pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0022365**
Facility Type	**Municipal**	APS ID	**1076240**
Major / Minor	**Minor**	Authorization ID	**1418520**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Perryopolis Area Joint Authority**	Facility Name	**Perryopolis STP**
Applicant Address	312 Independence St	Facility Address	465 Layton Rd
	Perryopolis, PA 15473-0298		Perryopolis, PA 15473-0298
Applicant Contact	Robert Emricko	Facility Contact	Mark Krukowsky
Applicant Phone	(724) 736-2932	Facility Phone	(724) 736-8330
Client ID	64540	Site ID	260897
Ch 94 Load Status	Not Overloaded	Municipality	Perryopolis Borough
Connection Status	No Limitations	County	Fayette
Date Application Received	November 22, 2022	EPA Waived?	Yes
Date Application Accepted	November 28, 2022	If No, Reason	

Purpose of Application: Renewal of existing NPDES permit for the discharge of treated sewage.

Summary of Review

The applicant has applied for the renewal of NPDES Permit No. PA0022365, which was previously issued on April 5, 2018 and will expire on April 30, 2023.

Sewage from this plant is treated with a mechanical bar screen and extended aeration, which includes aeration tanks, integral clarifiers, aerated sludge holding tanks, blowers, and diffusers. The resulting effluent is disinfected via chlorine and discharges to the Youghiogheny River, which is located in State Watershed 19-D.

This facility does not have any industrial contributors.

The Act 14-PL 834 Municipal Notification was provided by the June 2, 2022 letters and no comments were received.

Below is a summary of changes made to this permit:

- All instances of 8-hour composite sampling have been changed to 24-hour composite sampling
- *E. Coli* monitoring has been imposed
- A typo in the outfall coordinates has been corrected for this permit cycle

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

Approve	Deny	Signatures	Date
X		Grace Polakoski	
		Grace Polakoski, E.I.T. / Environmental Engineering Specialist	December 15, 2022
X		Mahbuba Iasmin	
		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	March 22, 2023

Summary of Review

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.

Sludge use and disposal description and location(s): Westmoreland County Landfill (901 Tyrol Blvd, Belle Vernon, PA 15012)

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.75
Latitude	40º 5' 19.8"	Longitude	-79º 43' 45.55"
Quad Name	Dawson	Quad Code	1808
Wastewater Description:	Sewage Effluent		
Receiving Waters	Youghiogheny River (WWF)	Stream Code	37456
NHD Com ID	69916747	RMI	30.9
Drainage Area	1410	Yield (cfs/mi^2)	0.344
Q_{7-10} Flow (cfs)	484.6	Q_{7-10} Basis	US Army Corps of Engineers (Attachment A)
Elevation (ft)	790	Slope (ft/ft)	
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	**None**	Name	**None**

Background/Ambient Data		Data Source
pH (SU)	6.9 (MIN)/ 7.7 (MAX)	NPDES Renewal Application
Temperature (°F)	67	NPDES Renewal Application
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake		West County Municipal Authority – McKeesport	
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	29.5

Changes Since Last Permit Issuance: N/A

Other Comments: USGS StreamStats (Attachment B) was used to find the drainage area of the discharge point. Because the Youghiogheny River is controlled by a series of locks and dams, data from the US Army Corps of Engineers (Attachment A) was used for the Q_{7-10} flow.

Treatment Facility Summary

Treatment Facility Name: Perryopolis STP

WQM Permit No.	Issuance Date	Purpose
2693405	9/13/1996	Replacement of existing trunk sewer
8563-S-A1	6/23/1992	Expansion of the existing sewage treatment plant from 0.22 MGD to 0.75 MGD and the extension of the outfall
2685403	10/8/1985	Installation of communitor chamber and flow meter chamber at the STP
2680401	5/1/1980	Construction of a sewer extension (2,900-ft of 8-in pipe) to serve 17 existing homes
2673410	1/21/1974	Construction of a sewer extension and a new sewage lift station
8563-S	11/30/1954	Construction of sanitary sewers, a sewage lift station, and a new STP. The sanitary sewers consist of 45,000-ft of 8-in and 10-in pipe. The lift station consists of 2 sewage pumps rated at 200 gpm. The STP consists of an Imhoff tank, a trickling filter, settling tanks, a chlorine contact chamber, and sludge drying beds.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	0.75

