pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0111201**
Facility Type	**Municipal**	APS ID	**813980**
Major / Minor	**Minor**	Authorization ID	**1267615**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Carrolltown Borough Municipal Authority**	Facility Name	**Carrolltown Borough**
Applicant Address	PO Box 307	Facility Address	190 Mill Street Extension
	Carrolltown, PA 15722-0307		Carrolltown, PA 15722
Applicant Contact	Lonnie Batdorf	Facility Contact	Same as Applicant
Applicant Phone	(814) 344-6650	Facility Phone	Same as Applicant
Client ID	77904	Site ID	262099
Ch 94 Load Status	Not Overloaded	Municipality	East Carroll Township
Connection Status	No Limitations	County	Cambria
Date Application Received	April 2, 2019	EPA Waived?	Yes
Date Application Accepted	April 3, 2019	If No, Reason	

Purpose of Application: Application for renewal of a NPDES Permit for discharge of sewage effluent

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0111201. NPDES Permit No. PA0111201 was previously issued by the PA Department of Environmental Protection (DEP) on September 5, 2014 and expired on September 30, 2019. The application was submitted in a timely manner, so the permit was granted an administrative extension.

Sewage from this facility is treated by extended aeration, final clarification, and chlorination.

The applicant is currently enrolled in and will continue to use eDMR.

Sludge produced at this facility is disposed of Cambria Township Sewer Authority's Revloc STP.

The applicant has complied with Act 14 Notifications and no comments were received.

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*

Approve	Deny	Signatures	Date
X		Stephanie Conrad / Environmental Engineering Specialist	April 8, 2022
x		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	April 8, 2022

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.2
Latitude	40º 36' 34"	Longitude	-78º 42' 20"
Quad Name	Carrolltown	Quad Code	1416
Wastewater Description:	Sewage Effluent		
Receiving Waters	Trib 26884 to Little Chest Creek (CWF)	Stream Code	26884
NHD Com ID	61837689	RMI	3.27
Drainage Area	0.46	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.0222	Q_{7-10} Basis	0.04826
Elevation (ft)		Slope (ft/ft)	
Watershed No.	8-B	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining		
Cause(s) of Impairment	Siltation, Total Suspended Solids (TSS), Turbidity		
Source(s) of Impairment	Acid Mine Drainage		
TMDL Status	Final	Name	Chest Creek Watershed Sediment TMDL West Branch Susquehanna River

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

Nearest Downstream Public Water Supply Intake		Shawville Power Plant	
PWS Waters	Susquehanna	Flow at Intake (MGD)	1.953
PWS RMI		Distance from Outfall (mi)	73.7

Changes Since Last Permit Issuance: None

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Carrolltown Borough STP

WQM Permit No.	Issuance Date
566S019	May 23, 1966

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration	Gas Chlorine	0.2

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.2	417	Not Overloaded	Aerated Holding Tank	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History

Facility: Carrolltown Borough STP
NPDES Permit No.: PA0111201
Compliance Review Period: 10/2016 – 10/2021

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3155331	03/02/2021	Incident-Response to Accident or Event	PA Dept of Environmental Protection	No Violations Noted
3052142	05/04/2020	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted
2890725	03/13/2019	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted
2853208	03/13/2019	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted
2856397	02/08/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
2767972	08/28/2018	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted
2692017	02/08/2018	Chapter 94 Inspection	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE	INSP ID
888112	05/04/2020	92A.44	NPDES - Violation of effluent limits in Part A of permit	05/04/2020	3052142

Open Violations by Client ID:

No CW violations for client ID 77904

Enforcement Summary:

ENF ID	ENF TYPE	ENF TYPE DESC	ENF CREATION DATE	EXECUTED DATE	ENF FINALSTATUS	ENF CLOSED DATE
386735	FLNOV	Field Notice of Violation	07/07/2020	05/04/2020	Administrative Close Out	04/08/2021

DMR Violation Summary:

