

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0024457
APS ID 735
Authorization ID 1382313

Applicant and Facility Information

Applicant Name	<u>Halifax Area Water & Sewer Authority</u>	Facility Name	<u>Halifax STP</u>
Applicant Address	<u>PO Box 443 (203 Armstrong Street) Halifax, PA 17032-0443</u>	Facility Address	<u>S Front Street Halifax, PA 17032</u>
Applicant Contact	<u>Jeffrey Enders</u>	Facility Contact	<u>Jeffrey Grosser</u>
Applicant Phone	<u>(717) 896-3886</u>	Facility Phone	<u>(717) 896-8149</u>
Client ID	<u>40444</u>	Site ID	<u>251407</u>
Ch 94 Load Status	<u>Existing Hydraulic Overload</u>	Municipality	<u>Halifax Borough</u>
Connection Status	<u>No Exceptions Allowed</u>	County	<u>Dauphin</u>
Date Application Received	<u>January 18, 2022</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>January 31, 2022</u>	If No, Reason	<u></u>
Purpose of Application	<u>Permit renewal for discharge of treated sewage.</u>		

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from Halifax Area Water & Sewer Authority (Authority) wastewater treatment plant. The Authority owns, operates, and maintains the wastewater treatment plant. The facility is located in Halifax Borough, Dauphin County. The facility services Halifax Borough (70% of the flow) and Halifax Township (30% of the flow). The sewer collection system is not combined in these areas and there are no bypasses or overflows approved in the collection system. The main pump station and the treatment facility has been upgraded during the last permit cycle. The Department is yet to receive certificate of completion but most of the treatment units are online. The upgraded treatment plant has a hydraulic design capacity of 0.28 MGD, but the annual average design capacity remains at 0.21 MGD. The organic design capacity of the facility is 636lbs/day- BOD5. The discharge goes to Susquehanna River which is classified for Warm Water Fishes (WWF) and Migratory Fishes (MF). The existing NPDES permit was issued on April 27, 2017 with an expiration date of April 30, 2022. The applicant submitted an administratively complete NPDES renewal application to the Department on January 18, 2022 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.

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

Liquid digested sludge is hauled out periodically by a license hauler to Capital Region Water's Advance sewage treatment plant for further treatment and disposal

Approve	Deny	Signatures	Date
X		<i>J. Pascal Kwedza</i> J. Pascal Kwedza, P.E. / Environmental Engineer	January 13, 2022
X		<i>Maria D. Bebenek for</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	January 25, 2022
X		<i>Maria D. Bebenek</i> Maria D. Bebenek, P.E. / Program Manager	January 25, 2022

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 Changes to the existing Permit

TRC limitation has been removed and UV intensity monitoring has been added
Quarterly E. Coli monitoring has been added.

1.4 Existing Permit 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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
(CBOD5)	44	70	XXX	25.0	40.0	50	1/week	24-Hr Composite
(BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	53	79	XXX	30.0	45.0	60	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Nitrate-Nitrite as N	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Kjeldahl Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia- Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

1.5 Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.21</u>
Latitude	<u>40° 27' 50.41"</u>	Longitude	<u>-76° 56' 12.0"</u>
Quad Name	<u>Halifax</u>	Quad Code	<u>1530</u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Susquehanna River</u>	Stream Code	<u>06685</u>
NHD Com ID	<u>54974881</u>	RMI	<u>92.3</u>
Drainage Area	<u>19,700</u>	Yield (cfs/mi ²)	<u>0.10</u>
Q ₇₋₁₀ Flow (cfs)	<u>1,970</u>	Q ₇₋₁₀ Basis	<u>USGS Gage station</u>
Elevation (ft)	<u>405</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>6-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status <u></u>			
Cause(s) of Impairment <u></u>			
Source(s) of Impairment <u></u>			
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>	<u></u>	
Temperature (°F)	<u></u>	<u></u>	
Hardness (mg/L)	<u></u>	<u></u>	
Other:	<u></u>	<u></u>	
Nearest Downstream Public Water Supply Intake		<u>Veolia Water Company</u>	
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>15</u>

Changes Since Last Permit Issuance: None

1.5.1 Water Supply:

The nearest downstream water supply intake is approximately 15 miles downstream by Veolia Water Company on the Susquehanna River above Fort Hunter, Dauphin County. The discharge will not impact the intake because of the distance and dilution.

