pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0218693**
Facility Type	**Municipal**	APS ID	**1068787**
Major / Minor	**Minor**	Authorization ID	**1405505**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Luzerne Township Sewer Authority Fayette County**	Facility Name	**Luzerne Township Sewer Authority WWTF**
Applicant Address	PO Box 241	Facility Address	783 Maxwell Avenue
	La Belle, PA 15450-0241		Labelle, PA 15450
Applicant Contact	John Terravecchia	Facility Contact	Michelle Plutch
Applicant Phone	(724) 785-4925	Facility Phone	(724) 785-4925
Client ID	206159	Site ID	263544
Ch 94 Load Status	Not Overloaded	Municipality	Luzerne Township
Connection Status	No Limitations	County	Fayette
Date Application Received	August 4, 2022	EPA Waived?	Yes
Date Application Accepted	August 5, 2022	If No, Reason	

Purpose of Application: Renewal of NPDES Permit to authorize a discharge of a treated sewage effluent.

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0218693. NPDES Permit No. PA0218693 was previously issued by the PA Department of Environmental Protection (DEP) on October 30, 2017.

The permit expires on October 31, 2022. The application was received on August 4, 2022 therefore it was considered late.

A WQM part II permit was issued on February 7, 2002 authorized to construct a treatment facility consist of: fine screen grit removal, a splitter box, 2 oxidation ditches run in parallel, a clarifier flow splitting box, 2 clarifiers, 2 telescopic valves, 2 submersible sludge pumps, an aerobic digester, a sludge thickener tank, a belt filter press, a polymer feed tank, and an ultraviolet disinfection system.

This is a separated system (no CSO), which treats raw sewer influent with no bypass or overflows within the collection system.

This facility is serving the Luzerne Township (59,500 GPD), and SCI-Fayette facility (360,500 GPD) per Act 537 Planning.

Per application and CH94 reports; no industrial or commercial users are served by this facility.

No hydraulic or organic overloads are projected to occur within the next five years per CH94 report for 2021.

Approve	Deny	Signatures	Date
X		Hazim Aldalli / Environmental Engineering Specialist	November 22, 2022
x		Mahbuba Iasmin / Mahbuba Iasmin, Ph.D. P.E. / Environmental Engineering Manager	November 30, 2022

Summary of Review

Operations compliance report mentioned that facility is in compliance with no open enforcement. The report shows inconsistent violations for Fecal Coliform, inspection reports reviewed did not identified this problem or any other violations. Recent eDMRs (2020-2022) for Fecal Coliform did not include limit exceedances.

Per application and CH94 reports, No changes/upgrades are implemented or proposed for the next five years; no Act 537 needed.

An appropriate evidence of the Act – 14 PL 834 Municipal Notification were provided by May 16, 2022 letters and no comments were received.

Sludge use and disposal description and location(s): Sludge is aerobically digested and dewatered using a belt filter press prior to ultimate disposal at a permitted landfill (Westmoreland County Landfill). Last year total sludge/biosolids production was 37.1 Dry Tons. This facility didn't receive any additional sludge from other sources.

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)	0.420
Latitude	40º 0' 37"	Longitude	-79º 58' 2"
Quad Name	California	Quad Code	40079A8
Wastewater Description:	Sewage Effluent		
Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99411964	RMI	62.26
Drainage Area	4960	Yield (cfs/mi^2)	0.107
Q_{7-10} Flow (cfs)	**530**	Q_{7-10} Basis	US Army Corp of Engineers-Monongahela River at Maxwell L&D
Elevation (ft)	763.0	Slope (ft/ft)	N/A*
Watershed No.	19-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Monongahela River TMDL

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

Nearest Downstream Public Water Supply Intake	PA-AMERICAN WATER-BROWNSVILLE		
PWS Waters	Monongahela River (WWF)	Flow at Intake (cfs)	1060
PWS RMI	57.6	Distance from Outfall (mi)	4.0

Changes Since Last Permit Issuance: DEP updated its WQM 7.0 criteria for Ammonia Nitrogen NH_3-N in 2019, limits and conditions of this permit need to be redeveloped to an adequate level to protect water quality.

Other Comments: * Hydraulic slope will depend on locks and dam operation.

Treatment Facility Summary

Treatment Facility Name: Luzerne Township Sewer Authority WWTF

WQM Permit No.	Issuance Date
2601404	February 7, 2002
2601404 A-1	August 13, 2009

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Oxidation Ditch	Ultraviolet	0.36

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.42	1050	Not Overloaded	Belt Filtration	Westmoreland County Landfill

Changes Since Last Permit Issuance: None.