MONITORING START DATE	MONITORING END DATE	PARAMETER	SAMPLE VALUE	PERMIT VALUE	STATISTICAL BASE CODE
09/01/2020	09/30/2020	Fecal Coliform	1725	1000	Instantaneous Maximum
02/01/2020	02/29/2020	Total Suspended Solids	53	45	Weekly Average
02/01/2020	02/29/2020	Total Suspended Solids	137.5	75.0	Weekly Average
12/01/2019	12/31/2019	Ammonia-Nitrogen	7.2	5.0	Weekly Average
12/01/2019	12/31/2019	Total Suspended Solids	52	45	Weekly Average
08/01/2019	08/31/2019	Fecal Coliform	4106	1000	Instantaneous Maximum
09/01/2018	09/30/2018	Ammonia-Nitrogen	5.1	3.0	Weekly Average
09/01/2018	09/30/2018	Fecal Coliform	1145	1000	Instantaneous Maximum
09/01/2018	09/30/2018	Flow	0.212	0.20	Average Monthly
09/01/2018	09/30/2018	Ammonia-Nitrogen	6.5	5.0	Weekly Average
02/01/2018	02/28/2018	Fecal Coliform	24200	10000	Instantaneous Maximum
02/01/2018	02/28/2018	Flow	0.217	0.20	Average Monthly
04/01/2017	04/30/2017	Ammonia-Nitrogen	5.2	5.0	Weekly Average
11/01/2016	11/30/2016	Total Residual Chlorine (TRC)	0.080	0.076	Instantaneous Maximum

Compliance Status:

Permittee has had some DMR exceedances. Will monitor and issue CACP as necessary.

Completed by: John Murphy

Completed date: 10/8/2021

Compliance History

DMR Data for Outfall 001 (from August 1, 2020 to July 31, 2021)

Parameter	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20
Flow (MGD) Average Monthly	0.054	0.075	0.111	0.080	0.206	0.091	0.119	0.128	0.078	0.063	0.064	0.059
Flow (MGD) Daily Maximum	0.08	0.134	0.557	0.129	0.885	0.242	0.394	0.507	0.141	0.130	0.091	0.110
pH (S.U.) Minimum	6.72	6.51	6.66	6.60	6.57	6.71	6.60	6.66	6.71	6.67	6.57	6.66
pH (S.U.) Maximum	7.27	7.26	7.4	7.17	7.16	7.25	7.10	7.17	7.28	7.27	7.7	7.20
DO (mg/L) Minimum	6.32	6.06	6.06	6.25	6.17	6.25	6.95	6.47	6.74	6.03	6.14	6.07
TRC (mg/L) Average Monthly	0.001	0.010	0.001	0.010	0.001	0.001	0.010	0.010	0.010	0.010	0.001	0.010
TRC (mg/L) Instantaneous Maximum	0.050	0.020	0.040	0.060	0.040	0.050	0.050	0.040	0.020	0.030	0.020	0.040
CBOD5 (lbs/day) Average Monthly	2.9	3.8	7.6	2.8	19.0	< 4.5	7.6	6.4	4.2	< 2.8	3.4	< 2.7
CBOD5 (lbs/day) Weekly Average	3.9	4.9	13.8	3.3	41.7	6.6	12.4	8.1	6.2	5.0	4.9	3.3
CBOD5 (mg/L) Average Monthly	7	7	8	5	13	< 7	8	7	7	< 6	6	< 6
CBOD5 (mg/L) Weekly Average	8	9	9	5	19	9	11	9	7	9	7	7
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	63	87	145	107	< 178	130	< 114	162	90	97	89	71
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	84	138	261	170	341	146	135	198	112	190	103	89
BOD5 (mg/L) Raw Sewage Influent Average Monthly	163.9	150.3	156.1	191	< 141.1	195	< 139.2	183	148.3	207	154	157
TSS (lbs/day) Average Monthly	< 3.5	4.7	8.5	3.6	35.0	8.2	13.5	8.8	4.1	< 3.4	< 4.6	< 2.8