2.0 Treatment Facility Summary				
Treatment Facility Name: Halifax STP				
WQM Permit No.		Issuance Date		
2205401 A-1		03/12/2020		
2205401		11/8/2005		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Sequencing Batch Reactor	Ultraviolet	0.21
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.28	636	Existing Hydraulic Overload	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: The facility has been upgraded to Sequencing Batch Reactor with ultraviolet disinfection.

2.1 Treatment Facility

The treatment plant consists of main influent pump station with a sewage grinder, mechanical fine screen with bar screen bypass, SBR feed pump station, two SBRs, post aeration tank, two aerobic digesters and two UV trains for disinfection. Provision is made to feed Sodium Hydroxide for pH adjustment and Aluminum Sulfate for Phosphorus precipitation if needed.

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from November 1, 2021 to October 31, 2022)

Parameter	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21
Flow (MGD) Average Monthly	0.0850	0.0826	0.1037	0.1429	0.1316	0.1804	0.1470	0.1260	0.1144	0.0803	0.0842	0.1017
Flow (MGD) Daily Maximum	0.1150	0.1320	0.1620	0.1680	0.1810	0.3160	0.1930	0.1720	0.1750	0.1170	0.1070	0.1400
pH (S.U.) Minimum	7.4	7.2	7.4	7.4	7.4	7.3	7.5	7.6	7.5	7.5	7.5	7.2
pH (S.U.) Maximum	9.0	7.8	7.5	7.6	7.6	7.6	7.7	7.7	7.8	7.8	7.9	7.6
DO (mg/L) Minimum	6.0	6.1	5.9	5.8	5.9	6.3	6.1	6.7	6.4	6.0	5.9	6.2
TRC (mg/L) Average Monthly	0.50	0.40	0.50	0.49	0.49	0.49	0.48	0.50	0.49	0.46	0.45	0.50
TRC (mg/L) Instant. Maximum	0.50	0.40	0.53	0.52	0.54	0.53	0.52	0.54	0.53	0.52	0.52	0.54
CBOD5 (lbs/day) Average Monthly	3.1	2.6	10.6	17.3	15.3	15.7	11.6	8.4	6.6	12.0	11.8	7.8
CBOD5 (lbs/day) Weekly Average	4.0	3.0	19.0	21.0	22.0	17.0	17.0	11.0	10.0	22.0	15.0	11.0
CBOD5 (mg/L) Average Monthly	4.1	3.5	11.3	15.5	14.4	11.6	10.6	7.8	7.0	17.5	16.9	9.6
CBOD5 (mg/L) Weekly Average	5.0	3.5	14.7	19.9	16.9	14.1	16.6	9.8	10.0	28.9	20.5	14.6
BOD5 (lbs/day) Raw Sewage Influent Aver. Monthly	177	180	207	123	63	138	115	98	148	120	149	115
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	238	280	548	200	151	241	268	123	216	187	241	178
BOD5 (mg/L) Raw Sewage Influent Aver. Monthly	273	277	244	108	66	103	97	91	164	176	222	139
TSS (lbs/day) Average Monthly	10.4	1.9	11.9	23.9	17.5	14	9.0	7.2	4.8	8.1	5.8	8.3
TSS (lbs/day) Raw Sewage Influent Aver. Monthly	150	188	131	107	81	111	67	101	161	122	141	93