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.75	1275	Not Overloaded	Dewatering	Landfill

Changes Since Last Permit Issuance: N/A

Other Comments: N/A

Compliance History

Facility: Perryopolis STP
NPDES Permit No.: PA0022365
Compliance Review Period: 12/1/2017-12/12/22
Inspection Summary:

INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
02/01/2022	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
01/27/2022	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
01/16/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE	VIOLATION COMMENT
02/01/2022	92A.44	NPDES - Violation of effluent limits in Part A of permit	07/19/2022	6/30/20 Fecal 2400 Limit 1000 Instantaneous Maximum 5/31/21 Fecal 2400 Limit 1000 Instantaneous Maximum
02/01/2022	252.4(A)	NPDES - Failure to utilize an accredited environmental laboratory for testing or analysis of environmental samples	07/19/2022	Make sure you register your onsite lab with the state.
02/01/2022	92A.41(A)10B	NPDES - Failure to utilize approved analytical methods	07/19/2022	Make sure lab meters are calibrated or checked against standards at a minimum quarterly and calibration log maintained.
02/01/2022	92A.41(A)10B	NPDES - Failure to utilize approved analytical methods	07/19/2022	Make sure pH buffers are current.

Open Violations by Client ID:
There are currently no open violations for Client ID 64540
Enforcement Summary:

ENF ID	ENF TYPE	EXECUTED DATE	PENALTY AMOUNT	ENF FINALSTATUS	ENF CLOSED DATE
410297	NOV	2/3/22		Comply/Closed	12/12/22

Effluent Violation Summary:

MON_PD_END	OUTFALL	PARAMETER	SAMPLE	PERMIT	UNIT	STAT_BASE_CODE
9/30/22	1	Fecal Coliform	2420	1000	No./100 ml	Instantaneous Maximum
9/30/22	1	Fecal Coliform	771	200	No./100 ml	Geometric Mean
5/31/21	1	Fecal Coliform	2400	1000	No./100 ml	Instantaneous Maximum
6/30/20	1	Fecal Coliform	2400	1000	No./100 ml	Instantaneous Maximum

Compliance Status: Facility is currently in compliance with no outstanding violations or pending enforcement.
Completed by: Amanda Schmidt
Completed date: 12/12/22

Compliance History

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	0.287	0.299	0.388	0.222	0.296	0.422	0.551	0.437	0.688	0.510	0.38	0.240
Flow (MGD) Daily Maximum	1.022	0.534	1.614	0.537	1.428	1.047	1.106	0.801	1.375	1.833	1.100	0.305
pH (S.U.) Minimum	6.8	6.1	6.1	6.3	6.6	7.1	7.2	7.2	7.4	7.4	7.3	7.3
pH (S.U.) Maximum	7.4	7.3	6.8	6.9	7.4	7.4	7.6	8.0	7.8	7.6	7.6	7.4
DO (mg/L) Minimum	5.0	4.7	4.8	4.6	5.2	6.6	7.1	6.1	4.2	4.2	4.3	4.2
TRC (mg/L) Average Monthly	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.4
TRC (mg/L) Instantaneous Maximum	0.7	0.6	0.7	0.6	0.6	0.6	0.5	0.4	0.6	0.4	0.6	0.5
CBOD5 (lbs/day) Average Monthly	9.5	12.7	12.9	7.4	10.9	21.1	19.3	14.8	26.4	21.7	17.4	8.2
CBOD5 (lbs/day) Weekly Average	9.5	16.2	12.9	7.4	11.6	40.5	22.0	16.02	35.5	22.9	31.7	18.0
CBOD5 (mg/L) Average Monthly	4.0	5.1	4.0	4.0	4.4	6.0	4.2	4.08	4.6	5.1	5.5	6.6
CBOD5 (mg/L) Weekly Average	4.0	6.5	4.0	4.0	4.7	11.5	4.8	4.4	6.2	5.4	10.0	9.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	306.5	254.5	291.4	357.5	482	507.1	606.9	389.5	597.1	400	532.7	328.4
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	392.7	347.0	469.4	446.4	590	728.9	882.8	495.04	964.5	710.7	862.5	412.5
BOD5 (mg/L) Raw Sewage Influent Average Monthly	128	102	90	193.0	195	144	132.0	107.0	104	94.0	168	164
TSS (lbs/day) Average Monthly	22.7	20.7	25.2	15.7	14.3	20.2	24.3	19.4	43.6	32.3	18.3	13.2