TSS (lbs/day) Raw Sewage Influent Average Monthly	42	46	72	54	78	74	84	100	50	76	78	55
TSS (lbs/day) Raw Sewage Influent Daily Maximum	57	66	159	113	93	92	100	147	116	162	102	72
TSS (lbs/day) Weekly Average	7.7	5.7	15.9	4.1	60.8	9.9	17.9	14.4	5.2	6.4	7.6	3.9
TSS (mg/L) Average Monthly	< 9	8	9	7	26	12	15	10	7	< 8	< 8	< 6
TSS (mg/L) Raw Sewage Influent Average Monthly	109	81	77	97	65	111	104	118	83	160	136	121
TSS (mg/L) Weekly Average	20	10	14	8	37	16	19	14	9	11	14	8
Fecal Coliform (CFU/100 ml) Geometric Mean	< 12	47	< 77	< 14	< 133	< 55	24	< 18	< 37	< 62	< 24	< 4
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	20	75	554	41	1935	2247	86	52	121	441	1725	10
Total Nitrogen (mg/L) Daily Maximum								30.5				
Ammonia (lbs/day) Average Monthly	< 0.3	< 0.5	< 0.7	< 0.5	< 1.1	< 0.5	< 0.7	< 0.7	< 0.5	< 0.4	< 0.5	< 0.4
Ammonia (lbs/day) Weekly Average	< 0.4	< 0.5	< 1.2	< 0.5	< 2.3	< 0.6	< 1.2	< 1.0	< 0.7	< 0.5	< 0.6	< 0.4
Ammonia (mg/L) Average Monthly	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Ammonia (mg/L) Weekly Average	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Phosphorus (mg/L) Daily Maximum								3.2				
Total Copper (lbs/day) Average Monthly	0.010	0.020	0.030	0.020	0.040	0.030	0.030	0.030	0.020	0.020	0.030	0.020
Total Copper (lbs/day) Weekly Average	0.020	0.020	0.050	0.020	0.060	0.040	0.040	0.050	0.040	0.030	0.040	0.020
Total Copper (mg/L) Average Monthly	0.03	0.04	0.04	0.04	0.03	0.05	0.04	0.04	0.04	0.04	0.05	0.04
Total Copper (mg/L) Weekly Average	0.04	0.04	0.05	0.040	0.03	0.057	0.05	0.05	0.05	0.05	0.052	0.04

Compliance History

Effluent Violations for Outfall 001, from: September 1, 2020 To: July 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Flow	03/31/21	Avg Mo	0.206	MGD	0.20	MGD
Fecal Coliform	09/30/20	IMAX	1725	CFU/100 ml	1000	CFU/100 ml

Summary of Inspections: The facility was last inspected by PADEP as a response to an incident on March 2, 2021. There were no violations.

Other Comments:

Permit No. PA0111201

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.2
Latitude 40º 36' 34.00" **Longitude** -78º 42' 20.00"
Wastewater Description: Sewage Effluent

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)

Water Quality-Based Limitations

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for Outfall 001 are re-evaluated even though there have been no changes to the STP.

The effluent was modeled using WQM 7.0 to evaluate the $CBOD_5$, Ammonia Nitrogen, and Dissolved Oxygen parameters. Modeling confirmed that technology based effluent limitations are appropriate for $CBOD_5$. The modeling also confirmed that Dissolved Oxygen and Ammonia-Nitrogen limits are necessary to meet in-stream water quality criterion. These limits are not changing from the last permit.

Total Residual Chlorine (TRC) was modeled with PADEP's TRC Spreadsheet, and it was determined that a stricter limit should be imposed. Based on eDMR data, the facility as operating should be able to meet the new, more restrictive TRC limit.

Parameter	Limit (mg/l)	SBC	Model
Total Residual Chlorine	0.019	Average Monthly	TRC Spreadsheet
Dissolved Oxygen	6.0	Instantaneous Minimum	WQM 7.0
Ammonia-Nitrogen (winter)	3.3	Average Monthly	WQM 7.0
Ammonia-Nitrogen (summer)	2.0	Average Monthly	WQM 7.0

A “Reasonable Potential Analysis” was conducted using PADEP’s Toxic Management Spreadsheet Version 1.3.

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (µg/l)	SBC	Model
Total Copper (µg/L)	9.9	Average Monthly	TMS Version 1.3

A WQBEL for total copper (mass and concentration) was previously imposed on this facility based upon output data from PENTOXSD Version 1.03. DMR data for total copper was reviewed and the Department’s TMS Model, Version 1.3 was used to develop an updated WQBEL (mass and concentration) for total copper based upon a design flow of 0.2 MGD. The output files are included in Attachment C. Based on eDMR data, the facility as currently operating is not able to meet the new limit.

In accordance with department policy, a pre-draft survey was sent to the authority on November 10, 2021. The authority returned a copy of the survey on December 13, 2022, and a copy of their response is included in Attachment E. The Authority stated copper is suspected to be coming from corrosion within the public drinking water system. The authority incorporates polyphosphate into their drinking water system to control corrosion. The new limits will require the authority to install additional treatment and the authority estimates that they can achieve the new limits in 2027. A compliance schedule of five years is therefore being implemented. The existing permit limits will expire one month prior to the permit expiration date.

