pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0023531**
Facility Type	**Municipal**	APS ID	**1010370**
Major / Minor	**Major**	Authorization ID	**1303644**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Danville Borough Municipal Authority Montour County**	Facility Name	**Danville Borough STP**
Applicant Address	PO Box 179 12 West Market Street	Facility Address	200 Northumberland Street
	Danville, PA 17821-0179		Danville, PA 17821-1511
Applicant Contact	Pete Rickert	Facility Contact	Jane Graham
Applicant Phone	(570) 275-3091	Facility Phone	(570) 275-2731
Client ID	162979	Site ID	458709
Ch 94 Load Status	Not Overloaded	Municipality	Danville Borough
Connection Status	No Limitations	County	Montour
Date Application Received	January 27, 2020	EPA Waived?	No
Date Application Accepted	February 7, 2020	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: Application for the renewal of the existing individual NPDES permit.

Summary of Review

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.

Approve	Deny	Signatures	Date
X		*Jonathan P. Peterman* Jonathan P. Peterman / Project Manager	December 16, 2020
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	December 17, 2020

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	3.62
Latitude	40° 57’ 43.92”	Longitude	76° 37’ 32.45”
Quad Name	Riverside	Quad Code	1132
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	133507330	RMI	136.6
Drainage Area	11,220	Yield (cfs/mi^2)	0.0998
Q_{7-10} Flow (cfs)	1,120	Q_{7-10} Basis	Gage No. 01540500
Elevation (ft)	438	Slope (ft/ft)	0.0007
Watershed No.	5-E	Chapter 93 Class.	WWF
Existing Use	WWF	Existing Use Qualifier	N/A
Exceptions to Use	None.	Exceptions to Criteria	N/A
Assessment Status	Impaired, See TMDL Impairment Section Below		
Cause(s) of Impairment	Metals, PCB, Mercury		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final, 03/12/1999	Name	Susquehanna River PCB
Nearest Downstream Public Water Supply Intake	Cherokee Pharmaceuticals, LLC.		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,125
PWS RMI	135.7	Distance from Outfall (mi)	0.9

Changes Since Last Permit Issuance: The updated Q_{7-10} data was obtained from the updated stream gage information obtained from *Stuckey, M.H., and Roland, M.A., 2011, Selected Streamflow Statistics for Streamgage Locations In and Near Pennsylvania*. This report indicates that the Q_{7-10} is 1,120. Given that the associated stream gage (01540500) is located approximately 0.5 river miles upstream of the discharge location, no comparative gage analysis is needed. The flows measured at the gage will be used directly and will be minimally conservative. Q_{7-10} calculations are attached in Appendix A.

Other Comments: None.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	3.62 (Between 001 & 002)
Latitude	40° 57’ 51.00”	Longitude	76° 37’ 28.00”
Quad Name	Danville	Quad Code	1133
Wastewater Description:	Supplemental Treated Sewage Effluent Outfall		
Receiving Waters	Mahoning Creek	Stream Code	27328
NHD Com ID	65641641	RMI	0.93
Drainage Area	39.52	Yield (cfs/mi^2)	0.06
Q_{7-10} Flow (cfs)	2.42	Q_{7-10} Basis	Gage No. 01539000
Elevation (ft)	460	Slope (ft/ft)	0.004
Watershed No.	5-E	Chapter 93 Class.	WWF
Existing Use	WWF	Existing Use Qualifier	N/A
Exceptions to Use	None.	Exceptions to Criteria	N/A
Assessment Status	Impaired, See TMDL Section Below.		
Cause(s) of Impairment	Organic enrichment, low dissolved oxygen, and sediment from agricultural and urban land use practices.		
Source(s) of Impairment	Agriculture.		
TMDL Status	Final	Name	Mahoning Creek TMDL Watershed
Nearest Downstream Public Water Supply Intake	Cherokee Pharmaceuticals, LLC.		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,125
PWS RMI	135.7	Distance from Outfall (mi)	1.6

Changes Since Last Permit Issuance: None.

