pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0082996**
Facility Type	**Non-Municipal**	APS ID	**823646**
Major / Minor	**Minor**	Authorization ID	**1234834**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Summit International School Of Ministry**	Facility Name	**Summit Int School Of Ministry**
Applicant Address	74 Harrison School Road	Facility Address	74 Harrison School Road
	Grantville, PA 17028-8222		Grantville, PA 17028-8222
Applicant Contact	Pavel Maftey	Facility Contact	Pavel Maftey
Applicant Phone	(717) 865-2000	Facility Phone	717) 865-2000
Client ID	307514	Site ID	452168
Ch 94 Load Status	Not Overloaded	Municipality	East Hanover Township
Connection Status	No Limitations	County	Lebanon
Date Application Received	June 25, 2018	EPA Waived?	Yes
Date Application Accepted	July 10, 2018	If No, Reason	

Purpose of Application: Permit Renewal for discharge of treated sewage

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for a discharge of treated domestic sewage from an existing wastewater treatment plant that serves a bible school located in Grantville, Lebanon County. The facility is own and operated by Summit International School of Ministry. The plant has a design capacity of 0.015 mgd, and discharge to an unnamed tributary of Indiantown Run which is classified for Warm Water Fishes (WWF) and Migratory Fishes (MF). The existing NPDES permit was issued on December 18, 2013 with an effective date of January 1, 2014 and expiration date of December 31, 2018. The applicant submitted a timely renewal application to the Department and is currently operating under the terms and conditions in the existing permit pending Department action on the renewal application. A topographic map showing the discharge location attachment. A topographic map showing the discharge location (attachment A)

1.1 Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	November 8, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E./ Program Manager	

Summary of Review

1.2 Changes to the existing Permit

- Semi-annual monitoring of Total Phosphorus, Total Nitrogen, TKN and Nitrate-Nitrite have been added

1.3 Existing Permit Limits and Monitoring Requirements

DISCHARGE LIMITATIONS							MONITORING REQUIREMENTS	
	Mass Units (lbs/day)		Concentrations (mg/l)					
Discharge Parameter	Average Monthly	Maximum Daily	Inst. Minimum	Average Monthly	Maximum Daily	Inst. Maximum	Monitoring Frequency	Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.08	XXX	0.26	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5.0	2/month	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15.0	2/month	8-Hr Composite
Total Phosphorus	XXX	Report	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	Report	XXX	Report Annl Avg	XXX	XXX	1/year	Calculation

1.4.0 Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.015
Latitude	40º 24' 33.07"	Longitude	-76º 35' 55.05"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Indiantown Run (WWF, MF)	Stream Code	09807
NHD Com ID	56396795	RMI	0.6800
Drainage Area	0.16 sq. mi	Yield (cfs/mi^2)	0.0656
Q_{7-10} Flow (cfs)	0.011	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)	475	Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	PA American Water		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	17

Changes Since Last Permit Issuance:

Other Comments:

1.4.1 Water Supply Intake

The nearest downstream water supply intake is approximately 17 miles downstream for PA American Water on Swatara Creek in South Hanover Township, Dauphin County. No impact is expected from this discharge on the intake

2.0 Treatment Facility Summary

Treatment Facility Name: Summit Int School Of Ministry

WQM Permit No.	Issuance Date
3886404 A-2	5/26/2015

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Hypochlorite	0.015

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.015		Not Overloaded	Aerobic Digestion	Combination of methods

Changes Since Last Permit Issuance: Amendment submitted to remove tertiary filter from the permit

Other Comments:

2.1 Treatment Facility

The treatment plant consists of bar screen, aerated EQ tank with pumps, splitter box (splits flow to aeration tank and back to EQ tank), 2 aeration tanks in series, a clarifier, chlorine disinfection/de-chlorination tank, sludge holding tank, flow meter and tertiary filter (not in use and will be removed from the WQM permit via a permit amendment submitted on 10/9/2019)