Default stream parameter values were used for modeling the new Copper limits. Because of this, the permittee must collect the site-specific data and a special condition Part C. III. B. was added to the Permit. Additionally, because the facility is receiving a WQBEL for Copper and the source is suspected to be corrosion of drinking water lines, the permittee is required to complete a Toxics Reduction Evaluation (TRE) and a special condition Part B. III. C. was added to the Permit.

The Toxic Management Spreadsheet Version 1.3 modeling results recommends Monitoring for Total Zinc. This monitoring requirement was not part of the previous permit.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA’s anti-backsliding regulation 40 CFR 122.44 **(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

The facility is not seeking to revise the previously permitted effluent limits.

Additional Considerations

Sewage discharges will include monitoring, at a minimum, for E. coli, in new and reissued permits, with a monitoring frequency of 1/quarter for design flows >= 0.05 and < 1 MGD.

For pH, Dissolved Oxygen (DO) and TRC, a monitoring frequency 1/day has been imposed. In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required.

The receiving stream is not impaired for nutrients, therefore, annual sampling for nitrogen and phosphorus will be imposed per 25 PA Code §92a.61.

For POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring must be established in the permit and the monitoring should be consistent with the same frequency and sample type as used for other effluent parameters.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations. Please note that Monitoring Requirements were changed for Flow to 1/week Metered to be consistent with the guidance.

When the source of a toxic pollutant is unknown, or suspected, department policy stipulates that the facility conducts a Toxics Reduction Evaluation (TRE). Additionally, when the pollutant is copper or lead and the source is suspected to be corrosion of water lines, the facility is required to conduct a Corrosion Control Feasibility Study as part of the TRE. Part C.III, Water Quality-Based Effluent Limitations for Toxic Pollutants, and C.IV, Corrosion Control Feasibility Study, have been added to the permit.

Mass Loading

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading units be established for $CBOD_5$, TSS, and NH3-N. Average monthly mass loading limits (lbs./day) are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

Chest Creek Watershed Sediment TMDL West Branch

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (codified at Title 40 of the Code of Federal Regulations Part 130) require states to develop a TMDL for impaired water bodies. A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding water quality criteria for the pollutant. TMDLs also provide a scientific bases for states to establish water quality-based controls for reducing pollution from both point and non-point sources in order to restore and maintain the quality of the state's water resources (USEPA 1991a). Stream reaches within the Chest Creek Watershed are included in the state's 2008 Section 303(d) because of various impairments including siltation, Total Suspended Solids (TSS), and turbidity. A TMDL for this watershed was finalized in August 2011 to address siltation, TSS, and turbidity impairments associated with abandoned mine drainage discharge.

In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge.

The facility permit, PA0111201, was identified in the TMDL. The facility was assigned a WLA that was derived from the permit limit which existed at the time the TMDL was finalized. The WLA is based on a TSS concentration of 30 mg/L and a design flow of 0.2 MGD. The WLA for this facility was adjusted up to 18,275.6 lbs./yr. An instantaneous maximum limit of 60 mg/L was calculated by using a multiplier of two times the average monthly limit in accordance with the Department's Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Doc. No. 362-0400-001, Chapter 3, pp. 15 – 16). A weekly average limit of 45 mg/L was imposed to be consistent with 40 CFT 133.102(b)(2) and 25 PA Code §92a.47(a)(b).

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: Beginning of Sixtieth (60th) Month Following Permit Issuance through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (ug/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Copper (ug/L)	0.017	0.025 Daily Max	XXX	9.9	15.0 Daily Max	15	1/week	24-Hr Composite

Compliance Sampling Location:

Other Comments:

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 End of Fifty-Ninth (59th) Month Following Permit Issuance.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (µg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Copper	0.083	0.166 Wkly Avg	XXX	0.05	0.10 Wkly Avg	0.125	1/week	8-Hr Composite

Compliance Sampling Location:

Other Comments:

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	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	0.20	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.019	XXX	0.063	1/day	Grab
$CBOD_5$	41.7	62.5	XXX	25	38	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	50.0	75.0	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-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
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	5.5	8.3	XXX	3.3	5.0	6.6	1/week	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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	3.3	5.0	XXX	2.0	3.0	4.0	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Zinc (ug/L)	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite

