pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0217301**
Facility Type	**Municipal**	APS ID	**1100321**
Major / Minor	**Minor**	Authorization ID	**1460761**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Conemaugh Township Supervisors Somerset County**	Facility Name	**Jerome WWTP**
Applicant Address	1120 Tire Hill Road Johnstown, PA 15905-7707	Facility Address	869 Penn Avenue Hollsopple, PA 15905
Applicant Contact	Steve Buncich	Facility Contact	Dustin Ohler
Applicant Phone	(814) 288-1400	Facility Phone	814-535-5388
Client ID	90463	Site ID	523743
Ch 94 Load Status	Not Overloaded	Municipality	Conemaugh Township
Connection Status	No Restrictions	County	Somerset
Date Application Received	November 2, 2023	EPA Waived?	Yes
Date Application Accepted	November 6, 2023	If No, Reason	

Purpose of Application: NPDES Permit Renewal for Discharge of Treated Sewage Effluent.

Summary of Review

The Conemaugh Township Somerset County has applied for a renewal of NPDES Permit PA0217301, which was last issued on April 10, 2019 and it's going to expire on April 30, 2024. The renewal permit application was submitted to the Department on November 2nd, 2023 which was considered timely.

The wastewater treatment plant includes the following facilities: comminutor / bypass bar screen, two EQ tanks, three aeration chambers, a clarifier, a chlorine contact tank, two sludge aerobic digesters, and a dechlorination system.

The NPDES permit authorized a discharge of 0.17 MGD to Tributary 45373 to Quemahoning Creek (CWF). This stream is classified as CWF at the point of discharge.

Per the reviewed application and CH94 reports, the collection system is totally separated and 100% on gravity with no pumping stations. Also there are no industrial users connected to this system. The applicant stated that there are no updates/upgrades scheduled for the next five years.

Operations compliance report on November 29, 2023 concluded that the permittee is in compliance. Additionally, no violations were noted on the last inspection report dated November 26, 2019.

An appropriate evidence of the Act – 14 PL 834 Municipal Notification was provided by October 25, 2023 letters. No comments were received.

Approve	Deny	Signatures	Date
X		Hazim Aldalli Hazim Aldalli / Environmental Engineering Specialist	February 20, 2024
x		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	February 26, 2024

Summary of Review
Sludge use and disposal description and location(s): Off site (the condensed thickened sludge been treated within Tire Hill WWTP), as there is no sludge been applied or disposed on site. 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)	0.170
Latitude	40º 11' 42"	Longitude	-78º 56' 49"
Quad Name	Hooversville	Quad Code	40078B8
Wastewater Description:	Sewage Effluent		
Receiving Waters	Tributary 45373 to Quemahoning Creek (CWF)	Stream Code	45373
NHD Com ID	123719290	RMI	0.50
Drainage Area	2.81	Yield (cfs/mi^2)	0.0437
Q_{7-10} Flow (cfs)	0.123	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1586	Slope (ft/ft)	0.006
Watershed No.	18-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None.	Exceptions to Criteria	None.
Assessment Status	Impaired: Recreational; Attaining: Aquatic Life		
Cause(s) of Impairment	PATHOGENS		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL

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

Nearest Downstream Public Water Supply Intake	SALTSBURG MUNI WATERWORKS		
PWS Waters	Conemaugh River	Flow at Intake (cfs)	124.0
PWS RMI	0.58	Distance from Outfall (mi)	>10.0

Changes Since Last Permit Issuance:

- Q_{7-10} flow, elevation, drainage area, and low flow yield were all updated to match USGS Stream Stats new data (see Appendix A).
- 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.
- *E. Coli* monitoring requirements will be introduced to this renewal which is in compliance with DEP SOP No. BCW-PMT-033 revised February 5, 2024.

Other Comments: None.

Treatment Facility Summary				
Treatment Facility Name: Jerome WWTP				
WQM Permit No.	**Issuance Date**			
5696403	October 11, 1996			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary with Ammonia-Nitrogen Removal	Extended Aeration	Chlorination	0.0599
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.17	289.0	Not Overloaded	Aerobic Digestion	Off site

Changes Since Last Permit Issuance: None.