TSS (lbs/day) Raw Sewage Influent Average Monthly	301.7	179.6	242.8	222.3	256.9	226.0	377.0	237.7	344.4	323.4	206.1	399
TSS (lbs/day) Raw Sewage Influent Daily Maximum	493.3	284.9	388.5	370.5	318.6	387.3	643.7	422.2	390.4	706.4	266.3	467
TSS (lbs/day) Weekly Average	28.7	28.6	53.4	18.5	17.3	22.8	29.8	20.4	60.5	53.1	20.5	18.0
TSS (mg/L) Average Monthly	9.5	8.3	7.8	8.5	5.8	5.75	5.3	5.4	7.6	7.6	5.8	6.6
TSS (mg/L) Raw Sewage Influent Average Monthly	126	72	75.0	120.0	104.4	64.2	82	65.3	60.0	76.0	65	199
TSS (mg/L) Weekly Average	12.0	11.5	10.5	10.0	7.0	6.5	6.5	6.0	10.5	12.5	6.5	9.0
Fecal Coliform (No./100 ml) Geometric Mean	25	771	37.6	1.0	2.0	28.2	319.0	371.0	1530	867	632	23.2
Fecal Coliform (No./100 ml) Instantaneous Maximum	435	2420	940	1.0	4.0	96	2420	2420	2420	2420	2420	225
Total Nitrogen (mg/L) Daily Maximum											1.25	
Ammonia (lbs/day) Average Monthly	1.5	5.7	1.5	1.66	0.74	2.5	1.3	1.45	1.7	1.36	1.7	0.84
Ammonia (mg/L) Average Monthly	0.65	2.3	0.48	0.90	0.3	0.73	0.3	0.4	0.3	0.32	0.54	0.42
Ammonia (mg/L) Weekly Average	0.89	4.45	0.78	1.11	0.3	2.03	0.3	0.78	0.3	0.40	0.69	0.75
Total Phosphorus (mg/L) Daily Maximum											0.935	

Compliance History

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

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/22	Geo Mean	771	No./100 ml	200	No./100 ml
Fecal Coliform	09/30/22	IMAX	2420	No./100 ml	1000	No./100 ml

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.75
Latitude 40º 5' 19.80" **Longitude** -79º 43' 45.55"
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
Flow (MGD)	Report	Average Monthly	-	92a.27, 92a.61
	Report Max Daily	Average Weekly	-	92a.27, 92a.61
$CBOD_5$	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 (TSS)	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
Total Residual Chlorine (TRC)	0.5	Average Monthly	-	92a.48(b)(2)
Ammonia-Nitrogen (NH_3-N)	25	Average Monthly	-	92a.61
	50	IMAX	-	92a.61
Dissolved Oxygen (DO)	4.0	Instantaneous Minimum	-	93.6, 92a.61
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total N	Report	Average Monthly	-	92a.61
Total P	Report	Average Monthly	-	92a.61
Fecal Coliform (No./100mL) (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (No./100mL) (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
E. Coli (No./100mL)	Report	IMAX	-	92a.61

Water Quality-Based Limitations

WQM7.0

WQM7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("$CBOD_5$"), ammonia-nitrogen, and dissolved oxygen for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the dissolved oxygen module, the model simulates the mixing and consumption of dissolved oxygen in the stream due to the degradation of $CBOD_5$ and ammonia-nitrogen and compares calculated instream dissolved oxygen concentrations to dissolved oxygen water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia-nitrogen concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced dissolved oxygen levels also appear to increase ammonia toxicity and the maximum concentration of dissolved oxygen in water is lower at higher temperatures.