**NPDES Permit Fact Sheet
Halifax STP**

NPDES Permit No. PA0024457

TSS (lbs/day) Raw Sewage Influent Daily Maximum	254	303	189	216	145	120	75	144	365	251	241	152
TSS (lbs/day) Weekly Average	30.6	2.0	19.5	31.0	24.5	26.5	13.3	9.7	6.8	10.1	10.8	12.5
TSS (mg/L) Average Monthly	14.0	2.8	13.5	20.2	15.3	10.1	7.3	6.9	5.1	12.0	8.8	10.3
TSS (mg/L) Raw Sewage Influent Aver. Monthly	222	287	162	93	71	81	55	94	183	178	204	111
TSS (mg/L) Weekly Average	39.0	2.8	15.2	27.3	19.0	21.0	8.8	10.2	7.1	15.4	19.0	16.9
Fecal Coliform (CFU/100 ml) Geometric Mean	48	1.31	7	22	681	308.8	806	618	169	831	638	59
Fecal Coliform (CFU/100 ml) Instant. Maximum	435	4	2420	24200	4840	2420	2420	2420	630	2420	2420	248
Nitrate-Nitrite (mg/L) Average Monthly	7.45	2.42	1.30	0.90	0.43	0.47	0.43	0.85	0.63	0.64	0.73	0.41
Nitrate-Nitrite (lbs) Total Monthly	171.43	48.30	51.77	37.20	19.50	17.05	15.30	26.66	14.56	13.64	17.67	10.20
Total Nitrogen (mg/L) Average Monthly	9.79	3.33	29.50	18.90	28.85	25.97	23.43	29.55	29.63	31.54	28.83	24.71
Total Nitrogen (lbs) Total Monthly	225.37	66.60	1174.59	781.82	1306.50	939.92	832.50	931.86	685.16	668.67	693.16	618.30
Ammonia (lbs/day) Average Monthly	0.94	< 0.200	30.95	19.48	34.42	25.92	24.28	24.01	22.05	21.27	18.61	19.93
Ammonia (mg/L) Average Monthly	1.27	< 0.200	24.10	14.60	22.80	22.20	20.50	23.60	26070	31.10	24.00	23.90
TKN (mg/L) Average Monthly	2.34	0.91	28.20	18.00	24.50	25.50	23.00	28.70	29.00	30.90	28.10	24.30
TKN (lbs) Total Monthly	53.94	18.30	1122.82	744.62	1109.40	922.87	817.20	905.20	670.32	655.03	675.49	608.10
Total Phosphorus (mg/L) Aver. Monthly	12.20	0.75	2.53	3.00	4.35	3.24	1.59	3.42	1.98	2.83	3.46	2.76
Total Phosphorus (lbs) Total Monthly	280.86	15.00	100.75	124.00	197.10	117.18	56.40	107.88	45.64	60.14	83.08	69.0

3.2 Effluent Violations for Outfall 001, from: December 1, 2021 To: October 31, 2022

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	06/30/22	Geo Mean	681	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	05/31/22	Geo Mean	308.8	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	07/31/22	IMAX	24200	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	08/31/22	IMAX	2420	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	08/31/22	IMAX	2420	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	06/30/22	IMAX	4840	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	05/31/22	IMAX	2420	CFU/100 ml	1000	CFU/100 ml

3.3 Summary of Discharge Monitoring Reports (DMRs):

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicate that except Fecal Coliform, permit limits have been met most of the time. Fecal Coliform effluent violations were noted on DMRs for the months of May to August 2022 during the period reviewed and presented in section 3.2 above. UV disinfection capability has been added to the upgraded facility that went online in the fall of 2022 and appeared to have addressed these effluent violations at the facility.

3.4 Summary of Inspections:

Other than the construction completion inspection, the upgraded facility which went online in fall of 2022 has not been inspected for effluent compliance at this time.

4.0 Development of Effluent Limitations

Outfall No. <u>001</u>	Design Flow (MGD) <u>.21</u>
Latitude <u>40° 27' 50.41"</u>	Longitude <u>-76° 56' 11.89"</u>
Wastewater Description: <u>Sewage Effluent</u>	

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.

4.2 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: The facility upgrade installed UV for disinfection and TRC limitation is no longer applicable.

4.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34$$

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 NH₃-N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.4 Water Quality-Based Limitations

4.4.1 Receiving Stream

The receiving stream is the Susquehanna River. According to 25 PA § 93.9o, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List o and State Watershed 6-C. It has been assigned stream code 06685. According to the Department's Integrated Water Quality Monitoring and Assessment Report, the Susquehanna River, is impaired for fish consumption due to PCB.

4.4.2 Streamflow:

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 Q_{7-10} and drainage area at the gage is 2610 ft³/s and 24100mi² respectively. The resulting yields are as follows:

- $Q_{7-10} = (2610 \text{ ft}^3/\text{s}) / 24100 \text{ mi}^2 = 0.10 \text{ ft}^3/\text{s} / \text{mi}^2$
- $Q_{30-10} / Q_{7-10} = 1.17$
- $Q_{1-10} / Q_{7-10} = 0.95$

The drainage area at discharge calculated from streamStats = 19,700 mi²
The Q_{7-10} at discharge = 19,700 mi² x 0.10 ft³/s/mi² = 1.970 ft³/s.