Compliance History

Operations Compliance Check Summary Report

Facility: Jerome WWTP
NPDES Permit No.: PA0217301
Compliance Review Period: 11/2018 – 11/2023
Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3466004	10/05/2022	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
2972576	11/26/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	RESOLVED DATE	INSP ID
977228	10/05/2022	92A.44	10/05/2022	3466004

Open Violations by Client ID:

No open violations for client ID 90463

Enforcement Summary:

ENF ID	ENF TYPE	EXECUTED DATE	PENALTY AMOUNT	ENF FINALSTATUS	ENF CLOSED DATE
370783	CACP	12/19/2018	$4,000.00	Comply/Closed	12/19/2018

DMR Violation Summary:

START	END	PARAMETER	SAMPLE	PERMIT	UNIT OF MEASURE	STATISTICAL BASE CODE
06/01/2023	06/30/2023	Fecal Coliform	3921.6	1000	No./100 ml	Instantaneous Maximum
07/01/2022	07/31/2022	Fecal Coliform	314	200	No./100 ml	Geometric Mean
07/01/2022	07/31/2022	Fecal Coliform	1095	1000	No./100 ml	Instantaneous Maximum
08/01/2021	08/31/2021	Fecal Coliform	1844.4	1000	No./100 ml	Instantaneous Maximum

Compliance Status:
Permittee in compliance. Ops will keep an eye on DMR exceedances
Completed by: John Murphy
Completed date: 11/29/2023

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.17
Latitude 40º 11' 42" **Longitude** -78º 56' 49"
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
NH_3-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: The existing discharge was evaluated using WQM 7.0 to develop $CBOD_5$, NH_3-N, and D.O. parameters.

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 (output files attached):

Parameter	Limit (mg/l)	SBC	Model
TRC	0.07	Average Monthly	DEP TRC Calculation
$CBOD_5$ (May1-Oct 31)	21	Average Monthly	WQM7.0
$CBOD_5$ (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
NH_3-N (May1-Oct 31)	3.14	Average Monthly	WQM7.0
NH_3-N (Nov 1- Apr 30)	6.12	Average Monthly	WQM7.0
Dissolved Oxygen	5.0	Minimum	WQM7.0

Best Professional Judgment (BPJ) Limitations

Comments: A minimum Dissolved Oxygen (DO) limit of 5.0 mg/L should be established based on DEP water quality model WQM 7.0 Version 1.1 (Appendix C).

The model also generated a new warm period limits for $CBOD_5$ of 21 mg/L, which is more stringent than the current limit of 25.0 mg/L.

Per renewal application effluent sampling and eDMR values, the facility can meet the newly imposed $CBOD_5$ warm period limits as this plant has achieved lower than the new proposed limits. No compliance schedule is necessary. Weekly monitoring shall be required.

WQM 7.0 was used to determine the newly imposed seasonal limits for Ammonia Nitrogen NH_3-N. After applying DEP's regulation (Implementation Guidance of Section 93.7 Ammonia Criteria, 1997), the new limits will be as 3.1 mg/L for the warm period and 6.1 mg/L for the cold period, which are more stringent than the current permit limits.

Per renewal application effluent sampling and eDMR values, the facility can meet the newly imposed Ammonia limits as this plant has achieved lower than the new proposed limits. No compliance schedule is necessary. Weekly monitoring shall be required.

Anti-Backsliding

The previously imposed limits for pH Effluent Limitation of (6.0 Minimum, and 9.0 Maximum SIU), Fecal Coliform AML Geo Mean seasonal limits of (200 & 2000 CFU/100 ml), and TSS AML, Weekly Average, and Ins. Max of (30, 45, and 60 mg/L) will be all unchanged due to anti-backsliding as stated in 40 CFR Section 122.44(l).

Total Maximum Daily Load (TMDL) Considerations

This facility discharges to the Kiskiminetas-Conemaugh River Watersheds, this Watershed has a Final TMDL and is impaired by metals. The receiving stream Tributary 45373 to Quemahoning Creek (CWF), also falls under Kiskiminetas-Conemaugh River Watershed TMDL but it's impaired by pathogens. Abandoned mine drainage is the source for the TMDL impairment. This sanitary sewage discharge is not expected to contribute to the stream Metals impairment. No WLAs have been developed for this sewage discharge; monitoring requirements for Total Iron, Total Manganese, and Total Aluminum was imposed on this facility per the existing permit.
The contribution for Aluminum, Iron, and Manganese from a sewage plant of this nature is expected to be insignificant to the water quality criteria. The application's effluent sampling results for TMDL metals showed no in stream water quality criteria exceedance. Therefore, no limits are needed to be imposed and monitoring will continue through this renewal. The permittee will be asked again to show no violations to the water quality criteria for this TMDL through the renewal application effluent sampling.

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, and the TDS is greater than 1000 mg/L or the TDS exceeds 20,000 lbs/day. The maximum reported concentration for Bromide is <0.20 mg/L as listed in the renewal application dated 11/2/2023. The maximum reported concentration for TDS is 318 mg/L as listed in the renewal application dated 11/2/2023.

Therefore, monitoring is not required for TDS, Bromide, Chloride, and Sulfate.

TN and TP Monitoring

Nutrient monitoring is required 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. Quemahoning Creek segment within the facility is not impaired for nutrients. Per DEP-SOP No. BCW-PMT-033 revised February 5, 2024, 1/year monitoring for Total Nitrogen and Total Phosphorus will be applied at Outfall 001.