The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period.

The model inputs used to model the discharge from Perryopolis STP are shown below:

Stream Parameters			
Reach 1		**Reach 2**	
Stream Code	37456	Stream Code	37456
RMI	30.9	RMI	30.8
Elevation (ft)	790	Elevation (ft)	789
Drainage Area (mi^2)	1410	Drainage Area (mi^2)	1420
Q_{7-10} Flow (cfs)	484.576	Q_{7-10} Flow (cfs)	484.736

Facility/Design Parameters	
Discharge Flow (MGD)	0.75
LFY (cfs/mi^2) [for use in summer modeling]	0.0628
2*LFY (cfs/mi^2) [for use in winter modeling]	0.0623

Summer Modeling Inputs			
Tributary		**Discharge**	
Temperature (°C)	25	Temperature (°C)	20
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	8.24	DO (mg/L)	4
$CBOD_5$ (mg/L)	2	$CBOD_5$ (mg/L)	25
NH_3-N (mg/L)	0	NH_3-N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5
Winter Modeling Inputs			
Tributary		**Discharge**	
Temperature (°C)	5	Temperature (°C)	15
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	12.51	DO (mg/L)	4
$CBOD_5$ (mg/L)	2	$CBOD_5$ (mg/L)	25
NH_3-N (mg/L)	0	NH_3-N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5

The modeling results (output files can be found in Attachment C) show that technology based effluent limitations for these parameters are appropriate.

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4	Minimum	WQM7.0
$CBOD_5$	25	Average Monthly	WQM7.0
Ammonia Nitrogen	Report	Average Monthly	WQM7.0

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site-specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. TRC_CALC recommends the BAT limits of 0.5 mg/L average monthly and 1.6 mg/L IMAX (Attachment D).

Toxics Management Spreadsheet (TMS)

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The Department of Environmental Protection developed the Toxics Management Spreadsheet (TMS) to facilitate calculations necessary to complete a reasonable potential (RP) analysis and determine WQBELs for discharges of toxic and some nonconventional pollutants.

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports, or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP's TOXCONC.xls spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling.

The TMS evaluates each pollutant by computing a Wasteload Allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following RP thresholds:

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. Use the average monthly, maximum daily, and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

In most cases, pollutants with effluent concentrations that are not detectable at the level of DEP's Target Quantitation Limits are eliminated as candidates for WQBELs and water quality-based monitoring.

Per DEP SOP "Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers" (SOP No. BCW-PMT-037), the Toxics Management Spreadsheet (TMS) will be run for all pollutants for which sampling data is available. Per the NPDES Application instructions all sewage facilities with a design flow of greater than or equal to 0.1 MGD are required to provide effluent samples for: pH, TRC, fecal coliform, $CBOD_5$ or BOD_5, TSS, NH_3-N, Total N, Total P, dissolved oxygen (min), temperature, TKN, NO_2-N + NO_3-N, TDS, chloride, bromide, sulfate, oil and grease, and TMDL parameters. Even though Perryopolis STP does not have any industrial contributors, effluent concentrations for Total Copper, Total Lead, and Total Zinc were still reported.

The applicable effluent concentrations were entered into the TMS and RP was not established for any pollutants. No additional WQBELs will be imposed as a result of this analysis. The TMS Results can be found in Attachment E.

Best Professional Judgment (BPJ) Limitations

In accordance with the WQM7.0 modeling results, the standard in 25 PA Code Chapter 93, and best professional judgment, a Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented.

