: frontdesk@Inbodenenv.com
NELAP Accredited DCLS VA Laboratory ID# 460024

Inboden Environmental Services, Inc.

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

Inboden Environmental Services, Inc.
5790 Main Street, Mt. Jackson, VA 22842
tel: (540)477-3300 fax: (540)477-3360 toll free:1-800-648-1010
Email: frontdesk@4ies.com
A NELAP Accredited Laboratory: VELAP Laboratory ID# 460024

NELAP ACCREDITED LABORATORY

PLEASE USE PRINT TO FILL OUT THIS FORM. CORRECTION TAPE, PAINT, OR INK IS PROHIBITED. PLEASE USE BLUE OR BLACK INK.

Client Name: Christendom College
Address: 134 Christendom Drive
Front Royal, Va 22630
Contact: Mike Foeckler
Phone#: 540-636-2900
Fax#: 540-636-1655
Email:
Project Name:
Quote/PO#:

COMPLIANCE TYPE
VPDES/DMR/VPA ☒
PWSID: ☐
NON-COMPLIANCE ☐

MATRIX
Wastewater ☒ Drinking Water ☐
Solid Waste ☐

Turn Around Time (TAT):
Normal ☒ Rush ☐
Rush TAT subject to pre-approval and surcharge
Date Required: ___/___/___

METHOD OF PRESERVATION KEY:
(1) Cool, <6° (5) HCL (9) Ascorbic Acid
(2) H_2SO_4 (6) Na_2SO_3 (10) Filter
(3) HNO_3 (7) $Na_2S_2O_3$
(4) NaOH (8) None Other:_____

LAB USE ONLY
Received on Ice: (Y) / N
Correct bottles used: (Y) / N
COC/Labels on bottles agree: (Y) / N
Correct Preservation on all preserved bottles: (Y) / N
Cl_2 Check for Ammonia? Y / N -or- (N/A)
Total number of bottles: 2
Temp Instr. ID#____ Etekcity

SAMPLE INFORMATION / ANALYSIS REQUESTED

SAMPLE LOCATION	Composite Start Date	Composite Start Time	Composite End or Grab Date	Composite End or Grab Time	Samplers Initials	Sample Type* G -or- C	Bottle Type** G -or- P	PARAMETER	Preservative (See Key Above)	Receipt Temp.	Bottle Properly Preserved?
Final Effluent	8/3/22	0800	8/3/22	0800	JX	C	P	CBODS, TSS	1	0.9	Y
Final Effluent	8/3/22	0800	8/3/22	0800	JX	C	P	Ammonia	1,2	0.7	Y

Sampled by: Jonathan Cannone	Date 8/3/22	Time 1415	Received by:	Date	Time	COMMENTS
Relinquished by: Jonathan Cannone	Date 8/3/22	Time 1753	Received by: Rob	Date 8/3	Time 1753	
Relinquished by:	Date	Time	Received by:	Date	Time	
Relinquished by:	Date	Time	Received by:	Date	Time	

220804084 1

* G=Grab; C=Composite
**G=Glass; P=Plastic

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Permit Number: VA0067067

QUALITY CONTROL & ASSURANCE

Onsite pH Instrument Calibration Confirmation Test

Analysis of pH 7 Buffer

MONTH: **YEAR:**

pH Meter Model:
pH Meter Thermistor Calibration Date:

DAY	DATE BUFFER REPLACED	PH 7 BUFFER CHECK	TIME	TEMPERATURE (degrees C)	INITIALS
1		7.06	[illegible]	17.6	[illegible]
2		7.07	17:07	16.1	[illegible]
3		7.04	14:36	17.3	[illegible]
4		7.08	18:07	19.3	[illegible]
5		7.01	16:53	27.6	KH
6		7.02	11:18	22.5	KH
7					
8					
9					
10					
11					
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31					

NOTES: Instrument calibration performed in accordance with manufacterers' instructions.
pH Standard Method 4500 H+B - 2011