Other Comments: This outfall is only utilized during extreme high flow conditions where the plant cannot discharge to the river via gravity. During these events, the effluent will be pumped to Mahoning Creek using the existing pump stations.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	N/A
Latitude	40° 57’ 51.00”	Longitude	76° 37’ 26.00”
Quad Name	Danville	Quad Code	1133
Wastewater Description:	Stormwater		
Receiving Waters	Mahoning Creek	Stream Code	27328
NHD Com ID	65641641	RMI	0.93
Drainage Area	39.52	Yield (cfs/mi^2)	0.06
Q_{7-10} Flow (cfs)	2.42	Q_{7-10} Basis	Gage No. 01539000
Elevation (ft)	460	Slope (ft/ft)	0.004
Watershed No.	5-E	Chapter 93 Class.	WWF
Existing Use	WWF	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	N/A
Assessment Status	Impaired, See TMDL Section Below.		
Cause(s) of Impairment	Organic enrichment, low dissolved oxygen, and sediment from agricultural and urban land use practices.		
Source(s) of Impairment	Agriculture.		
TMDL Status	Final	Name	Mahoning Creek TMDL Watershed
Nearest Downstream Public Water Supply Intake	Cherokee Pharmaceuticals, LLC.		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,125
PWS RMI	135.7	Distance from Outfall (mi)	1.6

Changes Since Last Permit Issuance: None.

Other Comments: None.

TMDL Impairment

Mahoning Creek Watershed TMDL

The pollutants that are the causes for the designated use impairments in the Mahoning Creek Watershed have been identified as organic enrichment, low dissolved oxygen, and sediment. The source of these pollutants is listed as agricultural. At present, there are no point source contributions within the segments addressed in this TMDL. Danville Municipal Authority was not considered in the WLA and therefore can’t contribute to the impairment. However, the facility only discharges to the Mahoning Creek in emergency (flood stage) situations. Only the stormwater is Outfall 003 is a regular discharger to the creek. Stormwater BMPs will be assigned to this outfall to ensure that the facility doesn’t further contribute to the impairment.

Susquehanna River PCB

The pollutants that are the causes for the designated use impairments in the Susquehanna River have been identified as organic Polychlorinated Biphenyls (PCBs).It is now illegal to manufacture, distribute, or use PCB in the United States. It is believed that the PCBs present in the Susquehanna River reside primarily in the sediment due to historic use. The main source of the PCBs was introduced into the environment while their use was unrestricted. However, occasional releases still occur. In addition, some permitted discharges and Superfund sites contribute PCB to surface water. It can be determined that a facility of this type with the associated industrial users, would not be a source for PCBs. In accordance with 40 CFR §122.44(d)(1)(ii)&(iii), it can be determined that the effluent from this facility has no “Reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant.” Therefore, the permit will not be required to contain effluent limits for PCB’s. The TMDL stipulates that natural attenuation may be the best implementation method because it involves less habitat disturbance/destruction than active removal of contaminated sediments.

Treatment Facility Summary

Treatment Facility Name: Danville Municipal Authority WWTP
Tributary Sewer System Information: The Danville Municipal Authority Wastewater Treatment Plant serves the Borough of Danville, Mahoning Township, Valley Township, and the Borough of Riverside. The Borough contributes 66% of the flow, Mahoning Township contributes 21% of the flow, Valley Township contributes 6% of the flow, and the Borough of Riverside contributes the remaining 7% of the flow. All sewer systems are 100% separated.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Contact Stabilization	Gas Chlorine	3.62

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
4.71	9,812	Not Overloaded	Anaerobic Digestion	Land Application