Mass Loading Limitations

Per Department SOP "Establishing Effluent Limitations for Individual Sewage Permits" (BCW-PMT-033), mass loading limits will be established for POTWs for $CBOD_5$, TSS, ammonia nitrogen. Average monthly mass loading limits will be established for $CBOD_5$, TSS, and ammonia nitrogen. Average weekly mass loading limits will be established for $CBOD_5$ and TSS. Mass loading limits will be calculated according to the formula below:

$$average\ annual\ design\ flow\ (MGD) \times concentration\ limit\ \left(\frac{mg}{L}\right) \times 8.34\ (converstion\ factor)$$
$$= mass\ loading\ limit\ (\frac{lbs}{day})$$

The following mass loading limitations were calculated:

Parameter	Average Monthly (lbs/day)	Average Weekly (lbs/day)
$CBOD_5$	155	235
TSS	185	280
Ammonia Nitrogen	**Report**	**----**

The above mass loading limitations are rounded according to DEP Rounding Guidelines and are thus slightly more stringent than those in the previous permit cycle.

Influent Monitoring

Per Department SOP "New and Reissuance Sewage Individual NPDES Permit Applications" (BCW-PMT-002), POTWs with design flows greater than 2,000 GPD, influent BOD_5 and TSS monitoring will be established in the permit. The influent monitoring will be established with the same frequency and sample type as the effluent sampling.

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 between 0.05 and 1 MGD.

The receiving stream is not impaired for nutrients, therefore, annual sampling for nitrogen and phosphorus will again be imposed per 25 PA Code §92.61b.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3 "Self-Monitoring Requirements for Sewage Dischargers" and Table 6-4 "Self-Monitoring Requirements for Industrial Dischargers", from the Departments Technical Guidance for the Development and Specification of Effluent Limitations.

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)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	155.0	235.0	XXX	25.0	38.0	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	185.0	280.0	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
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
Ammonia-Nitrogen	Report	XXX	XXX	Report	Report	XXX	1/week	24-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		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite

Compliance Sampling Location: 001

ATTACHMENT A:
US ARMY CORPS OF ENGINEERS $Q_{7\text{-}10}$ FLOWS OF MAJOR RIVERS

$Q_{7\text{-}10}$ Flows of Major Rivers

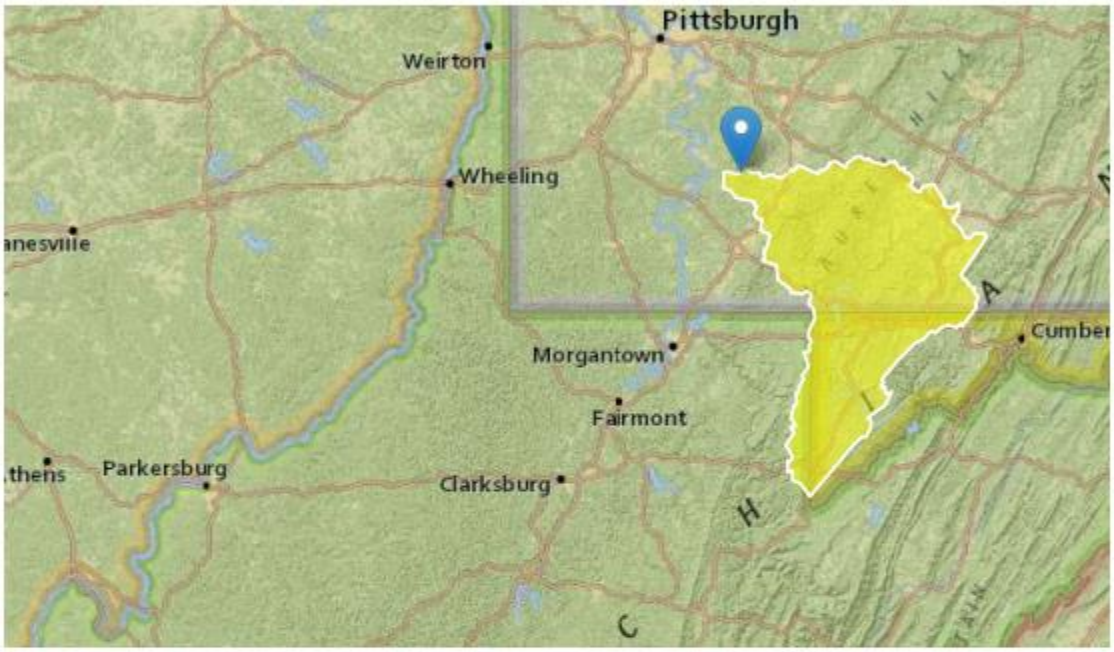
Nicolas Lazzaro, P.E.
U.S. Army Corp of Engineers
Pittsburgh District Water Management
December 1, 2017