For WQM modelling purposes, 25% of the flow will be used

$$Q_{7-10} \text{ model} = 1.970 \text{ ft}^3/\text{s} \times 0.25 = 492.5 \text{ ft}^3/\text{s}$$

4.4.3 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 | = 7.4 (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) |

4.4.4 CBOD₅

The attached results of the WQM 7.0 stream model (attachment B) indicates that, for the Halifax Area Water Authority's discharge of 0.21MGD, an average monthly limit (AML) of 25mg/l for CBOD₅ is required to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been consistently achieving below this limitation. Therefore, a limit of 25mg/l AML, 40mg/l average weekly limit (AWL) and 50 mg/l IMAX is recommended for this permit cycle. Mass limits are calculated as follows:

$$\text{Mass based AML (lb/day)} = 25 \text{ (mg/L)} \times 0.21(\text{mgd}) \times 8.34 = 44$$

$$\text{Mass based AWL (lb/day)} = 40(\text{mg/L}) \times 0.21(\text{mgd}) \times 8.34 = 70$$

4.4.5 NH₃-N

The attached results of the WQM 7.0 stream model (attachment B) also indicates that no limitation on NH₃ as a monthly average is necessary to protect the aquatic life from toxicity effects. However, ammonia monitoring required in the existing permit will continue to ensure treatment efficiency.

4.4.6 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.

4.4.7 Total Suspended Solids (TSS):

There is no water quality criteria for TSS. The existing limit of 30 mg/l AML based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) and an AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2) will remain in the permit. Mass limit are calculated as follows:

$$\text{Mass based AML (lb/day)} = 30 \text{ (mg/L)} \times 0.21 \text{ (mgd)} \times 8.34 = 53$$

$$\text{Mass based AWL (lb/day)} = 45 \text{ (mg/L)} \times 0.21 \text{ (mgd)} \times 8.34 = 79$$

4.4.8 Total Residual Chlorine

The discharge does not have the reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee no longer utilizes chlorine for disinfection. Therefore, total residual chlorine limit is not necessary. The permittee may use chlorine-based chemicals for cleaning and is required to optimize chlorine usage to prevent negative impacts on receiving stream. UV is used for disinfection. Daily UV intensity monitoring is required in the permit to ensure efficiency of the UV unit.

4.4.9 Toxics

A reasonable potential (RP) analysis was done for pollutants sampled in support of the permit renewal application. All pollutants that were presented in the application sampling data were entered into DEP's Toxics Management Spreadsheet (TMS) to calculate WQBELs. The results of the TMS are presented in attachment C. The results of the TMS indicate discharge levels for all pollutants are well below DEP's target quantitation limits and the calculated WQBELs, therefore, no monitoring or limitation was recommended.

The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

4.4.10 Fecal 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 – 0.05 MGD. Your discharge of 0.21MGD requires 1/quarter monitoring as included in the permit.

4.4.11 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay 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 DEP based on their delivered TN 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. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mgd) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would 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 renewals

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would 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 renewals. This facility is classified as a phase 4, and has been monitoring Total Phosphorus, Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen, and will continue to monitor and report the daily maximum concentration during the next permit cycle 1/month.

4.4.12 Influent BOD and TSS Monitoring

The permit include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.4.13 Stormwater

There is no stormwater outfall associated with this facility.

4.4.14 Industrial Users

Halifax Area Sewer and Water Sewer Authority's wastewater treatment plant does not receive wastewater from any significant industrial users.

4.4.15 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.21 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 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.

5.3 Class A Wild Trout Fisheries

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

5.4 303d Listed Streams

The discharge is located on a 303d listed stream segment. It is impaired for fish consumption by PCB. The source of the impairment is unknown. This discharge does not contribute to the impairment; therefore, no action is warranted at this time.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management and Restriction on receipt of hauled in waste under certain conditions.

5.6 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).

5.7 Effluent Monitoring Frequency

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 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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	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
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	44	70	XXX	25.0	40.0	50	1/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	53	79	XXX	30.0	45.0	60	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ultraviolet light intensity (mW/cm ²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite as N	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/month	Calculation