Disinfection

Total Residual Chlorine (TRC) limits are updated based on the DEP preset values entered in the Department Calculation Sheet (see Appendix B) for chlorine stream and discharge demands. Pursuant to State Regulation 92a.48(b)(1), a BAT limit of 0.07 mg/L and IMAX of 0.25 mg/L will be imposed. Per renewal application effluent sampling and eDMR values, the plant has achieved effluent limits of TRC lower than these limits; no compliance schedule is necessary to be given. The new stringent limits for TRC will help to reduce the Fecal Coliform exceedances which was noticed especially within the summertime (see Operations Compliance Report on page 5).

E. Coli

Pursuant to 25 Pa. code § 92a.61(b), quarterly monitoring for *E. Coli* will be imposed at Outfall 001 per DEP SOP No. BCW-PMT-033 revised February 5, 2024.

The pathogens pollution case indicated on page 3 will be taken care by the TBELs imposed for the Fecal Coliform, the monitoring requirements set for the *E.Coli*, the adjusted TRC limits, and the stringent newly developed WQBELs for $CBOD_5$ and Dissolved Oxygen. As an evidence of the NPDES water quality criteria effectiveness, this stream is attaining its aquatic life uses per PA eMAP(see page 3).

Mass Loadings

Mass loading limits are applicable for publicly owned treatment works (POTW). Current policy requires average monthly and average weekly mass loading limits be established for $CBOD_5$ and TSS.

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).

Influent Monitoring

Per DEP SOP No. BCW-PMT-033 revised February 5, 2024, 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, Dissolved Oxygen (DO) and Total Residual Chloride (TRC), a monitoring frequency of “1/day” has been imposed. The daily monitoring frequencies are consistent with current policy and Table 6-3 of DEP’s Technical Guidance for the Development and Specification of Effluent Limitations. Daily monitoring is required for these parameters to provide minimum assurance that the facility is being operated properly.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	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
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.07	XXX	0.25	1/day	Grab
CBOD5 Nov 1 - Apr 30	35.5	53.2	XXX	25.0	37.5	50	1/week	8-Hr Composite
CBOD5 May 1 - Oct 31	29.7	46.0	XXX	21.0	32.5	42	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	42.6	63.8	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
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
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	8.6	13.0	XXX	6.1	9.2	12.2	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	4.4	6.5	XXX	3.1	4.6	6.2	1/week	8-Hr Composite

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

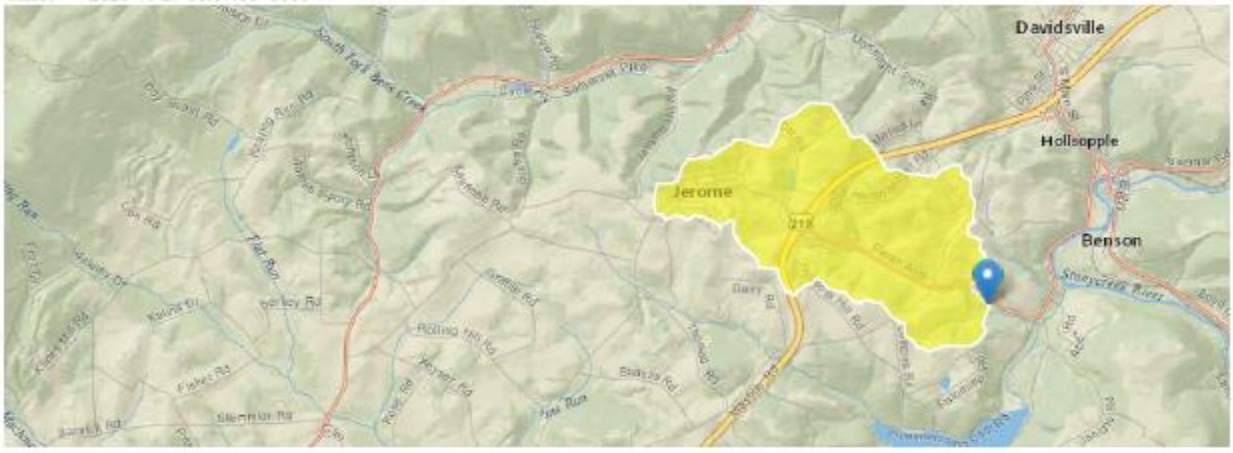
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
E. Coli (No./100ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Iron	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite
Total Manganese	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001.