UPPER OHIO BASIN LOW FLOWS		
Location		Q7, 10 Flow (cfs)
Allegheny River		
Franklin downstream of French Creek (RMI 123.96)		1,450
L&D 9 at Templeton (RMI 62.2; Upper Pool El. 822.2)		2,070
L&D 8 at Templeton (RMI 52.6; Upper Pool El. 800.2)		2,070
L&D 7 at Kittanning (RMI 45.7; Upper Pool El. 782.4)	Crooked Creek enters at RMI 40.11	2,070
L&D 6 at Freeport (RMI 36.3; Upper Pool El. 769.4)		2,070
L&D 5 at Freeport (RMI 30.4; Upper Pool El. 757.0)	Kiskiminetas R. enters at RMI 30.2	2,070
L&D 4 at Natrona (RMI 24.2; Upper Pool El. 745.4)		2,390
C.W. Bill Young L&D at New Kensington (RMI 14.5; Upper Pool El. 734.5)		2,390
L&D 2 at Pittsburgh (RMI 6.7, Pool El. 721.0)		2,390
Monongahela River		
Point Marion L&D (RMI 90.8; Upper Pool El. 797.0)	Cheat River enters at RMI 89.68 Dunkard Creek enters at RMI 87.18	420
Grays Landing L&D (RMI 82.0; Upper Pool El. 778.0)	Tenmile Creek enters at RMI 65.62	530
Maxwell L&D (RMI 61.2; Upper Pool El. 763.0)	Redstone Creek enters at RMI 54.90	530
L&D 4 at Charleroi (RMI 41.5; Upper Pool El. 743.5)		550
L&D 3 at Elizabeth (RMI 23.8; Upper Pool El. 726.9)		550
McKeesport downstream of the Youghiogheny River (RMI 15.53)		1,060
Braddock L&D (RMI 11.2; Upper Pool El. 718.7)		1,230
Youghiogheny River		
Youghiogheny Dam at Confluence (RMI 74.8)		390
Dam at Connellsville (RMI 46.27)		460
Sutersville downstream of Sewickley Creek (~RMI 15.0)		510
Beaver River		
Beaver Falls		640
Ohio River		
Emsworth L&D (RMI 974.8; Pool El. 710.0)	Q7,10 is halved for each side of Neville Island	4,730
Dashields L&D (RMI 967.7; Upper Pool El. 692.0)		4,730
Montgomery L&D (RMI 949.3; Upper Pool El. 682.0)		5,880
New Cumberland L&D (RMI 926.7; Upper Pool El. 664.5)		5,880
Pike Island L&D (RMI 896.8; Upper Pool El. 664.0)		5,880
Hannibal L&D (RMI 854.6; Upper Pool El. 623.0)		5,880

ATTACHMENT B:
USGS STREAMSTATS

StreamStats Report

Region ID: PA
Workspace ID: PA20221206140316407000
Clicked Point (Latitude, Longitude): 40.08928, -79.72920
Time: 2022-12-06 09:03:38 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1410	square miles
ELEV	Mean Basin Elevation	2201	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (1410 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1410	square miles	2.26	1400
ELEV	Mean Basin Elevation	2201	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (1410 square miles) Low Flow Region 4]