Compliance Sampling Location:

Other Comments:

ATTACHMENT A

WQM 7.0 Modeling Results

Summer

Permit No. PA0111201

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
08B	26884	Trib 26884 to Little Chest Creek	3.270	2600.00	0.46	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	0.048	0.00	0.00	0.000	0.000	10.0	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
Carrolltown Bor	PA0111201	0.2000	0.0000	0.0000	0.000	20.00	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	6.00	9.01	0.00	0.00
NH3-N	2.00	0.00	0.00	0.70

Permit No. PA0111201

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
08B	26884	Trib 26884 to Little Chest Creek	0.001	1800.00	2.88	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	0.048	0.00	0.00	0.000	0.000	10.0	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0111201

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

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												
3.270	0.02	0.00	0.02	.3094	0.04635	.457	4.49	9.82	0.16	1.236	20.00	7.00
Q1-10 Flow												
3.270	0.01	0.00	0.01	.3094	0.04635	NA	NA	NA	0.16	1.253	20.00	7.00
Q30-10 Flow												
3.270	0.03	0.00	0.03	.3094	0.04635	NA	NA	NA	0.16	1.220	20.00	7.00

Permit No. PA0111201

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	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

Permit No. PA0111201

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

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
3.270	Carrolltown Bor	16.76	4	16.76	4	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
3.270	Carrolltown Bor	1.89	2	1.89	2	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)		
3.27	Carrolltown Bor	25	25	2	2	6	6	0	0

Permit No. PA0111201

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.270	0.200	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.488	0.457	9.815	0.162
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
23.46	1.476	1.87	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.202	27.217	Owens	6
Reach Travel Time (days)			
1.236			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.124	19.55	1.71	7.25
0.247	16.29	1.57	7.57
0.371	13.57	1.44	7.82
0.495	11.31	1.32	8.03
0.618	9.42	1.21	8.20
0.742	7.85	1.11	8.24
0.865	6.54	1.02	8.24
0.989	5.45	0.93	8.24
1.113	4.54	0.86	8.24
1.236	3.79	0.79	8.24

Permit No. PA0111201

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

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)
3.270	Carrolltown Bor	PA0111201	0.200	CBOD5	25		
				NH3-N	2	4	
				Dissolved Oxygen			6

Winter

Permit No. PA0111201

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
06B	26884	Trib 26884 to Little Chest Creek	3.270	2600.00	0.46	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	0.097	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
Carrolltown Bor	PA0111201	0.2000	0.0000	0.0000	0.000	15.00	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	6.00	12.51	0.00	0.00
NH3-N	3.30	0.00	0.00	0.70

Permit No. PA0111201

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
06B	26884	Trib 26884 to Little Chest Creek	0.001	1800.00	2.88	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	0.097	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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	0.00	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0111201

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

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												
3.270	0.04	0.00	0.04	.3094	0.04635	.463	4.56	9.87	0.17	1.192	13.75	7.00
Q1-10 Flow												
3.270	0.03	0.00	0.03	.3094	0.04635	NA	NA	NA	0.16	1.223	14.16	7.00
Q30-10 Flow												
3.270	0.06	0.00	0.06	.3094	0.04635	NA	NA	NA	0.17	1.163	13.37	7.00

Permit No. PA0111201

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	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

Permit No. PA0111201

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

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
3.270	Carrolltown Bor	24.1	6.6	24.1	6.6	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
3.270	Carrolltown Bor	2.89	3.3	2.89	3.3	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)		
3.27	Carrolltown Bor	25	25	3.3	3.3	6	6	0	0

Permit No. PA0111201

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.270	0.200	13.745	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.565	0.463	9.869	0.168
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
22.11	1.465	2.89	0.433
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.817	23.534	Owens	6
Reach Travel Time (days)			
1.192			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.119	19.40	2.74	8.61
0.238	17.02	2.60	8.89
0.358	14.93	2.47	9.06
0.477	13.09	2.35	9.21
0.596	11.49	2.23	9.33
0.715	10.08	2.12	9.33
0.835	8.84	2.01	9.33
0.954	7.75	1.91	9.33
1.073	6.80	1.81	9.33
1.192	5.97	1.72	9.33

Permit No. PA0111201

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08B	26884	Trib 26884 to Little Chest Creek