Christendom College STP
WASTEWATER TREATMENT

Permit Number: VA0067067

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

IES

Month _____ Year _____

Final - 001

DAY	Flow Meter	Flow, Gallons	Techs Initials	Final Sample Time	pH Test Time	pH Result, Std. Unit	Temp. Result, °C	TRC Test Time	TRC Result, mg/L	D.O. Sample Time	D.O. Test Time	D.O. Result, mg/L
1	6249722	13133	[illegible]	15:00	15:02	7.61	17.8	15:05	0.02	15:10	15:14	6.81
2	6257855	11280	[illegible]	17:10	17:13	7.32	20.7	17:15	0.01	17:18	17:21	7.03
3	6268137	12135	[illegible]	14:41	14:43	7.59	19.6	14:45	0.00	14:47	14:50	7.13
4	6278772	10575	[illegible]	18:20	18:23	7.40	18.9	18:25	0.03	18:27	18:30	6.78
5	6293347	8105	KP	17:04	17:07	7.21	22.7	17:09	0.03	17:03	17:06	6.59
6	6301452		KP	11:46	11:49	7.37	22.6	11:44	0.02	11:43	11:46	6.52
7												
8												
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30												
31												
Tot												

QA/QC NOTES: pH duplicate is to be +/- 0.10 SU - initial pH result is to be reported
Initial TRC reported if duplicate performed
DO analysis is performed in-situ

Final discharge sampled during forward flow

Methods:

pH	SM 4500 H°B - 2011
DO	SM 4500-OG - 2011
TRC	Hach 8167 (SM 4500-Cl G - 2011)

pH Result: _____ Initials: _____

Christendom College STP
WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Permit Number: VA0067067

QUALITY CONTROL & ASSURANCE

MONTH: YEAR:

DAY	COLORIMETER CALIBRATION STANDARDS BLANK	S1	S2	S3	Acceptable	Time	Initials	DISSOLVED OXYGEN METER CALIBRATION D.O. mg/L	TEMP °C	Time	Initials	Membrane Replace	pH METER pH BUFFERS REPLACED?	Date Replaced	pH CALIBRATION BUFFERS 4	7	10	Temp.	T check +/- 0.10	Time	INITIALS	PROBE CLEANED & REFILLED
1	0.00	0.23	0.88	1.65	✓	10:00	JP	8.58	20.1	14:55	JP	N	4 7 10		4.03	7.02	10.04	13.7	7.06	10:04	JP	N
2	0.00	0.22	0.89	1.66	✓	12:00	JP	9.31	16.7	17:01	JP	N	4 7 10		4.03	7.02	10.04	15.9	7.05	12:03	JP	N
3	0.00	0.16	0.86	1.67	✓	6:45	JP	8.46	19.8	14:38	JP	N	4 7 10		4.03	7.02	10.04	14.4	6.99	6:59	JP	N
4	0.00	0.16	0.86	1.62	✓	9:35	JP	8.09	23.8	18:06	JP	N	4 7 10		4.03	7.02	10.04	10.8	7.00	9:40	JP	N
5	0.00	0.23	0.96	1.65	✓	6:12	KH	8.11	24.6	16:58	KH	N	4 7 10	10/31/25	4.00	7.02	10.01	17.5	7.02	6:09	KH	N
6	0.00	0.21	0.91	1.60	✓	9:50	KH	8.60	21.6	11:21	KH	N	4 7 10		4.00	7.00	10.01	20.5	6.98	6:10	KH	N
7													4 7 10									
8													4 7 10									
9													4 7 10									
10													4 7 10									
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31													4 7 10									

SPEC-CHECK Color Standards: S1 = ____ +/- 0.09
Lot #: _____ S2 = ____ +/- 0.10
Exp. Date: _____ S3 = ____ +/- 0.14

DPD Reagent Buffering Capability (1/month): Acceptance Range pH 6.00-7.00 SU
Reagent Lot #: Date:
Reagent Exp. Date Time:
pH Result: Initials:

NOTES:
Instrument calibration performed in accordance with manufacturers' instructions.