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

Low-Flow Statistics Flow Report [99.9 Percent (1410 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	180	ft^3/s
30 Day 2 Year Low Flow	257	ft^3/s
7 Day 10 Year Low Flow	88.5	ft^3/s
30 Day 10 Year Low Flow	116	ft^3/s
90 Day 10 Year Low Flow	191	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/)

ATTACHMENT C:
WQM7.0 MODELING RESULTS

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
19D	37456	YOUGHIOGHENY RIVER	**30.900**	790.00	1410.00	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	0.344	484.58	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
Perryopolis STP	PA0022365	0.0000	0.0000	0.7500	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	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19D	37456	YOUGHIOGHENY RIVER	**30.800**	789.00	1420.00	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	0.341	484.74	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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

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	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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												
30.900	484.58	0.00	484.58	1.1602	0.00189	1.135	349.46	307.86	1.22	0.005	24.99	7.00
Q1-10 Flow												
30.900	310.13	0.00	310.13	1.1602	0.00189	NA	NA	NA	0.95	0.006	24.98	7.00
Q30-10 Flow												
30.900	659.02	0.00	659.02	1.1602	0.00189	NA	NA	NA	1.45	0.004	24.99	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
30.900	0.750	24.988	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
349.456	1.135	307.859	1.225
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.05	0.043	0.06	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.230	12.176	Tsivoglou	5
Reach Travel Time (days)			
0.005			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.000	2.05	0.06	7.54
0.001	2.05	0.06	7.54
0.001	2.05	0.06	7.54
0.002	2.05	0.06	7.54
0.002	2.05	0.06	7.54
0.003	2.05	0.06	7.54
0.003	2.05	0.06	7.54
0.004	2.05	0.06	7.54
0.004	2.05	0.06	7.54
0.005	2.05	0.06	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY 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
30.900	Perryopolis STP	11.09	50	11.09	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
30.900	Perryopolis STP	1.37	25	1.37	25	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)		
30.90	Perryopolis STP	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37456	YOUGHIOGHENY RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
30.900	Perryopolis STP	PA0022365	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

ATTACHMENT D:
TRC_CALC RESULTS

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

484.576	= Qstream (cfs)	0.5	= CV Daily
0.75	= Qdischarge (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 = 133.249	1.3.2.ii	WLA cfc = 129.900
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 49.652	5.1d	LTA_cfc = 75.517

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**
LTAMULTafc	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 E:
TOXIC MANAGEMENT SPREADSHEET RESULTS

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Perryopolis STP** NPDES Permit No.: **PA022362** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **sewage**

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
0.75	100	7.3						

					0 if left blank		*0.5 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	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		488									
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	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		8.18									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	7									
	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		25									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Perryopolis STP, NPDES Permit No. PA022362, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Youghiogheny River**

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	037456	30.9	790	1410			Yes
End of Reach 1	037456	30.8	789	1420			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	30.9	0.344										100	7		
End of Reach 1	30.8	0.341													

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	30.9														
End of Reach 1	30.8														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Perryopolis STP, NPDES Permit No. PA022362, Outfall 001

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
30.9	485.04		485.04	1.16	0.002	1.135	349.618	308.015	1.225	0.005	3168.277
30.8	488.45		488.45								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
30.9	1653.33		1653.33	1.16	0.002	1.946	349.618	179.704	2.432	0.003	1416.673
30.8	1663.48		1663.48								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 7.183 PMF: 0.069 Analysis Hardness (mg/l): 100 Analysis pH: 7.01

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	
Total Copper	0	0		0	13.439	14.0	417	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	2,430	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	3,566	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.477 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	
Total Copper	0	0		0	8.956	9.33	1,868	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	637	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	23,998	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 720 PMF: 0.477 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	
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): 720 PMF: 0.713 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	
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

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***

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
Total Copper	267	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	637	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	2,286	µg/L	Discharge Conc ≤ 10% WQBEL