Other Comments: No violations or enforcements are pending for this facility, last inspection report on August 13, 2018 was issued with no violations.

Operations Compliance Check Summary Report

Facility: Luzerne Twp Sew Auth WWTF

NPDES Permit No.: PA0218693

Compliance Review Period: 7/2017 – 7/2022

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC
2767978	08/13/2018	Compliance Evaluation	No Violations Noted

Violation Summary:
No violations noted

Open Violations by Client ID:
No open violations for Client ID 77835

Enforcement Summary:
No enforcements executed during review period

Effluent Violation Summary:

Mon Pd. End	OUTFALL	PARAMETER	SAMPLE	PERMIT	UNITS	STAT_BASE_CODE
2/28/2019	1	Fecal Coliform	> 12100	10000	No./100 ml	Instantaneous Maximum
7/31/2019	1	Fecal Coliform	2050	1000	No./100 ml	Instantaneous Maximum
10/31/2019	1	Fecal Coliform	> 12100	10000	No./100 ml	Instantaneous Maximum
6/30/2022	1	Fecal Coliform	1180	1000	No./100 ml	Instantaneous Maximum

Compliance Status: Facility is in general compliance at this time with no enforcements pending. It is anticipated that the effluent exceedances shown above will be addressed at the time of the next Compliance Evaluation Inspection.

Completed by: Amanda Schmidt
Completed date: 8/26/22

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.420
Latitude 40º 0' 37.00" **Longitude** -79º 58' 2.00"
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)
E. Coli (No./100 ml)	Report	IMAX	-	92a.61
D.O. (mg/L)	4.0	Min	-	BPJ
NH3-N (mg/L)	25	Average Monthly	-	BPJ
	50	IMAX		
Total N (mg/L)	Report	Average Monthly	-	92a.61
Total P (mg/L)	Report	Average Monthly	-	92a.61

Comments: A WQM 7.0 modelling was used to determine the newly imposed seasonal limits for Ammonia Nitrogen NH_3-N, also to redevelop $CBOD_5$ and DO limits.

The Total Suspended Solids, pH, and Fecal Coliform parameters are not evaluated using WQM 7.0. The bases for the proposed technology-based limitations are listed in the above table.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (Appendices A & B):

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$ (May1-Oct 31)	25	Average Monthly	WQM7.0
$CBOD_5$ (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
NH3-N (May1-Oct 31)	25	Average Monthly	WQM7.0
NH3-N (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
Dissolved Oxygen	4.0	Minimum	WQM7.0

Comments: DEP policy allows new parameters introduced into renewed permits, in which the application manager desires for the permittee to collect data to verify reasonable potential for the subsequent permit application review to select any reasonable monitoring frequency that is greater than or equal to once per year.

Best Professional Judgment (BPJ) Limitations

A minimum Dissolved Oxygen (DO) limit of 4.0 mg/L should be established based on Best Professional Judgment (BPJ) to ensure adequate operation and maintenance, which matches the WQBEL generated by DEP WQM 7.0.

The new water quality criteria for Ammonia-Nitrogen was incorporated within the DEP WQM 7.0; the model generated new year around limit of 25.0 mg/l which will be imposed for this renewal.

Checking on the eDMR, the plant has achieved effluent limits of NH_3-N lower than the new proposed limits. Therefore, no compliance schedule is necessary to meet the new Ammonia-Nitrogen limit. Weekly monitoring is recommended.

Nitrite and Nitrate will be assessed for the drinking water purposes at the nearest downstream water treatment station for PA-American Water-Brownsville on Monongahela River, where the large dilution available (ratio of 816:1) would disqualify consideration of the limits; no accumulation is foreseen to set a limit for nitrite or nitrate.

Total Dissolved Solids (TDS) and its Major Constituents

Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems.

Because of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data if the Bromide is greater than 1 mg/l (<0.1 mg/l as of 8/3/2022) and the TDS is greater than 1000 mg/l (237 mg/l as of 8/3/2022) or the TDS exceeds 20,000 lbs/day (237 mg/L * 0.42 MGD * 8.34 = 830.16 lbs/day).

Monitoring will not be required for Bromide, Chloride, and Sulfate.

TN and TP Monitoring

Per SOP (No. BCW-PMT-033: Establishing Effluent Limitations for Individual Sewage Permits):

- Nutrient monitoring is required, at a minimum, to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). Sewage discharges with design flows > 2,000 gpd require monitoring, at a minimum, for Total Nitrogen and Total Phosphorus in new and reissued permits.

The receiving stream is not impaired with nutrients. Annual monitoring is recommended.