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
3.270	Carrolltown Bor	PA0111201	0.200	CBOD5	25		
				NH3-N	3.3	6.6	
				Dissolved Oxygen			6

ATTACHMENT B

TRC Modeling Results

Permit No. PA0111201

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0222	= Q stream (cfs)	0.5	= CV Daily
0.2	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.042	1.3.2.iii	WLA cfc =	0.033
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.016	5.1d	LTA_cfc =	0.019

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.019	AFC
		INST MAX LIMIT (mg/l) =	0.063	

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)

ATTACHMENT C

TMS Spreadsheet Output

Permit No. PA0111201

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Carrolltown Borough NPDES Permit No.: PA0111201 Outfall No.: 001

Evaluation Type: Wastewater Description:

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
0.2	100	7						

					0 if left blank		0.6 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		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		449									
	Chloride (PWS)	mg/L		114									
	Bromide	mg/L		0.06									
	Sulfate (PWS)	mg/L		27.5									
	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		47									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	0.33									
	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		47									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Permit No. PA0111201

Group 3	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										

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	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Carrolltown Borough, NPDES Permit No. PA0111201, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: UNT of Little Chest Creek

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	026884	3.27	2600	0.46			Yes
End of Reach 1	026884	0.01	1800	2.88			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	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	3.27	0.048										100	7		
End of Reach 1	0.01	0.048													

Q_h

Location	RMI	LFY (cfs/mi²)	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	3.27														
End of Reach 1	0.01														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Carrolltown Borough, NPDES Permit No. PA0111201, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | All | Inputs | Results | Limits

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 0.002 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	15.0	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	87.5	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	128	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 0.002 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

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	9.99	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	3.41	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	128	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 0.002 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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	

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): 0.061 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	0.017	0.025	9.99	15.0	15.0	µg/L	9.99	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	120	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Lead	N/A	N/A	Discharge Conc < TQL

ATTACHMENT D

USGS Stream Stats Output

Permit No. PA0111201

At Discharge Point

StreamStats Report

Region ID: PA
Workspace ID: PA20211001125026276000
Clicked Point (Latitude, Longitude): 40.60927, -78.70556
Time: 2021-10-01 08:50:45 -0400

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.46	square miles
ELEV	Mean Basin Elevation	2157	feet
PRECIP	Mean Annual Precipitation	43	inches

Permit No. PA0111201

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.46	square miles	2.33	1720
ELEV	Mean Basin Elevation	2157	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Disclaimers [Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0583	ft^3/s
30 Day 2 Year Low Flow	0.0855	ft^3/s
7 Day 10 Year Low Flow	0.0222	ft^3/s
30 Day 10 Year Low Flow	0.0312	ft^3/s
90 Day 10 Year Low Flow	0.0474	ft^3/s

Low-Flow Statistics Citations

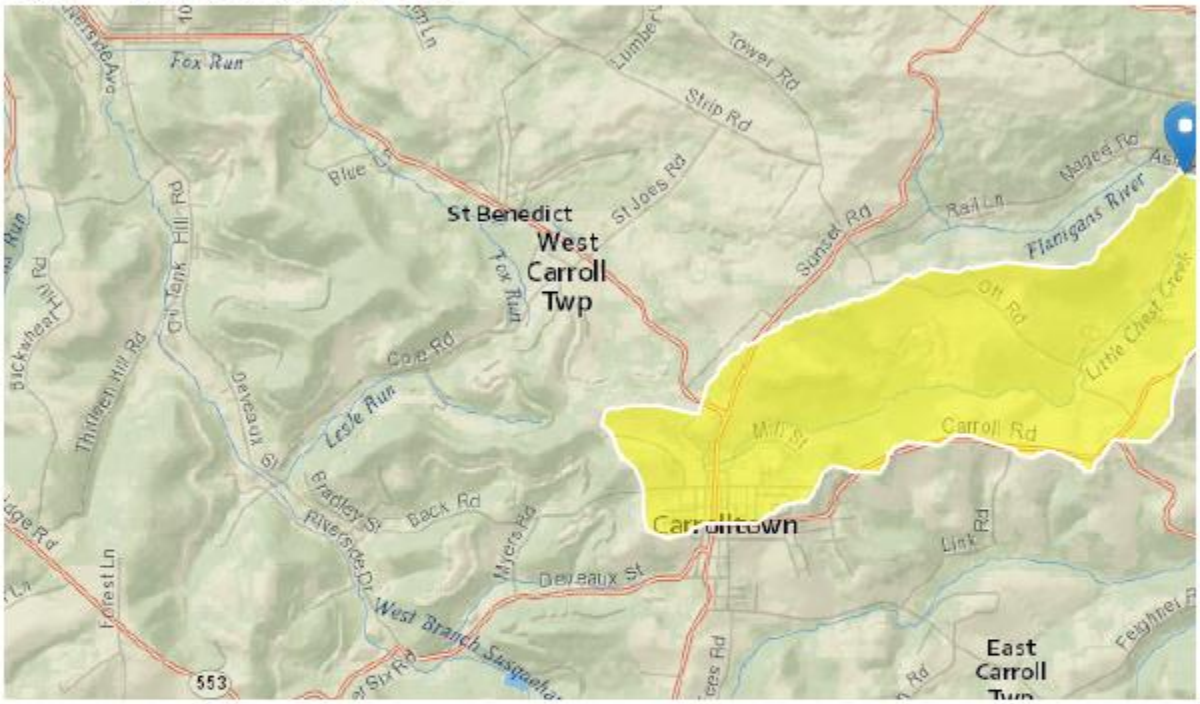
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Permit No. PA0111201