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

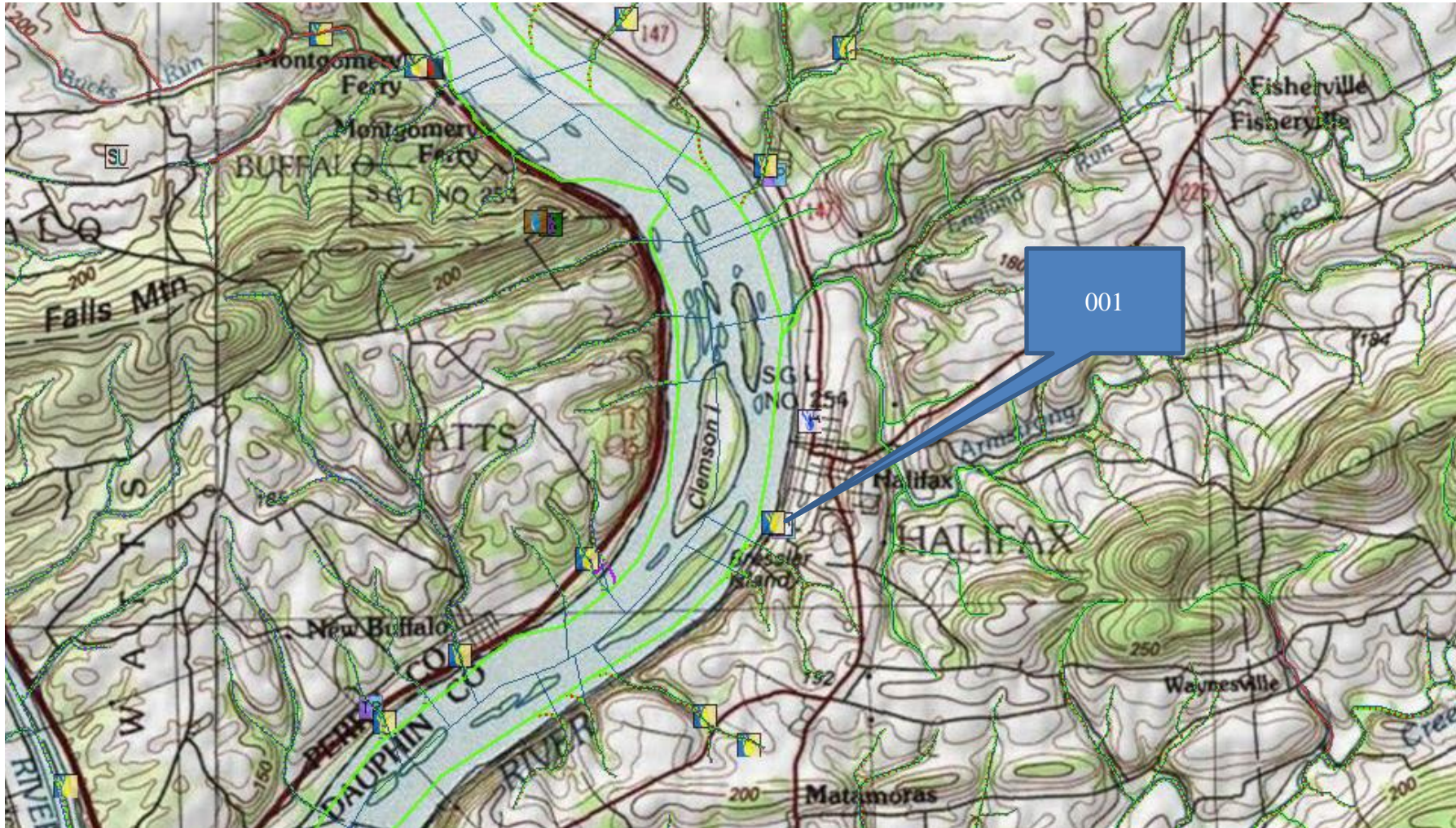
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/month	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/month	24-Hr Composite

Compliance Sampling Location: At Outfall 001

7.0 Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment B)
<input checked="" type="checkbox"/>	Toxics Management Spreadsheet (see Attachment C)
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<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, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 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, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
<input checked="" type="checkbox"/>	Design Stream Flows, 391-2000-023, 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, 391-2000-024, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 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 limitation for individual sewage permit.
<input checked="" type="checkbox"/>	Other: WIP 3 and Supplement

8. Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
07K		6685		SUSQUEHANNA RIVER			
<u>RMI</u>	<u>Name</u>	<u>Permit Number</u>	<u>Disc Flow (mgd)</u>	<u>Parameter</u>	<u>Efl. Limit 30-day Ave. (mg/L)</u>	<u>Efl. Limit Maximum (mg/L)</u>	<u>Efl. Limit Minimum (mg/L)</u>
92.300	Halifax AWSA	PA0024457	0.210	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

Permit No. PA0024457

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
07K	6685	SUSQUEHANNA RIVER	92.300	405.00	19700.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	492.50	0.000	0.000	0.0	0.00	0.00	23.50	8.20	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
Halifax AWSA	PA0024457	0.2100	0.2100	0.2100	0.000	25.00	7.40

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

Permit No. PA0024457

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
07K	6685	SUSQUEHANNA RIVER	90.090	385.00	19702.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	23.50	8.20	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
Liberty Travel	PA0080489	0.0150	0.0150	0.0150	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

