

Application Type

Renewal

Facility Type

Non-Municipal

Major / Minor

Minor

Application No.

PA0084492

APS ID

929657

Authorization ID

1498174

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Applicant and Facility Information

Applicant Name	<u>Halifax Village LLC</u>	Facility Name	<u>Halifax Village</u>
Applicant Address	<u>PO Box 375</u>	Facility Address	<u>S Elmer Avenue</u>
	<u>Gap, PA 17527-0375</u>		<u>Halifax, PA 17032</u>
Applicant Contact	<u>John Stoltzfus</u>	Facility Contact	<u>Andrew Meloy</u>
Applicant Phone	<u>(484) 880-1329</u>	Facility Phone	<u>(814) 329-8811</u>
Client ID	<u>332334</u>	Site ID	<u>1128</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Halifax Township</u>
Connection Status		County	<u>Dauphin</u>
Date Application Received	<u>August 31, 2024</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>October 3, 2024</u>	If No, Reason	
Purpose of Application	<u>NPDES permit renewal</u>		

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for discharge of treated domestic sewage from Halifax Village LLC wastewater treatment plant that serves a mobile home community, Red Rose Motel and Engle Ford car dealership. The plant is designed for 0.062MGD to serve the mobile home community at built out and the other contributors. The extended aeration package plant discharges to an unnamed tributary to Susquehanna River which is classified for warm water fishes (WWF) and migratory fishes (MF). The project was phased and the first phase of 0.031MGD was constructed. The NPDES was developed based on the built-out flow of 0.062MGD. A request for WQM permit modification is required prior to construction of the proposed additional 50 units in the future. The existing NPDES permit was issued on February 20, 2020, with an effective date of March 1, 2020, and expiration date of February 28, 2025. 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 is presented in attachment A

11 Sludge use and disposal description and location(s):

Digested sludge is hauled out periodically by a license hauler.

Approve	Deny	Signatures	Date
X		<i>J. Pascal Kwedza</i> J. Pascal Kwedza, P.E. / Environmental Engineer	September 17, 2025
X		<i>Maria D. Bebenek for</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	September 17, 2025
X		<i>Maria D. Bebenek</i> Maria D. Bebenek, P.E. / Program Manager	September 17, 2025

Summary of Review

1.2 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.

1.3 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.062
Latitude	40° 30' 27.71"	Longitude	-76° 57' 12.54"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Susquehanna River (WWF)	Stream Code	16877
NHD Com ID	54974407	RMI	0.29
Drainage Area	0.30 sq. mi	Yield (cfs/mi ²)	0.11
Q ₇₋₁₀ Flow (cfs)	0.033	Q ₇₋₁₀ Basis	USGS Gage Station
Elevation (ft)	440	Slope (ft/ft)	
Watershed No.	6-C	Chapter 93 Class.	WWF
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	Veolia Water PA		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	15

Changes Since Last Permit Issuance: None

1.3.1 Water Supply Intake

The nearest downstream water supply intake is approximately 15 miles downstream by Veolia Water PA on Susquehanna River, in Susquehanna Township, Dauphin County. No impact is expected from this discharge on the intake.

2.0 Treatment Facility Summary				
Treatment Facility Name: Halifax Village				
WQM Permit No.		Issuance Date		
2291409		April 28, 1992		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.031
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.031		Not Overloaded		

Changes Since Last Permit Issuance: N/A

2.1 Treatment Facility

The treatment plant consists aerated EQ tank with 2 grinder pumps, flow meter to measure flow coming out of the EQ tank, pre-aeration tank with 3 access points, the 2nd tank has 3 sections, $\frac{3}{4}$ of the tank is used for aeration tank, and $\frac{1}{4}$ is used as clarifier, a chlorine contact tank with tablet chlorinator and basket for adding more tablets if needed, flow meter pit and de-chlorination system and a sludge holding tank.