Treatment System Components (See Appendix E for Plant Process Flow Diagram):
- Two (2) Manual Bar Screens.
- One (1) Grit Chamber.
- One (1) Mechanical Bar Screen.
- One (1) Wet Well.
- One (1) Main Distribution Box.
- Three (3) Primary Clarifiers.
- Three (3) Bio Reactors (Contact Stabilization activated sludge process)
- One (1) Flash Mixing tanks.
- Three (3) Secondary Clarifiers.
- One (1) Hypochlorite Disinfection System.
- One (1) Chlorine contact tank.
- Two (2) Outfalls*
  - -Outfall 001 – Primary Discharge Location
  - -Outfall 002 – Emergency Outfall Location
-Two (2) Anaerobic Digesters
-One (1) Secondary Anaerobic Digester
-One (1) Belt Filter Press

*Outfall 003 is a Stormwater Outfall Location and not part of the treatment process.
Changes Since Last Permit Issuance: None.

Trucked-In Waste

The application indicates that the facility receives hauled-in waste from Valley Twp. WWTP. The annual average volume is approximately 4,000 gallons. A Part-C condition will be placed in the draft permit.

Anti-Backsliding

In accordance with 40 CFR 122.44(l)(1) and (2), this permit does not contain effluent limitations, standards, or conditions that are less stringent than the previous permit.

Industrial Users

Danville Municipal Authority receives wastewater from the following industrial users:

Industrial User	Wastewater Flows (GPD)					Significant Industrial User?	Pollutant Groups
	Process	NCCW	Sanitary	Other	Total		
Geisinger Medical Center	-	-	143,000	-	143,000	Yes*	1,2,3,4,5
Danville State Hospital	-	-	131,000	-	131,000	Yes*	1,2,3,4,5
TOTAL	-	-	274,000	-	274,000		

-Geisinger Medical Center is a medical hospital that only discharges sanitary sewage from patients and staff. No medical or laboratory wastewater is generated on-site. Laundry services are outsourced.

-Danville State Hospital is a medical hospital that only discharges sanitary sewage from patients and staff. Laundry services are outsourced.

* The applicant indicated on the application that both of these facilities are significant industrial users, but given that no industrial process water is discharged, neither user should be considered as a significant industrial user.

Chesapeake Bay Requirements

In order to address the TMDL, Pennsylvania developed a Chesapeake Watershed Implementation Plan (WIP) – Phase I. Since the publication of Pennsylvania's Phase I Chesapeake WIP in January 2011 and the Chesapeake Bay TMDL, several activities have occurred that necessitated the development of the Phase II WIP. Initially, a phased approach was utilized which imposed TN and TP cap loads in reissued permits for significant sewage dischargers. Accordingly, Galeton the renewed permit included these TN and TP cap loads. In accordance with the Wastewater Supplement to Phase II WIP, these cap loads will remain in the permit. Per the April 6, 2015 revisions to the Chesapeake Bay Watershed Implementation Plan (WIP), Phase II, the monitoring frequencies for the Nitrogen series and Total Phosphorus have been increased from 1/week to 2/week. Additionally, the Chesapeake Bay language at Part C I of the permit has been revised to reflect the revised WIP.

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy:

Outfall 001 & 002, Effective Period: Permit Effective Date through Permit Expiration Date

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report		Report		2/week	24-Hr Comp.
Kjeldahl---N	Report			Report		2/week	24-Hr Comp.
Nitrate-Nitrite as N	Report			Report		2/week	24-Hr Comp.
Total Nitrogen	Report	Report		Report		1/month	Calculation
Total Phosphorus	Report	Report		Report		2/week	24-Hr Comp.
Net Total Nitrogen	Report	66,118*				1/month	Calculation
Net Total Phosphorus	Report	8,816**				1/month	Calculation

*TN = 3.62 MGD x 6.0 mg/l x 8.34 x 365 days/yr = 66,118 lb/yr

**TP = 3.62 MGD x 0.8 mg/l x 8.34 x 365 days/yr = 8,816 lb/yr

Existing Effluent Limitations and Monitoring Requirements

Existing Limits – Outfalls 001 and 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	755	1,210 Wkly Avg	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	905	1,360 Wkly Avg	XXX	30	45	60	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/week	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	Report	2/week	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite

*The existing effluent limits for Outfall 001 were based on a design flow of 3.62 MGD.