Permit No. PA0024457

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
07K		6685				SUSQUEHANNA RIVER						
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												
92.300	492.50	0.00	492.50	.3249	0.00171	1.288	462.9	359.42	0.83	0.163	23.50	8.20
Q1-10 Flow												
92.300	467.88	0.00	467.88	.3249	0.00171	NA	NA	NA	0.80	0.168	23.50	8.20
Q30-10 Flow												
92.300	576.22	0.00	576.22	.3249	0.00171	NA	NA	NA	0.90	0.150	23.50	8.20

Permit No. PA0024457

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		

Permit No. PA0024457

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
07K	6685	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
92.300	Halifax AWSA	2	50	2	50	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
92.300	Halifax AWSA	.46	25	.46	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
92.30	Halifax AWSA	25	25	25	25	5	5	0	0

Permit No. PA0024457

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
07K	6685	SUSQUEHANNA RIVER		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>
92.300	0.210	23.501		8.198
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>
462.902	1.288	359.421		0.827
<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>
2.02	0.011	0.02		0.916
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>
8.241	7.181	Tsivoglou		5
<u>Reach Travel Time (days)</u>				
0.163				
Subreach Results				
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.016	2.01	0.02	7.74
	0.033	2.01	0.02	7.74
	0.049	2.01	0.02	7.74
	0.065	2.01	0.02	7.74
	0.082	2.01	0.02	7.74
	0.098	2.01	0.02	7.74
	0.114	2.01	0.01	7.74
	0.131	2.01	0.01	7.74
	0.147	2.01	0.01	7.74
	0.163	2.01	0.01	7.74

Permit No. PA0024457

C. Toxic Management Spreadsheet



Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions Discharge Stream

Facility: Halifax STP NPDES Permit No.: PA0024457 Outfall No.: 001
 Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Sewage effluent

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q ₇₋₁₀	Q _h
0.21	100	7.4						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank		1 if left blank		
			Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L	327								
	Chloride (PWS)	mg/L	96.6								
	Bromide	mg/L	< 2								
	Sulfate (PWS)	mg/L	22.3								
	Fluoride (PWS)	mg/L									
Group 2	Total Aluminum	µg/L									
	Total Antimony	µg/L									
	Total Arsenic	µg/L									
	Total Barium	µg/L									
	Total Beryllium	µg/L									
	Total Boron	µg/L									
	Total Cadmium	µg/L									
	Total Chromium (III)	µg/L									
	Hexavalent Chromium	µg/L									
	Total Cobalt	µg/L									
	Total Copper	µg/L	10.7								
	Free Cyanide	µg/L									
	Total Cyanide	µg/L									
	Dissolved Iron	µg/L									
	Total Iron	µg/L									
	Total Lead	µg/L	< 1								
	Total Manganese	µg/L									
	Total Mercury	µg/L									
	Total Nickel	µg/L									
	Total Phenols (Phenolics) (PWS)	µg/L									
	Total Selenium	µg/L									
Total Silver	µg/L										
Total Thallium	µg/L										
Total Zinc	µg/L	33.3									
Total Molybdenum	µg/L										
Acrolein	µg/L	<									
Acrylamide	µg/L	<									
Acrylonitrile	µg/L	<									
Benzene	µg/L	<									
Bromoform	µg/L	<									



Stream / Surface Water Information

Halifax STP, NPDES Permit No. PA0024457, Outfall 001

- Instructions
- Discharge
- Stream

Receiving Surface Water Name:

No. Reaches to Model: 1

- Statewide Criteria
- Great Lakes Criteria
- ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi ²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	006685	92.3	405	19700			Yes
End of Reach 1	006685	90.09	385	19702			Yes

Q₇₋₁₀

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	92.3	0.1	492.5									100	8.2		
End of Reach 1	90.09	0.1													

Q_h

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	92.3														
End of Reach 1	90.09														



Model Results

Halifax STP, NPDES Permit No. PA0024457, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Wasteload Allocations

AFC

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	13.439	14.0	1,195	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	6,967	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	10,224	Chem Translator of 0.978 applied

CFC

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	8.956	9.33	5,460	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	1,862	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	70,125	Chem Translator of 0.986 applied

THH

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	

Permit No. PA0024457

Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

CRL CCT (min): PMF: Analysis Hardness (mg/l): Analysis pH:

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month:

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

Other Pollutants without Limits or Monitoring