The permitted facilities include:

- Screening unit
- A 10,470-gallon pre-aeration flow equalization tank
- A 31,239-gallon aeration tank provided with a diffused aeration system
- A 10,772-gallon clarifier
- A tablet type chlorinator and a 628-gallon contact tank
- De-chlorination feeder
- Equalization tank with pumps
- Aerobic sludge digester
- 400 feet of 10-inch outfall sewer discharging to an unnamed tributary of the Susquehanna River.

2.2 Chemicals

- Soda ash for pH adjustments
- Calcium Hypochlorite for disinfection
- Sodium bisulfate for de-chlorination
- Polymer added to sludge tank as needed

3.0 Existing Effluent Limitations and Monitoring Requirements

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	0.06	XXX	0.20	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	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	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

3.1 Compliance History

3.1.1 DMR Data for Outfall 001 (from August 1, 2024 to July 31, 2025)

Parameter	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24
Flow (MGD) Average Monthly	0.01110 94	0.00631 8	0.01051 8	0.00765 9	0.00536 4	0.00805 9	0.00764 4	0.00821 1	0.00654 6	0.00759 3	0.00848 9	0.02122 82
Flow (MGD) Daily Maximum	0.09021	0.01094 7	0.05987	0.03951	0.00131 4	0.02423	0.01455 2	0.00986 1	0.01050 5	0.01368 9	0.02986	0.25907
pH (S.U.) Instantaneous Minimum	6.64	6.68	6.61	6.368	6.65	6.71	6.68	6.7	6.7	6.68	6.68	6.68
pH (S.U.) Instantaneous Maximum	6.76	6.77	6.9	6.76	6.9	6.79	6.78	7.36	6.79	6.84	6.88	7.75
DO (mg/L) Daily Minimum	6.68	6.5	6.17	6.65	6.7	6.25	6.0	6.7	6.7	6.68	6.68	6.68
TRC (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TRC (mg/L) Instantaneous Maximum	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	< 2.0	< 2.0	< 40.0	4.0	6.0	3.0	< 2.0	5.0	< 2.0	< 2.0	< 2.0	< 2.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0	< 1.0	< 1.0	< 1.0	1.0	< 1.0
Nitrate-Nitrite (mg/L) Daily Maximum		17.82						< 21.73				
Total Nitrogen (mg/L) Daily Maximum		< 18.32						< 22.23				
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	1.4	1.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TKN (mg/L) Daily Maximum		< 0.5						< 0.5				
Total Phosphorus (mg/L) Daily Maximum		0.228						0.385				

3.1.2 Effluent Violations for Outfall 001, from: September 1, 2024 To: July 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	05/31/25	Avg Mo	< 40.0	mg/L	30	mg/L

3.1.2 Summary of DMRs:

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1.1 indicates permit limits have been met most of the time. One TSS effluent violation was noted during the period reviewed.

3.1.3 Summary of Inspections:

The facility has been inspected a couple of times during the previous permit cycle. No effluent violations were found during plant inspections. The facility is operated and maintained well.

4.0 Development of Effluent Limitations

Outfall No. 001
Latitude 40° 30' 27.00"
Wastewater Description: Sewage Effluent

Design Flow (MGD) .062
Longitude -76° 57' 12.00"

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) 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.

4.2 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.

4.3 Water Quality-Based Limitations

4.3.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for CBOD₅, NH₃-N and DO in permits. The model simulates mixing and degradation of NH₃-N in the stream and compares calculated instream NH₃-N concentrations to NH₃-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of CBOD₅ and NH₃N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.3.2 Streamflows

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 01570500 on Susquehanna River in Harrisburg. The Q₇₋₁₀ and drainage area at the gage is 2610 ft³/s and 24100 mi² respectively. The resulting yields are as follows:

- Q₇₋₁₀ = (2610 ft³/s) / 24100 mi² = 0.11 ft³/s/ mi²
- Q₃₀₋₁₀ / Q₇₋₁₀ = 1.17
- Q₁₋₁₀ / Q₇₋₁₀ = 0.95

The drainage area at discharge taken from the previous factsheet = 0.3 mi²

The Q_{7-10} at discharge = $0.3 \text{ mi}^2 \times 0.10 \text{ ft}^3/\text{s}/\text{mi}^2 = 0.033 \text{ ft}^3/\text{s}$.