Development of Effluent Limitations

Outfall No. 001 &002 **Design Flow (MGD)** 3.62
Latitude 40° 57' 44" **Longitude** 76° 37' 33"
Wastewater Description: Treated Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

To establish whether or not water-quality based effluent limitations (WQBELs) are required, the Department models in-stream conditions. In order to determine limitations for CBOD5, ammonia-N and dissolved oxygen, the Department utilizes the WQM 7.0 v1.0b model and in order to determine limitations for toxics, the Department utilizes the PENTOXSD v2.0d model.

WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen
The model was run using the Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. The existing water technology-based limits for $CBOD_5$ (25 mg/l) and NH3-N (25.0 mg/l) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (6.0 mg/L for WWF) was used for the in-stream objective for the model. The summary of the output is as follows:

Parameter	Effluent Limit		
	30 Day Average	Maximum	Minimum
CBOD5	25	N/A	N/A
Ammonia-N	25	50	N/A
Dissolved Oxygen	N/A	N/A	3

The previous model did not recommend more stringent water-quality based effluent limitations with regards to CBOD5, ammonia-nitrogen, and dissolved oxygen. Refer to Appendix B for the previous WQM 7.0 inputs and results.

PENTOXSD for Windows Version 2.0d
PENTOXSD V2.0d is a single discharge Wasteload Allocation (WLA) program for toxics that uses a mass-balance water quality analysis to determine recommended water quality-based effluent limits. The model incorporates consideration for mixing, first-order decay and other factors to computes a WLA for each applicable criterion. Finally, the model determines a maximum water quality-based effluent limitation (WQBEL) for each parameter and outputs the more stringent of the WQBEL or the input concentration. The output of which is the recommended average monthly and maximum daily effluent limitations.

In order to determine which parameters are required to be analyzed in the PENTOXSD model, a Toxics Screening Analysis is used to identify toxic pollutants of concern. In this particular case, sampling for pollutants was submitted with the

application. This is required by the application given the types of industrial users connected to the collection system. These values were input into the Toxics Screening Analysis v2.7 spreadsheet to determine if each pollutant was a candidate for PENTOXSD modeling (pollutant of concern). Refer to Appendix C for the Toxics Screening Analysis v2.7.

The Toxics Screening Analysis v2.7 determines pollutants of concern using the following logic:

- All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, that are greater than the most stringent applicable water quality criterion were considered to be pollutants of concern.
- Also, where the maximum reported value in an application for a pollutant is less than the detection limit using the most sensitive analytical method listed in Chapter 16, the parameter is not a parameter of concern, even if the maximum reported value exceeds the applicable Chapter 93 criterion.
- Where the maximum reported values in an application for a parameter is less than the detection limit for some analytical method other than the most sensitive analytical method listed in Chapter 16, the parameter is a pollutant of concern if the maximum reported value exceeds the Chapter 93 criterion, even if the value is reported as “non-detect.”

The PENTOXSD model was then run for all parameters of concern to evaluate reasonable potential (RP) for other toxic pollutants to cause an excursion above water quality standards. See Appendix D for the PENTOXSD model input/output. The most stringent WQBEL recommended by the model was then entered back into the same Toxics Screening Analysis v2.7 spreadsheet in order to determine which action to take regarding the pollutant. The permit recommendations of Monitor, Establish Limits, or to take no action (-) are established in the Toxics Screening Analysis v2.7 spreadsheet for each pollutant based upon the following logic:

- Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
- For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

A “Reasonable Potential Analysis” (See Appendix C) determined that the following parameters were candidates for monitoring or limitations shown below:

Parameter	Effluent Limit (µg/l)	Governing Criterion	Max Daily Limit (µg/l)	WQBEL (µg/l)	WQBEL Criterion	Permit Recommendation
Free Available Cyanide	22.2	INPUT	34.636	77.724	AFC	Monitor

Comments: See the Free Available Cyanide effluent limit section below.