E. Coli

Pursuant to 25 Pa. code § 92a.61(b) quarterly monitoring for *E. Coli* will be imposed at Outfall (001) to determine if *E. Coli* will be a pollutant of concern, which is consistent with DEP SOP No. BCW-PMT-033 revised on March 24, 2021.

Disinfection

Ultraviolet (UV) disinfection is used therefore Total Residual Chlorine (TRC) limits are not applicable. Routine monitoring of UV intensity will be at the same monitoring frequency that is used for TRC. Part C33 will be added to the permit document.

Monongahela River TMDL

This Total Maximum Daily Load (TMDL) applies to the main stem of the Monongahela River (Stream Code 37185) from the Point Marion Lock and Dam to the Grays Landing Lock and Dam.

Since the use of both PCB and chlordane has been banned in the United States, so there should be no new point sources to which controls can be applied, and there are no known current sources of PCB or chlordane to this Monongahela River segment; PCB and chlordane present in the system are believed to reside primarily in the sediment due to historical use.

The Luzerne WWTF is currently not recognized as a significant point source for these pollutants within the watershed; no monitoring or limits are required.

Mass Loadings

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for $CBOD_5$, TSS, and NH_3-N and average weekly mass loading limits be established for $CBOD_5$ and TSS.

Average monthly mass loading limits (lbs/day) are determined based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

Influent Monitoring

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 is used for other effluent parameters.

Monitoring Frequency Considerations

For pH, TRC, and Dissolved Oxygen (DO), a monitoring frequency of 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 permittee may remain in compliance with the permit by using a No Discharge Indicator (NODI) code on the “Daily Effluent Monitoring” supplemental form to identify the lack of a discharge on a particular day.

The daily monitoring frequencies and other frequencies justified above are consistent with current policy and Table 6-3 of DEP’s 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	XXX	9.0 Max	XXX	1/day	Grab
DO	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
CBOD5	85.0	130.0	XXX	25.0	37.5	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	105.0	155.0	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia-Nitrogen	Report	XXX	XXX	25.0	XXX	50.0	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
Ultraviolet light Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001.
Other Comments: None.

Appendix A – WQM 7.0 Modeling – Summer Conditions

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
19A	37185	MONONGAHELA RIVER	**62.260**	762.86	4960.00	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	0.107	0.00	530.00	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
Luzerne WWTF	PA0218693	0.4200	0.4200	0.4200	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
19A	37185	MONONGAHELA RIVER	**61.300**	762.23	4961.00	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	0.107	0.00	530.00	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
Luzerne WWTF		0.0000	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	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA 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												
62.260	530.00	0.00	530.00	.6497	0.00012	1.22	474.4	389.01	0.92	0.064	24.99	7.00
Q1-10 Flow												
62.260	339.20	0.00	339.20	.6497	0.00012	NA	NA	NA	0.71	0.082	24.99	7.00
Q30-10 Flow												
62.260	720.80	0.00	720.80	.6497	0.00012	NA	NA	NA	1.09	0.054	25.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
62.260	0.420	24.994	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
474.401	1.220	389.007	0.917
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.021	0.03	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.238	0.532	Tsivoglou	5
Reach Travel Time (days)			
0.064			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.03	0.03	7.54
0.013	2.03	0.03	7.54
0.019	2.03	0.03	7.54
0.026	2.03	0.03	7.54
0.032	2.03	0.03	7.54
0.038	2.03	0.03	7.54
0.045	2.03	0.03	7.54
0.051	2.03	0.03	7.54
0.058	2.03	0.03	7.54
0.064	2.02	0.03	7.54

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA 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
62.260	Luzerne WWTF	11.08	50	11.08	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
62.260	Luzerne WWTF	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)		
62.26	Luzerne WWTF	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA 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)
62.260	Luzerne WWTF	PA0218693	0.420	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Appendix B – WQM 7.0 Modeling – Winter Conditions