Appendix -A- USGS Stream Stats

Jerome WWTP_StreamStats Report

Region ID: PA
Workspace ID: PA20231129135928050000
Clicked Point (Latitude, Longitude): 40.19486, -78.94698
Time: 2023-11-29 08:59:55 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.81	square miles
ELEV	Mean Basin Elevation	1819	feet
PRECIP	Mean Annual Precipitation	42	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.81	square miles	2.33	1720
ELEV	Mean Basin Elevation	1819	feet	898	2700
PRECIP	Mean Annual Precipitation	42	inches	38.7	47.9

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.307	ft^3/s	43	43
30 Day 2 Year Low Flow	0.44	ft^3/s	38	38
7 Day 10 Year Low Flow	0.123	ft^3/s	54	54
30 Day 10 Year Low Flow	0.173	ft^3/s	49	49
90 Day 10 Year Low Flow	0.26	ft^3/s	41	41

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/)

Application Version: 4.18.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Appendix -B- TRC Calculation

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.123	= Q stream (cfs)	0.5	= CV Daily
0.17	= 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 Discharg	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 = 0.168	1.3.2.iii	WLA cfc = 0.156
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.063	5.1d	LTA_cfc = 0.091

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.077	AFC
		INST MAX LIMIT (mg/l) = 0.252	

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)**

Appendix –C– 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
18E	45373	Trib 45373 to Quemahoning Creek	0.500	1586.00	2.81	0.00600	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	0.044	0.12	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
Jerome WWTP	PA0217301	0.1700	0.1700	0.1700	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	9.01	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
18E	45373	Trib 45373 to Quemahoning Creek	0.010	1535.00	99.60	0.00200	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	0.063	6.27	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
Jerome WWTP	PA0217301	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	9.01	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
18E	45373	Trib 45373 to Quemahoning 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												
0.500	0.12	0.00	0.12	.263	0.00600	.622	6.22	10	0.10	0.300	20.00	7.00
Q1-10 Flow												
0.500	0.08	0.00	0.08	.263	0.00600	NA	NA	NA	0.09	0.322	20.00	7.00
Q30-10 Flow												
0.500	0.17	0.00	0.17	.263	0.00600	NA	NA	NA	0.11	0.283	20.00	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	6		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.500	0.170	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
6.222	0.622	10.000	0.100
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.38	1.233	2.14	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.278	11.140	Owens	6
Reach Travel Time (days)			
0.300			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.030	14.82	2.09	6.21
0.060	14.28	2.05	6.20
0.090	13.76	2.01	6.21
0.120	13.26	1.96	6.25
0.150	12.78	1.92	6.31
0.180	12.31	1.88	6.37
0.210	11.87	1.84	6.44
0.240	11.43	1.81	6.52
0.270	11.02	1.77	6.59
0.300	10.62	1.73	6.67

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning 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
0.500	Jerome WWTP	9.67	12.57	9.67	12.57	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.500	Jerome WWTP	1.92	3.14	1.92	3.14	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)		
0.50	Jerome WWTP	21.63	21.63	3.14	3.14	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning 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)
0.500	Jerome WWTP	PA0217301	0.170	CBOD5	21.63		
				NH3-N	3.14	6.28	
				Dissolved Oxygen			5

Appendix –C– 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
18E	45373	Trib 45373 to Quemahoning Creek	**0.500**	1586.00	2.81	0.00600	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	0.087	0.12	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
Jerome WWTP	PA0217301	0.1700	0.1700	0.1700	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
18E	45373	Trib 45373 to Quemahoning Creek	**0.010**	1535.00	99.60	0.00200	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	0.126	6.27	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
Jerome WWTP	PA0217301	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning 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												
0.500	0.12	0.00	0.12	.263	0.00600	.622	6.22	10	0.10	0.300	11.81	7.00
Q1-10 Flow												
0.500	0.08	0.00	0.08	.263	0.00600	NA	NA	NA	0.09	0.322	12.70	7.00
Q30-10 Flow												
0.500	0.17	0.00	0.17	.263	0.00600	NA	NA	NA	0.11	0.283	11.11	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	6		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.500	0.170	11.813	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
6.222	0.622	10.000	0.100
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
17.67	1.437	4.17	0.373
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.712	9.174	Owens	6
Reach Travel Time (days)			
0.300			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.030	17.15	4.12	6.84
0.060	16.65	4.08	6.96
0.090	16.17	4.03	7.07
0.120	15.70	3.99	7.17
0.150	15.24	3.94	7.27
0.180	14.79	3.90	7.37
0.210	14.36	3.86	7.46
0.240	13.94	3.81	7.54
0.270	13.53	3.77	7.63
0.300	13.14	3.73	7.71

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning 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
0.500	Jerome WWTP	16.7	21.7	16.7	21.7	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.500	Jerome WWTP	3.74	6.12	3.74	6.12	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)		
0.50	Jerome WWTP	25	25	6.12	6.12	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
18E	45373	Trib 45373 to Quemahoning 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)
0.500	Jerome WWTP	PA0217301	0.170	CBOD5	25		
				NH3-N	6.12	12.24	
				Dissolved Oxygen			4