4.3.3 NH₃N Calculations

NH₃N 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 NH₃N criteria used in the attached computer model of the stream:

* Discharge pH	= 6.6 (July -Sept DMR median)
* Discharge Temperature	= 25 °C (Default)
* Stream pH	= 8.2 (Taken from WQN station at Harrisburg)
* Stream Temperature	= 23.5°C (Taken from WQN station at Harrisburg)
* Background NH ₃ -N	= 0.0 (default)

4.3.4 CBOD₅

The attached WQM 7.0 stream model results presented in attachment B indicates that, for a discharge of 0.062 MGD from Halifax Village STP, a limit of 25 mg/l CBOD₅, is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been achieving this limitation. Therefore, a limit of 25 mg/l AML, and 50 mg/l IMAX are recommended again for this permit cycle.

4.3.5 NH₃-N

The attached WQM 7.0 stream model results (attachment B) also indicates that, a summer limit of 2.0 mg/l NH₃ as a monthly average is adequate to protect the aquatic life from toxicity effects. This is slightly more stringent than the existing limit of 2.5 mg/l but the facility can meet the new limitation based on discharge monitoring data. The limit for winter months is 3 times the summer limit (6mg/l NH₃-N).

4.3.6 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.

4.3.7 Total Suspended Solids(TSS)

There are no water quality criteria for TSS. An average monthly limit of 30 mg/l in the existing permit based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR Chapter 1, Part 133, Section 133.102b(1) and 25 PA § 92a.47(a)(1) will continue.

4.3.8 Toxics

No parameter of concern is associated with this discharge.

4.3.9 Chesapeake Bay Strategy:

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized based on their delivered TN and TP loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received 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. These limits may be achieved through a combination of treatment technology, credits, or offsets if approved by DEP. Phase 4 (0.2 - 0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN series and TP during permit renewal. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This facility is, classified as a phase 5, and has been monitoring and will continue monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, Total Nitrogen and Total Phosphorus semi-annually throughout the next permit cycle to collect data.

4.3.10 Total Residual Chlorine

The attached TRC results presented in attachment C utilizes the equations and calculations presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The result indicates that a water quality limit rounded to 2 decimal places of 0.06 mg/l monthly average and 0.20 mg/l IMAX for the discharge would be needed to prevent toxicity concerns. This is consistent with the existing limit, IMAX is slightly more stringent but DMR and inspection data show facility has capability to comply with the limitation.

4.3.11 Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows \geq 1 MGD, 1/quarter for design flows \geq 0.05 and $<$ 1 MGD and 1/year for design flows of 0.002 and $<$ 0.05 MGD. Your discharge of 0.062 MGD requires 1/quarter monitoring as included in the permit.

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 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.

5.5 Class A Wild Trout Fisheries

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

5.6 303d Listed Streams:

The discharge is located on a 303d listed stream segment as impaired for recreational use due to pathogen. No action is warranted at this time.

5.7 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).

5.8 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" (386-0400-001), SOPs and/or BPJ.