Christendom College STP

WASTEWATER TREATMENT

DAILY OPERATION

Permit Number: VA0067067

MONTH _____ YEAR _____

DAY	Chlorine Contact Tank					Aeration		Digester	Comments
	Tech.'s Initials	TRC Sample Time	TRC Test Time	TRC Result, mg/L	RPD % (+/- 20%)	Sett. Solids %	D.O. Result mg/L	Sludge Hauled	
1	[illegible]	15:14	15:18	2.15					
2	[illegible]	17:24	17:28	2.05					
3	[illegible]	14:54	14:58	1.87					
4	[illegible]	18:32	18:35	1.95					
5	[illegible]	16:55	16:58	3.51					
6	KH	11:19	11:22	4.74					Filled Cl_2 tank with 12½ Gallons Cl_2 1.5 lbs x 3
7									
8									
9									
10									
11									
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RPD % Calculation: $\frac{\text{Duplicate Difference}}{\text{Duplicate Average}} \times 100$

All sampling performed during forward flow

11/6/22 Sunday 73° Cloudy DS/DS

- Calibrated Instrument
- Skimmed & Scrapped & Hosed Clarifier
- Skimmed 5 gals from Contact tank
- Added 2 Cl_2 Tablets to return Bay
- Added SO_2 tablets shock down
- Added H_2O mix with 1 Cup poly mer to aeration
- Added 3 bags OB GBugs
- Ran Daily Tests

10/30/22 Sunday 62°F Sunny
- Calibrated Instruments
- Skimmed Clarifier a lot
- Hosed Clarifier
- Change tube in Cl_2 Stenner pump
- unclogged Cl_2 [illegible] pull up line with new tubing
- added 2 Cl_2 tablets to return Box
- added 3 Bag O&G Bugs to aeration
- Run Daily Tests
- added SO_2 tablets & Shook down
- Left Blower on Hand

10/31/22 Monday 54°F Light rain
- Calibrated Instrument
- Skimmed Clarifier & Hosed down
- Skimmed some in contact tank
- added SO_2 tablets & Shook down
- added 3 bags O&G Bugs to aeration
- added 1 Cl_2 tablet to return Box

10/31/22 Continued

- wasted 10 mins
- First Choice pumped Contact tank & digestor
- Ran Daily Tests

Tuesday 11/1/22 Torsicio & Tracy
Change Braker for Blower #1
wire both blower to Normal

1-1-22

- Calibrated tools ; Wasted 10 min
- Skimmed Clarifier
- Shook down & Added Sea
- Added 3 bags of bugs
- Added 4 Clo tablets to Return
- Hosed clarifier
- Hosed creek
- Ran test

1-2-22

- Calibrated ; Skimmed, Hosed creek
- Wasted 10 min. Added 3 bags of bugs
- Skimmed clarifier & contact tank. Added 1 cup Poly
- Pumped contact tank. Bucket Broke off Auto Sam
- Hosed clarifier. Shook down Sea & Added -

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360
WEB: www.4ies.com

Thermometer Calibration Certificate

Client: IES Operator

Date: 08/08/2022
Time: 11:00 AM

Make	Model No.	Serial No.	Type	Range	Divisions, °C	Immersion	Length
Oakton	pH 30	T31108110	pH Meter	0 to 50 °C	0.1 °C	N/A	N/A

NIST Thermometer Reading	Thermometer Reading	Correction
0.0 °C	0.3 °C	-0.3 °C
15.0 °C	15.1 °C	-0.1 °C
30.0 °C	30.2 °C	-0.2 °C

NOTE: If above correction is preceded by a (+) sign, it should be added to the thermometer reading; if it is preceded by a (-) sign, it should be subtracted from the thermometer reading to obtain the correct temperature.

Calibration Instrument

Make	Model No.	Serial No.	Type	Range	Divisions, °C	Immersion	Length
Thermco	1011-3	1015	Glass nitrogen filled	-1 to 110 °C	0.2 °C	76 mm	457 mm

NIST thermometer checked with ice point. Pure distilled shaved ice used for ice point calibration.

Laboratory Technician
Gabriella Hensley

Inboden Environmental Services, Inc.

5790 Main Street
Mt Jackson, VA 22842
(540) 477-3300
TOLL-FREE (800) 648-1010
FAX. (540) 477-3360
WEB: www.4ies.com

INBODEN ENVIRONMENTAL SERVICES, Inc.

