pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0094757**
Facility Type	**Non-Municipal**	APS ID	**806542**
Major / Minor	**Minor**	Authorization ID	**1304842**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**E.J. Holtz Sewer Inc.**	Facility Name	**Lake Cresson Manor STP**
Applicant Address	633 Logan Boulevard	Facility Address	Lake Front Drive North of Cresson Lake
	Altoona, PA 16602-4139		Loretto, PA 15940
Applicant Contact	Eric J. Holtz	Facility Contact	Same as applicant
Applicant Phone	(814) 946-4211	Facility Phone	Same as applicant
Client ID	145495	Site ID	248012
Ch 94 Load Status	Not Overloaded	Municipality	Allegheny Township
Connection Status		County	Cambria
Date Application Received	February 7, 2020	EPA Waived?	Yes
Date Application Accepted	February 11, 2020	If No, Reason	

Purpose of Application: Application for a renewal of an NPDES permit for discharge of treated sewage

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0094757. NPDES Permit No. PA0094757 was previously issued by the PA Department of Environmental Protection (DEP) on July 22, 2015 and expired on July 31, 2020. NPDES Permit No. PA0094757 was administratively extended.

The existing treatment process consists of flow equalization, extended aeration, and chlorine disinfection

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

The Act-14 PL 834 Municipal Notification was provided by the letters dated December 5, 2019. No comments were received.

Sludge use and disposal description and location(s): other WWTP

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*,

Approve	Deny	Signatures	Date
X		Grace Polakoski Grace Polakoski, E.I.T. / Environmental Engineering Specialist	December 29, 2021
x		Mahbuba Iasmin Mahbuba Iasmin, P.E., Ph.D. / Environmental Engineer Manager	January 24, 2022

Summary of Review
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)	0.025
Latitude	40º 29' 51"	Longitude	-78º 35' 56"
Quad Name	Cresson	Quad Code	40078D5
Wastewater Description:	Sewage Effluent		
Receiving Waters	Clearfield Creek (WWF)	Stream Code	26107
NHD Com ID	61839163	RMI	68.51
Drainage Area	8.08 sq. mi.	Yield (cfs/mi^2)	0.0762
Q_{7-10} Flow (cfs)	0.616	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1787	Slope (ft/ft)	
Watershed No.	8-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	METALS		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Clearfield Creek

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

Nearest Downstream Public Water Supply Intake	Amsbry Water Authority		
PWS Waters	Clearfield Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	4.07

Changes Since Last Permit Issuance:

Other Comments:

Clearfield Creek TMDL
A TMDL for the Clearfield Creek watershed was approved on April 7, 2007 for the control of acid mine drainage pollutants: pH, iron, aluminum, manganese, and metals. In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by the EPA pursuant to 40 CFR § 130.7. The Lake Cresson Manor STP was not assigned wasteload allocations for iron, aluminum, and manganese by the Clearfield Creek Watershed TMDL, therefore the Department will reimpose annual monitoring for aluminum, iron, and manganese.

Treatment Facility Summary

Treatment Facility Name: Lake Cresson Manor STP

WQM Permit No.	Issuance Date
1183407 A-3	03/25/2004
1183407 A-2	03/07/2003

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.025

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.025	50	Not Overloaded	N/A	Other WWTP

Changes Since Last Permit Issuance:

Other Comments:

Compliance History

Facility: Lake Cresson Manor STP
NPDES Permit No.: PA0094757
Compliance Review Period: 12/2016 – 12/2021

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
2856087	01/09/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
2823495	01/25/2018	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary: No violations

Open Violations by Client ID: No CW violations for client ID 145495

Enforcement Summary: No enforcements

DMR Violation Summary:

MONITORING END DATE	OUTFALL	PARAMETER	STATISTICAL BASE CODE	PERMIT VALUE	SAMPLE VALUE	UNIT OF MEASURE
12/31/2019	1	Total Residual Chlorine (TRC)	Average Monthly	0.5	0.53	mg/L
4/30/2020	1	Fecal Coliform	Instantaneous Maximum	10000	11199	CFU/100 ml
4/30/2020	1	Fecal Coliform	Geometric Mean	2000	4655	CFU/100 ml
7/31/2020	1	Fecal Coliform	Geometric Mean	200	1016	CFU/100 ml
7/31/2020	1	Fecal Coliform	Instantaneous Maximum	1000	19863	CFU/100 ml
9/30/2020	1	Dissolved Oxygen	Minimum	4	2.69	mg/L
5/31/2021	1	Fecal Coliform	Instantaneous Maximum	1000	2190	CFU/100 ml

Compliance Status: Permittee has some DMR exceedances. Ops will monitor and issue enforcement as necessary.