2.2 Chemicals

- Sodium Hypochlorite for disinfection
- Sodium Bisulfite for de-chlorination

3.0 Compliance History

3.1 DMR Data for Outfall 002 (from October 1, 2018 to September 30, 2019)

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
Flow (MGD) Average Monthly	0.017	0.017	0.015	0.0120	0.011	0.019	0.015	0.019	0.014	0.027	0.026	0.0269
Flow (MGD) Daily Maximum	0.029	0.036	0.024	0.019	0.035	0.040	0.040	0.036	0.037	0.050	0.064	0.053
pH (S.U.) Minimum	7.27	7.04	7.32	7.48	7.17	7.43	6.65	7.45	6.47	6.74	7.12	7.42
pH (S.U.) Maximum	8.16	8.16	8.33	7.92	7.97	7.95	7.98	8.26	8.32	7.44	7.89	7.94
DO (mg/L) Minimum	6.15	4.90	5.26	7.48	6.31	8.27	8.94	9.49	9.11	8.15	7.72	7.3
TRC (mg/L) Average Monthly	0.02	0.02	0.02	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.01
TRC (mg/L) Instant. Maximum	0.04	0.06	0.04	0.04	0.10	0.16	0.25	0.11	0.09	0.07	0.07	0.04
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.0	< 2.0	< 6.35	4.00	< 2.9	< 3.55	< 2.0	< 3.4	< 2.0	< 2.0
TSS (mg/L) Average Monthly	< 5.0	6.0	< 7.0	< 8.5	< 20.0	< 5.0	< 8.5	< 5.0	< 5.0	< 5.0	7.0	< 5.5
Fecal Coliform (CFU/100 ml) Geometric Mean	4.58	77.46	17.89	1200	7.746	135.94	< 7.55	133.08	< 3.16	< 46.90	15.49	21.21
Fecal Coliform (CFU/100 ml) Instant. Maximum	21.0	200	320.0	3200	15	240	57.0	230.0	10.0	2200	240	450
Total Nitrogen (mg/L) Annual Average										25.10		
Total Nitrogen (lbs) Total Annual										1832.30		
Ammonia (mg/L) Average Monthly	15.83	0.825	3.41	1.76	< 2.41	3.44	1.946	29.35	10.10	7.694	3.54	5.0175
Total Phosphorus (mg/L) Annual Ave.										3.30		
Total Phosphorus (lbs) Total Annual										240.90		

Compliance History

3.2 Effluent Violations for Outfall 002, from: November 1, 2018 To: September 30, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
DO	08/31/19	Min	4.90	mg/L	5.0	mg/L
Fecal Coliform	06/30/19	Geo Mean	1200	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	06/30/19	IMAX	3200	CFU/100 ml	1000	CFU/100 ml
Ammonia	12/31/18	Avg Mo	7.694	mg/L	7.5	mg/L
Ammonia	07/31/19	Avg Mo	3.41	mg/L	2.5	mg/L
Ammonia	02/28/19	Avg Mo	29.35	mg/L	7.5	mg/L
Ammonia	01/31/19	Avg Mo	10.10	mg/L	7.5	mg/L
Ammonia	09/30/19	Avg Mo	15.83	mg/L	2.5	mg/L

3.2 Compliance History	
Summary of DMRs:	Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table above indicate 5 instances of Ammonia violations, 2 Fecal Coliform violations and a DO violation. The violations appear to be operation related. It is recommended the operator check the aeration system to ensure adequate oxygen transfer in the aeration tank, ensure adequate disinfection and provide adequate reaeration after dichlorination.
Summary of Inspections:	The facility was inspected 7 times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met consistently. No violations noted during plant inspections.

4.0 Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** .015
Latitude 40º 24' 33.00" **Longitude** -76º 35' 55.00"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

4.1.1 Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: Weekly averages are not applicable to this discharge

4.2 Water Quality-Based Limitations

4.2.1 Streamflows

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01573000 on Swatara Creek at Harper Tavern. The Q_{7-10} and drainage area at the gage is 22.1ft3/s and 337 mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (22.1ft^3/s)/337 mi^2 = 0.0656ft^3/s/ mi^2
- Q_{30-10} / Q_{7-10} = 1.40
- Q_{1-10} / Q_{7-10} = 0.80

The drainage area at the proposed discharge point was found from streamstats calculation to be 0.16 mi^2
The design streamflow (Q_{7-10}) is calculated as: Q_{7-10} = (0.0656)x(0.16) = 0.011cfs

4.2.2 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

- STP pH = 7.0 (DMR median Jul - Sept)
- STP Temperature = 25 ° C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20 ° C (Default)
- Background NH_3-N = 0.0 (Default)

4.2.3 $CBOD_5$

The attached results of WQM 7.0 stream model (attachment B) indicates a monthly average limit of 25mg/l CBOD5 is adequate to protect the water quality of the stream at outfall 002. This limit is consistent with the existing permit and the facility has been complying with the limit.

4.2.4 NH_3-N

The attached results of the WQM 7.0 stream model (attachment B) also indicates that a summer limit of 2.5 mg/l NH_3-N as a monthly average is adequate to protect the aquatic life from toxicity effects at the outfall 002. Winter months limit is 3 times the summer limit. These limits are consistent with the existing limits which the permit has been complying with but not consistently. There is need for some operational adjustments to consistently meet the limits.