Outfall 001, 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	0.06	XXX	0.20	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	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	6.0	XXX	12	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

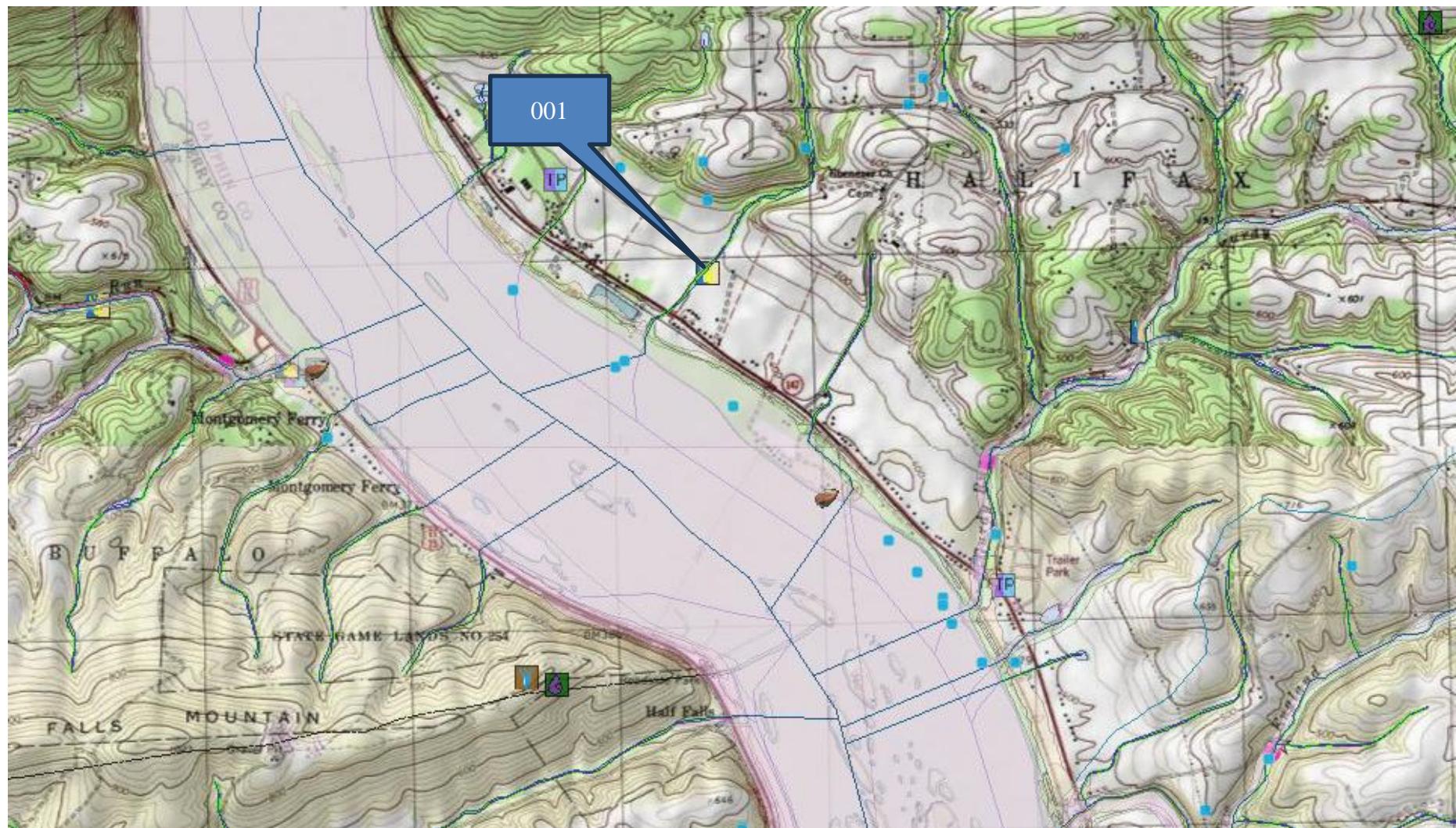
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/6 months	8-Hr Composite

Compliance Sampling Location: 001

7.0 Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment B)
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [REDACTED])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment C)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [REDACTED])
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	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, 386-2000-020, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	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, 386-2000-010, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input checked="" type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: Establishing effluent limits for individual sewage permits.
<input type="checkbox"/>	Other: [REDACTED]