5790 Main St. Mt. Jackson, VA 22842

QUALITY CONTROL LOG
COLORIMETER INSTRUMENT CHECK

Client: IES Operations	Date: 08-08-2022

Instrument Identification: Hach DR300 S/N 19090A001360

DPD Chlorine Standard Lot: A0356 Exp. Date: DEC-2022

DPD Chlorine Standard	Standard Reading	Instrument Reading
Standard 1	0.21 ± 0.09	0.18
Standard 2	0.91 ± 0.10	0.88
Standard 3	1.60 ± 0.14	1.56
Accepted (YES or NO)		YES

Primary Check Standard

YSI Primary Standard Kit Lot: 200729 Exp Date: 08-31-2022

Standard Value:	Instrument Reading
1.49 ± 0.006	1.45
Accepted (YES or NO)	YES

* All values listed are in mg/L

Laboratory Technician
Gabriella Hensley

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360
WEB: www.4ies.com

Laboratory Secondary Control Standard Certificate

Date: 08/08/2022
Time: 11:00 AM

Client: IES Operator

Make	Model No.	Serial No.	Type	Range	Divisions, S.U.
Oakton	pH 30	T31108110	pH Meter	-1.00-15.00 S.U.	0.01 S.U.

pH Buffer 4 Identification	pH Buffer 7 Identification	pH Buffer 10 Identification	Temperature °C	Acceptable (YES or NO)
Manufacturer: BlueBook Lot No.:1GH1124 Reading: 3.99	Manufacturer: BlueBook Lot No.:1GF824 Reading: 7.00	Manufacturer: BlueBook Lot No.:1GG1079 Reading: 10.00	23.1	***YES***

Laboratory Standard	Standard Value	pH Meter Reading	Acceptable (YES or NO) pH within 0.10 of standard
Manufacturer: USABlueBook Lot No. :1GC844	7.00	6.97	***YES***

pH determined using SM4500-H+ B-2011

Laboratory Technician
Gabriella Hensley

Inboden Environmental Services, Inc.
IES

5790 Main Street
Mt. Jackson, VA 22842
(540) 477-3300
TOLL-FREE: (800) 648-1010
FAX: (540) 477-3360
WEB: www.4ies.com

Thermometer Calibration Certificate

Date: 08/08/2022
Time: 11:00 AM

Client: IES Operations
5790 Main St. Mount Jackson, VA 22842

Make	Model No.	Serial No.	Type	Range, °C	Divisions, °C	Immersion	Length
EcoSense	DO200A	JC06598	Thermister	-6.0 to +46.0	0.1 °C	N/A	N/A

NIST Thermometer Reading	Thermometer Reading	Correction
0.0 °C	0.1 °C	-0.1 °C
15.0 °C	15.0 °C	0.0 °C
30.0 °C	30.0 °C	0.0 °C

NOTE: If above correction is preceded by a (+) sign, it should be added to the thermometer reading; if it is preceded by a (-) sign, it should be subtracted from the thermometer reading to obtain the correct temperature.

Calibration Instrument

Make	Model No.	Serial No.	Type	Range	Divisions, °C	Immersion	Length
Thermco	1011-3	1015	Glass nitrogen filled	-1 to 110 °C	0.2 °C	76 mm	457 mm

NIST thermometer checked with ice point. Pure distilled shaved ice used for ice point calibration.

Quality Control Technician
Gabriella Hensley

OPERATION AND MAINTENANCE MANUAL

Christendom College
Sewage Treatment Plant

July 1985

Prepared For:
Christendom College
134 Christendom Drive
Front Royal, VA 22630

Revised By:
Inboden Environmental Services, Inc.
5790 Main Street
Mount Jackson, VA 22842
(540) 477-3300

Revised:

November 1985

January 1991

March 9, 2009

June 19, 2018

IV. OPERATION OF TREATMENT FACILITY

The operation of the treatment facility shall be in accordance with the manufacturers recommendations, contained in Appendix "H" of this manual. A generalized check list for troubleshooting appears as Appendix "E" of this manual.

Sludge generated at the facility is disposed of in accordance with the approved Sludge Management Plan for VPDES Permit No: VA0067067 and involves pumping and hauling the wasted sludge to the Town of Front Royal STP.

The operation of sludge pump and supernatant pump station shall be on an as needed bases. The operation and maintenance of these pumps shall be in accordance with the manufacturers' recommendations, contained in Appendix "L" of this manual.

V. MAINTENANCE

Routine maintenance shall be performed by the plant operator. Major repairs and equipment replacements shall be performed by Inboden Environmental Services, Inc. or Kappe Associates, Inc.