Completed by: John Murphy

Completed date: 12/23/2021

Compliance History

DMR Data for Outfall 001 (from November 1, 2020 to October 31, 2021)

Parameter	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20
Flow (MGD) Average Monthly	0.010	0.017	0.009	0.006	0.007	0.007	0.0064	0.007	0.0060	0.0061	0.0064	0.0063
pH (S.U.) Minimum	7.05	7.15	7.09	7.13	7.12	7.14	7.01	7.04	7.02	7.2	7.32	7.14
pH (S.U.) Maximum	7.60	7.67	8.35	7.62	7.57	7.63	7.56	7.57	7.51	7.7	7.72	7.82
DO (mg/L) Minimum	4.02	4.05	4.02	4.02	4.42	4.5	4.84	4.95	5.43	4.57	4.08	4.29
TRC (mg/L) Average Monthly	0.45	0.5	0.5	0.5	0.44	0.48	0.47	0.5	0.4	0.5	0.44	0.44
TRC (mg/L) Instantaneous Maximum	1.0	1.4	1.5	1.5	1.4	1.0	1.2	1.1	1.4	1.4	1.4	1.3
CBOD5 (mg/L) Average Monthly	0.250	0.42	0.24	0.165	0.187	0.2925	3	0.67	0.26	0.154	0.26	0.29
CBOD5 (mg/L) Instantaneous Maximum	0.250	0.42	0.24	0.165	0.187	0.41	3	1.17	0.36	0.157	0.36	0.43
TSS (mg/L) Average Monthly	0.266	0.59	0.45	0.30	0.35	0.29	1.54	0.57	0.47	0.39	0.35	0.12
TSS (mg/L) Instantaneous Maximum	0.166	0.73	0.52	0.39	0.5	0.49	2.75	0.63	0.50	0.48	0.36	0.14
Fecal Coliform (CFU/100 ml) Geometric Mean	2.02	< 1	7.64	2	5.47	129	9.42	139.1	678.8	414.5	4	4
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	4.1	< 1	58.4	4	7.5	2190	29.6	2419	1953.6	960.6	4	4
Total Nitrogen (mg/L) Daily Maximum											< 0.5	
Ammonia (mg/L) Average Monthly	0.008	0.33	< 0.1	0.005	< 0.1	0.44	0.355	0.41	0.16	< 0.1	< 0.1	< 0.1
Ammonia (mg/L) Instantaneous Maximum	0.008	0.52	< 0.1	0.005	< 0.1	0.55	0.42	0.45	0.18	< 0.1	< 0.1	< 0.1

Total Phosphorus (mg/L) Daily Maximum											3.58	
Total Aluminum (mg/L) Daily Maximum											< 0.1	
Total Iron (mg/L) Daily Maximum											< 0.2	
Total Manganese (mg/L) Daily Maximum											0.437	

Compliance History

Effluent Violations for Outfall 001, from: December 1, 2020 To: October 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	05/31/21	IMAX	2190	CFU/100 ml	1000	CFU/100 ml

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.025
Latitude 40º 29' 51.00" **Longitude** -78º 35' 56.00"
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)

Comments:

The discharge was evaluated using WQM 7.0 to evaluate the $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen parameters. The modeling results show technology based effluent limitations for $CBOD_5$ are appropriate.

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for ammonia-nitrogen for Outfall 001 are re-evaluated even though there have been no changes to the STP. Modeling results recommended a limit of 25 mg/L for ammonia nitrogen. However, due to EPA's antibacksliding regulation (40 CFR § 122.44), effluent limits in reissued permits must be at least as stringent as the final effluent limits in the previous permit. Therefore, the ammonia nitrogen limit will stay at 20 mg/L. Since the model showed that an average monthly warm period limit of 25 mg/L ammonia nitrogen was acceptable, a year-round monitoring requirement for ammonia-nitrogen, at a minimum, will be established.

The discharge was evaluated using the Total Residual Chlorine (TRC) spreadsheet. The modeling results confirm that a total residual chlorine limit is necessary to meet the in-stream water quality criterion. The TRC spreadsheet recommended a limit of 0.5 mg/L, which complies with regulatory standards under §§92a.47(a)(8) and 92a.48(b).

Anti-Backsliding

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

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 **(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in**

the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

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

Best Professional Judgment (BPJ) Limitations

A Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented based on the standard in 25 PA Code Chapter 93 and best professional judgment.

Additional Considerations

Sewage discharges will include monitoring, at a minimum, for E. coli, in new and reissued permits, with a monitoring frequency of 1/year for design flows >= 0.002 and < 0.05 MGD.

According to Phase 1 of the Chesapeake Bay Watershed Implementation Plan (WIP), dischargers with a design annual average daily flow greater than 0.002 MGD and less than 0.2 MGD are classified as Phase 5 dischargers. Phase 5 dischargers will monitor and report Total N and Total P. This remains unchanged from the last permit cycle. If any WLAs are to be implemented for Phase 5 dischargers, they will not occur until after the implementation of Phases 1-4. The Phase 3 WIP was most recently published in August 2019.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations. Monitoring frequency for flow was adjusted from 2/month to 1/week according to Table 6-3.