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
19A	37185	MONONGAHELA RIVER	**61.300**	762.23	4961.00	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	0.214	0.00	530.00	0.000	0.000	0.0	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
Luzerne WWTF		0.0000	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	4.00	12.51	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
19A	37185	MONONGAHELA RIVER	**62.260**	762.86	4960.00	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	0.214	0.00	530.00	0.000	0.000	0.0	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
Luzerne WWTF	PA0218693	0.4200	0.4200	0.4200	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	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA 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 (ºC)	Analysis pH
Q7-10 Flow												
62.260	530.00	0.00	530.00	.6497	0.00012	1.22	474.4	389.01	0.92	0.064	5.01	7.00
Q1-10 Flow												
62.260	339.20	0.00	339.20	.6497	0.00012	NA	NA	NA	0.71	0.082	5.02	7.00
Q30-10 Flow												
62.260	720.80	0.00	720.80	.6497	0.00012	NA	NA	NA	1.09	0.054	5.01	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
62.260	0.420	5.012	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
474.401	1.220	389.007	0.917
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.022	0.03	0.221
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.500	0.532	Tsivoglou	5
Reach Travel Time (days)			
0.064			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.03	0.03	11.45
0.013	2.03	0.03	11.45
0.019	2.03	0.03	11.45
0.026	2.03	0.03	11.45
0.032	2.03	0.03	11.45
0.038	2.03	0.03	11.45
0.045	2.03	0.03	11.45
0.051	2.03	0.03	11.45
0.058	2.03	0.03	11.45
0.064	2.03	0.03	11.45

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA 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
62.260	Luzerne WWTF	24.1	50	24.1	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
62.260	Luzerne WWTF	4.36	25	4.36	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)		
62.26	Luzerne WWTF	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

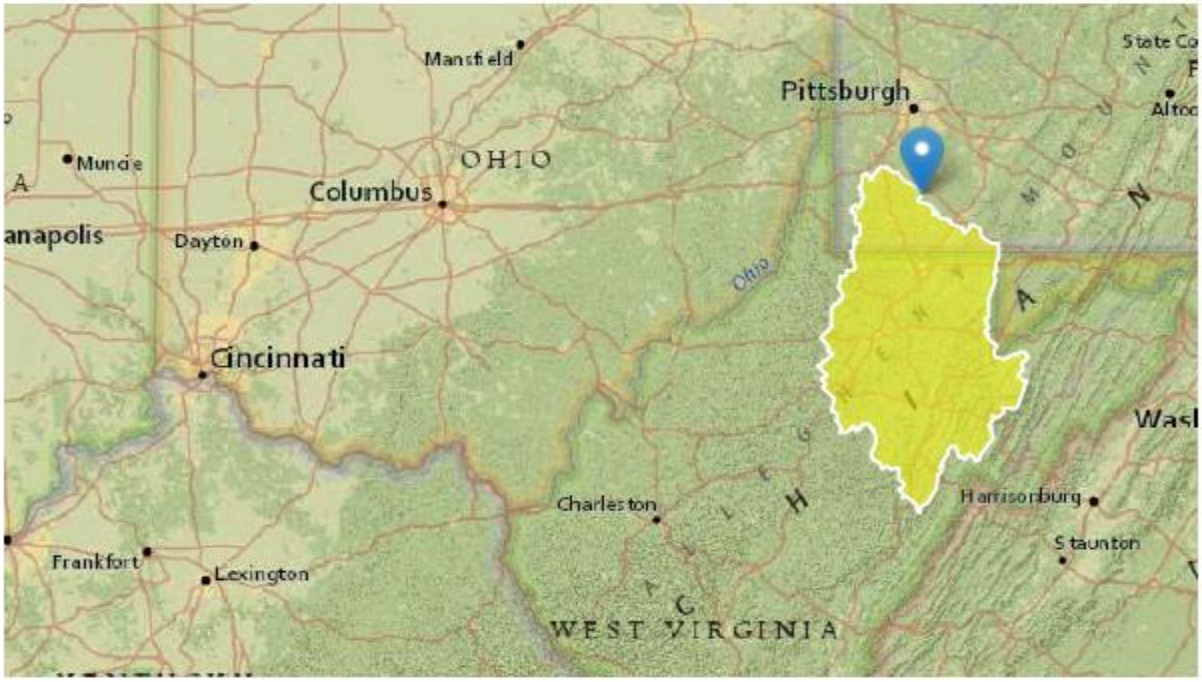
SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

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)
62.260	Luzerne WWTF	PA0218693	0.420	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Appendix C – StreamStats Report –

StreamStats Report

Region ID: PA
Workspace ID: PA20220808151821529000
Clicked Point (Latitude, Longitude): 40.00963, -79.96511
Time: 2022-08-08 11:18:47 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4960	square miles
ELEV	Mean Basin Elevation	1878	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (4960 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4960	square miles	2.26	1400
ELEV	Mean Basin Elevation	1878	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (4960 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 (4960 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	662	ft^3/s
30 Day 2 Year Low Flow	881	ft^3/s
7 Day 10 Year Low Flow	382	ft^3/s
30 Day 10 Year Low Flow	449	ft^3/s
90 Day 10 Year Low Flow	672	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/)

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Application Version: 4.10.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1