4.2.5 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.2.6 Toxics

No parameter of concern is associated with this discharge.

4.2.7 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal at a monitoring frequency following Table 6-3 of DEP's Technical Guidance for Development and Specification of effluent Limitations (No. 362-0400-001). Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away.

EPA published the Chesapeake Bay Total Maximum Daily Load (TMDL) in December of 2010. Despite extensive restoration efforts during the past 25 years, the TMDL was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries.

In order to address the TMDL, Pennsylvania developed in addition to the Bay Strategy, a Chesapeake Watershed Implementation Plan (WIP) Phase 1 in January 2011 and Phase 2 in March 2012. In accordance with the Phase 2 WIP and its supplement, re-issuing permits for significant dischargers follow the same phased approach formulated in the original Bay strategy, whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal. This facility is, classified as a phase 5, and has been monitoring Total Nitrogen and Total Phosphorus annually will and be required to continue monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, Total Nitrogen and Total Phosphorus semi-annually during this permit cycle to collect adequate data.

4.2.8 Total Residual Chlorine

The attached TRC results utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-

specific BAT has been developed. The attached results (attachment C) indicates that a water quality limit of 0.08 mg/l and 0.26mg/l IMAX would be needed to prevent toxicity concerns at outfall 002. This limit is consistent with the existing limit in the permit. The facility installed a de-chlorination system during the previous permit cycle and has been complying with the limitation.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 Special Permit Conditions

The permit will contain the following special conditions:

Stormwater Prohibition, Approval Contingencies, Proper Waste/solids Management, and Chlorine minimization.

5.4 Biosolids Management

Digested sludge is hauled out periodically by a license hauler.

5.5 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.6 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

5.7 303d Listed Streams:

The discharge is not located on a 303d listed stream segment.

5.8 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.9 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.08	XXX	0.26	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite

Compliance Sampling Location: At Outfall 002

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment B)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

8. Attachments

A. Topographical Map

B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9807	Trib 09807 to Indiantown Run

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
0.680	Summit Sch OM	PA008996	0.015	CBOD5	25		
				NH3-N	2.51	5.02	
				Dissolved Oxygen			5

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9807	Trib 09807 to Indiantown Run	0.680	475.00	0.16	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.066	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Summit Sch OM	PA008996	0.0150	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9807	Trib 09807 to Indiantown Run	**0.350**	465.00	0.19	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.066	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07D	9807	Trib 09807 to Indiantown Run

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
0.680	0.01	0.00	0.01	.0232	0.00574	.312	2.27	7.27	0.05	0.423	23.44	7.00
Q1-10 Flow												
0.680	0.01	0.00	0.01	.0232	0.00574	NA	NA	NA	0.05	0.439	23.67	7.00
Q30-10 Flow												
0.680	0.01	0.00	0.01	.0232	0.00574	NA	NA	NA	0.05	0.396	23.06	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.8	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.4	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9807	Trib 09807 to Indiantown Run

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.680	Summit Sch OM	7.43	10.12	7.43	10.12	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.680	Summit Sch OM	1.54	2.51	1.54	2.51	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.68	Summit Sch OM	25	25	2.51	2.51	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9807	Trib 09807 to Indiantown Run

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.680	0.015	23.443	7.000
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
2.267	0.312	7.267	0.048
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
17.84	1.424	1.73	0.912
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
6.010	26.421	Owens	5
Reach Travel Time (days)			
0.423			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.042	16.62	1.66	6.49
0.085	15.49	1.60	6.72
0.127	14.43	1.54	6.88
0.169	13.45	1.48	7.00
0.212	12.53	1.43	7.10
0.254	11.68	1.37	7.20
0.296	10.88	1.32	7.29
0.339	10.14	1.27	7.37
0.381	9.45	1.22	7.45
0.423	8.80	1.18	7.52

C. TRC Calculations

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			**Enter Facility Name in E3**		
3	Input appropriate values in B4:B8 and E4:E7					
4	0.011	= Q stream (cfs)		0.5	= CV Daily	
5	0.015	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Dischar		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
		= % Factor of Safety (FOS)			=Decay Coefficient (K)	

#	Source	Reference	AFC Calculations		Reference	CFC Calculations	
#	TRC	1.3.2.iii	WLA afc =	0.170	1.3.2.iii	WLA cfc =	0.158
#	PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
#	PENTOXSD TRG	5.1b	LTA_afc=	0.063	5.1d	LTA_cfc =	0.092
#							

#	Source	Effluent Limit Calculations		
#	PENTOXSD TRG	5.1f	AML MULT =	1.231	
#	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.078	AFC
#			INST MAX LIMIT (mg/l) =	0.255	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**