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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.025	Report	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	20.0	XXX	40.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Iron	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

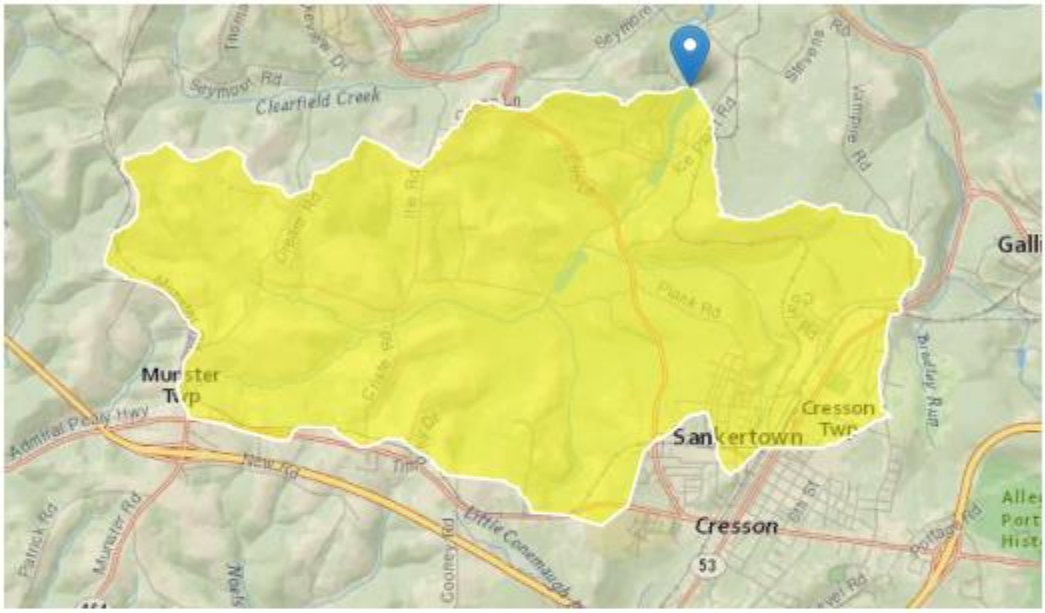
Compliance Sampling Location: Outfall 001

Other Comments:

APPENDIX A:
USGS StreamStats Report

StreamStats Report

Region ID: PA
Workspace ID: PA20211222150633643000
Clicked Point (Latitude, Longitude): 40.49737, -78.59696
Time: 2021-12-22 10:06:52 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	8.08	square miles
ELEV	Mean Basin Elevation	1942	feet
PRECIP	Mean Annual Precipitation	47	inches

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.08	square miles	2.33	1720
ELEV	Mean Basin Elevation	1942	feet	898	2700
PRECIP	Mean Annual Precipitation	47	inches	38.7	47.9

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

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.23	ft^3/s	43	43
30 Day 2 Year Low Flow	1.78	ft^3/s	38	38
7 Day 10 Year Low Flow	0.616	ft^3/s	54	54
30 Day 10 Year Low Flow	0.81	ft^3/s	49	49
90 Day 10 Year Low Flow	1.17	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: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

APPENDIX B:
WQM7.0 Modeling Results (Summer)

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
08C	26107	CLEARFIELD CREEK	**68.510**	1787.00	8.08	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	0.076	0.62	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
Lk Cresson STP	PA0094757	0.0000	0.0000	0.0250	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
08C	26107	CLEARFIELD CREEK	**68.410**	1776.00	8.53	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	0.071	0.60	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
08C	26107	CLEARFIELD 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												
68.510	0.62	0.00	0.62	.0387	0.02083	.493	11.27	22.84	0.12	0.052	24.70	7.00
Q1-10 Flow												
68.510	0.39	0.00	0.39	.0387	0.02083	NA	NA	NA	0.09	0.065	24.55	7.00
Q30-10 Flow												
68.510	0.84	0.00	0.84	.0387	0.02083	NA	NA	NA	0.14	0.044	24.78	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08C	26107	CLEARFIELD CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
68.510	0.025	24.705	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
11.265	0.493	22.838	0.118
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.36	0.642	1.48	1.005
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.992	21.400	Owens	5
Reach Travel Time (days)			
0.052			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.005	3.34	1.47	7.58
0.010	3.33	1.46	7.58
0.016	3.32	1.45	7.58
0.021	3.30	1.45	7.58
0.026	3.29	1.44	7.58
0.031	3.28	1.43	7.58
0.036	3.26	1.42	7.58
0.041	3.25	1.42	7.58
0.047	3.24	1.41	7.58
0.052	3.22	1.40	7.58

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
08C	26107	CLEARFIELD 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
68.510	Lk Cresson STP	11.49	50	11.49	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
68.510	Lk Cresson STP	1.39	25	1.39	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)		
68.51	Lk Cresson STP	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08C	26107	CLEARFIELD 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)
68.510	Lk Cresson STP	PA0094757	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

APPENDIX C:
TRC_CALC Results

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.616	= Q stream (cfs)	0.5	= CV Daily
0.025	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 5.100	1.3.2.iii	WLA cfc = 4.964
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.900	5.1d	LTA_cfc = 2.886

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)
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)