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name					
		06C	16877	Trib 16877 to Susquehanna River			
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)
0.290	Halifax Village	PA0084492	0.062	CBOD5	25		
				NH3-N	2.17	4.34	
				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		
06C	16877	16877 to Susquehanna River			0.290	440.00	0.30	0.00000	0.00	<input checked="" type="checkbox"/>		
Stream Data												
Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio (ft)	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Stream pH (°C)		
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.00	7.10		
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			
Halifax Village		PA0084492		0.0620	0.0620	0.0620	0.000	25.00	6.60			
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	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC			
06C		16877 Trib 16877 to Susquehanna River		0.010	384.00	0.32	0.00000	0.00	<input checked="" type="checkbox"/>			
Stream Data												
Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio (ft)	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Stream Temp (°C)	pH	pH
Q7-10	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.00	7.10	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								
06C		16877		Trib 16877 to Susquehanna River								
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
Q7-10 Flow												
0.290	0.03	0.00	0.03	.0959	0.03788	.385	3.26	8.46	0.10	0.166	24.49	6.68
Q1-10 Flow												
0.290	0.03	0.00	0.03	.0959	0.03788	NA	NA	NA	0.10	0.168	24.51	6.68
Q30-10 Flow												
0.290	0.04	0.00	0.04	.0959	0.03788	NA	NA	NA	0.11	0.162	24.43	6.69

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.95	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.17	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
06C	16877	Trib 16877 to Susquehanna River					
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
0.290	Halifax Village	14.4	19.1	14.4	19.1	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
0.290	Halifax Village	1.55	2.17	1.55	2.17	0	0
Dissolved Oxygen Allocations							
RMI	Discharge Name	<u>CBOD5</u>	<u>NH3-N</u>	<u>Dissolved Oxygen</u>			
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)
0.29	Halifax Village	25	25	2.17	2.17	5	5
						0	0

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
06C	16877	Trib 16877 to Susquehanna River		
<u>RMI</u>		<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>
0.290		0.062	24.488	6.684
<u>Reach Width (ft)</u>		<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>
3.257		0.385	8.462	0.103
<u>Reach CBOD5 (mg/L)</u>		<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>
19.11		1.453	1.62	0.989
<u>Reach DO (mg/L)</u>		<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>
5.830		30.763	Owens	5
<u>Reach Travel Time (days)</u>		<u>Subreach Results</u>		
0.166		TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)
				D.O. (mg/L)
		0.017	18.55	1.59
		0.033	18.01	1.56
		0.050	17.48	1.54
		0.067	16.97	1.51
		0.083	16.47	1.49
		0.100	15.99	1.46
		0.116	15.52	1.44
		0.133	15.07	1.42
		0.150	14.63	1.39
		0.166	14.20	1.37
				6.93

C. TRC Calculations

Copy of TRC_CALC1

TRC EVALUATION							
Input appropriate values in A3:A9 and D3:D9							
0.033	= Q stream (cfs)		0.5	= CV Daily			
0.062	= Q discharge (MGD)		0.5	= CV Hourly			
30	= no. samples		1	= AFC_Partial Mix Factor			
0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor			
0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)			
0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)			
0	= % Factor of Safety (FOS)		0	= Decay Coefficient (K)			
Source	Reference	AFC Calculations		Reference	CFC Calculations		
TRC	1.3.2.iii	WLA_afc = 0.129		1.3.2.iii	WLA_cfc = 0.118		
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c	LTAMULT_cfc = 0.581		
PENTOXSD TRG	5.1b	LTA_afc = 0.048		5.1d	LTA_cfc = 0.069		
Effluent Limit Calculations							
PENTOXSD TRG	5.1f		AML MULT = 1.231				
PENTOXSD TRG	5.1g		AVG MON LIMIT (mg/l) = 0.059		AFC		
			INST MAX LIMIT (mg/l) = 0.193				
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)					