Downstream of Discharge

StreamStats Report

Region ID: PA
Workspace ID: PA20211001125946385000
Clicked Point (Latitude, Longitude): 40.62916, -78.66222
Time: 2021-10-01 09:00:05 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.88	square miles
ELEV	Mean Basin Elevation	2039	feet
PRECIP	Mean Annual Precipitation	43	inches

ATTACHMENT E

Carrolltown Borough Municipal Authority Pre-Draft Survey Response

Permit No. PA0111201

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Clean Water

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PRE-DRAFT PERMIT SURVEY FOR TOXIC POLLUTANTS

Permittee Name: **Carrolltown Borough Municipal Authority Cambria County** Permit No.: **PA0111201**

Pollutant(s) identified by DEP that may require WQBELs: **Copper**

Is the permittee aware of the source(s) of the pollutant(s)? ☐ Yes ☐ No ☒ Suspected

If Yes or Suspected, describe the known or suspected source(s) of pollutant(s) in the effluent.
The primary source of copper is suspected to be corrosion of piping (including institutional boilers) within the public drinking water system. 2019 Lead/Copper Testing resulted in a 90th percentile copper concentration of 0.413 mg/l. That level meets drinking water standards but is well in excess of the proposed WQBEL.

Has the permittee completed any studies in the past to control or treat the pollutant(s)? ☒ Yes ☐ No

If Yes, describe prior studies and results:
The Authority has incorporated polyphosphate treatment into the drinking water system to control corrosion. Occasional exceedances of the existing copper effluent limit still occur.

Does the permittee believe it can achieve the proposed WQBELs now? ☐ Yes ☒ No ☐ Uncertain

If No, describe the activities, upgrades or process changes that would be necessary to achieve the WQBELs, if known.
More stringent copper effluent limits will require the installation of tertiary treatment, likely in the form of adsorption or filtration units.

Estimated date by which the permittee could achieve the proposed WQBELs: **2027** ☐ Uncertain

Will the permittee conduct additional sampling for the pollutant(s) to supplement the application? ☐ Yes ☒ No

Check the appropriate box(es) below to indicate site-specific data that have been collected by the permittee in the past. If any of these data have not been submitted to DEP, please attach to this survey.

☒	Discharge pollutant concentration coefficient(s) of variability	Year(s) Studied: **2021 to date**
☐	Discharge and background Total Hardness concentrations (metals)	Year(s) Studied:
☐	Background / ambient pollutant concentrations	Year(s) Studied:
☐	Chemical translator(s) (metals)	Year(s) Studied:
☐	Slope and width of receiving waters	Year(s) Studied:
☐	Velocity of receiving waters at design conditions	Year(s) Studied:
☐	Acute and/or chronic partial mix factors (mixing at design conditions)	Year(s) Studied:
☐	Volatilization rates (highly volatile organics)	Year(s) Studied:
☒	Site-specific criteria (e.g., Water Effect Ratio or related study)	Year(s) Studied: **2008**

Please submit this survey to the DEP regional office that is reviewing the permit application within 30 days of receipt.