Tools

Normal maintenance will be accomplished with common tools. These common tools shall be supplied by the College. Any special equipment will be supplied by the service representative.

Spare Parts

The following spare parts will be stored at the College:

1. 1 each: Spare blower (The spare blower shall have identical features to the blower furnished with the plant. The blower shall be less motors and accessories and be packaged for storage.)
2. 6 each: snap caps
3. 6 each: diffusers
4. 4 each: froth nozzle
5. 2 each: blower belts
6. 2 each: complete set of blower bearings

These parts shall be stored at a dry inside location readily accessible for replacement.

Maintenance Schedule

General

Daily	1. Check motors for overheating by hand
	2. Wash plant sidewalls
Weekly	1. Check effluent weir level
Monthly	1. Clean dust away from motor
Semi-Annually	1. Check valves for leaks
	2. Clean spray pump screen
Yearly	1. Repaint effluent weir
	2. Clean and repaint metal surfaces
	3. Scrape and paint all exposed steel

Electrical

Monthly	1. Inspect breakers, fuses, and resets
Yearly	1. Check electrical leads

Comminutor

Monthly	1. Check oil level
	2. Check cutting efficiency
Semi-Annually	1. Grease Comminutor

Aerator Blowers

Daily	1. Check air valve settings
Weekly	1. Inspect V-belt for slippage
Monthly	1. Check pully alignment
	2. Clean air filter
	3. Oil pressure relief valve
	4. Inspect V-belt for wear
	5. Check oil level

6. Grease bearings
7. Check motor mounting bolts

Clarifier

Daily
1. Clean tank walls
2. Skim scum from scum baffles
3. Hose down weirs and scum

Semi-annually
1. Take out of service and inspect all mechanical equipment wear and corrosion.
2. Check all moving parts for wear
3. Replace moving parts, if necessary
4. Check weirs to make sure they are level

Hypochlorinator

For all maintenance of the hypochlorinator see Appendix "J".

Cascade Aerator

Daily
1. Clean any deposits or debris

Maintenance Records

The College shall institute procedures for maintaining an equipment record system. Each major component of the plant shall have an equipment record maintained on it.

The Vice President of Operations shall have ultimate responsibility for the maintenance of the equipment record system and review the records at a minimum of once per year. The Vice President of Operations may day to day keeping of the equipment records to the designated operator.

The equipment records shall be kept in a 3-ring binder catalog in the office of the Vice President of Operations.

The maintenance record for each piece of equipment shall include the following:

1. Common Name:
2. Function:
3. Date of Purchase:
4. Manufacturer model number:
5. Serial Number:
6. Notes:
7. Listings of Corrective or Emergency Maintenance work: A detailed description of the problem, its source, and curative procedures shall be attached to the maintenance record for each piece of equipment.

Sample Maintenance Record Forms are shown in Appendix "G".

VI. SAMPLING AND LABORATORY TESTING

All field monitoring and sampling shall be done by the contract operator. Required field monitoring and sample types are listed on the VPDES permit.

Sampling: Influent and other process control samples may be taken at any time to diagnose a biological issue or quantify various parameters within the treatment waste. All effluent samples are taken from a point following the cascade aerator. All samples are either classified as "composite" or "grab" samples. A "composite" sample is composited from many individual samples collected at regular intervals over a period of time. The volume of each sample is taken proportional to the flow a rate at the time of sampling. A "grab" sample is a single sample collected at one individual sampling event and does not reflect the current flow rate. Required sampling parameters and frequencies are specified in the VPDES Permit No: VA0067067. Sample results must be reported within the Discharge Monitoring Report (DMR) and sent to DEQ each month. A copy of the DMR is included as Appendix "B".

The following principles are to be followed in order to collect a representative sample:

1. Samples should be taken after post-aeration.
2. Sample are to be preserved and cooled properly.
3. Sample containers shall be clean and not contaminated during sampling.

Christendom College STP

WASTEWATER TREATMENT

Inboden Environmental Services, Inc.
Mt. Jackson, Va. 22842

Foam Log

MONTH

VA0067067

Are floating solids or is visible foam present beyond a trace (barely noticeable) amount?

Month and Year:

	Sample Pt.		Stream		If so, check for cause. action to be taken (if any):
Day	YES	NO	YES	NO	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
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Can foam be created by turbulence upstream of outfall?