Best Professional Judgment (BPJ) Limitations

See D.O. and Ammonia-Nitrogen section below.

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 the abovementioned 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) and/or BPJ.

Outfall 001 & 002, 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	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	755	1,210 Wkly Avg	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	905	1,360 Wkly Avg	XXX	30	45	60	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/week	Grab
Ammonia-Nitrogen (Nov – April)	Report	Report Wkly Avg	XXX	Report	Report	XXX	2/week	24-Hr Composite
Ammonia-Nitrogen (May-Oct)	755	1,210 Wkly Avg	XXX	25	40	50	2/week	24-Hr Composite
Free Available Cyanide	XXX	XXX	XXX	Report	XXX	XXX	1/Month	24-Hr Composite

The proposed effluent limits for Outfall 001 were based on a design flow of 3.62 MGD.

General Information

The associated mass-based limits (lbs/day) for all parameters were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). All effluent limits were then rounded down in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. The existing

monitoring frequencies and sample types for these parameters generally correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Flow
Reporting of the average monthly and daily maximum flow is consistent with monitoring requirements for other treatment plants of this size.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
The results of the WQM 7.0 model show that the previously applied secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ are protective of water quality and will remain.

Total Suspended Solids (TSS)
The previously applied technology based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will remain as well.

pH
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH. The existing limits will remain.

Fecal Coliforms
The existing fecal coliform limits with I-max limits were updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5) and will remain.

Ammonia-Nitrogen (NH3-N)
The results of the WQM 7.0 model show that the previously applied technology-based limits for Ammonia-Nitrogen are protective of water quality and will remain. The Implementation Guidance also states that the winter seasonal limits shall be 3.0 times the summer limits. However, effluent concentrations of NH3-N are not expected to exceed 25 mg/l which is considered a conventional influent level (*Table 7-3, Metcalf & Eddy).* Therefore, monitoring of NH3-N concentrations in the effluent will be remain as a minimum BPJ requirement for the winter months.

Influent BOD_5 and TSS
The Department requires the reporting of raw sewage influent monitoring for BOD_5 and TSS in all POTW permits. This provides the Department with the ability to monitor the percent removal of each parameter as stipulated in section 2 of the Part A conditions and maintain records of the BOD_5 loading as required by 25 Pa. Code Chapter 94. The monitoring frequencies and sample types are identical to the effluent sampling.

Dissolved Oxygen (DO)
Given results of the WQM 7.0 model, a discharge of effluent from this facility with a DO concentration of 3 mg/l would not result in an exceedance of water quality requirements for this stream. It is anticipated, based on similar technology, that the DO concentration in the effluent would be greater than 3.0 mg/l. Therefore, based on BPJ, only monitoring will be required for this facility.

Total Residual Chlorine (TRC)
A TRC model evaluation was conducted by using the technology-based effluent limitations recommended as input. (See Appendix F for the spreadsheet results.) In accordance with 25 Pa. Code § 92a.48(b)(2), a value of 0.5 mg/l (which was also the existing limit) was used in the evaluation given that the facility utilizes an hypochlorite disinfection system which has a relatively high degree of control. This effluent limit for TRC of 0.5 mg/l constitutes BAT. The attached TRC model indicates that the existing water technology based effluent limits of 0.5 mg/L (Average Monthly) and 1.6 mg/L (Instantaneous Maximum) will be protective of water quality.

Free Available Cyanide
Based on the Reasonable Potential Analysis, monitoring will be established for this pollutant. In order to obtain data regarding these pollutants for future decision-making, a monthly 24-hr composite sample is proposed.

All of the limits proposed above are consistent with other permits issued for major wastewater treatment plants in the region.

Compliance Sampling Location: Chlorine Contact Tank

Other Comments: None.

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☒ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☐ Other:

The dilution series used for the tests was: 100%, 60%, 30%, 3%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 3.

Summary of Four Most Recent Test Results

(NOTE – Enter results into one table, depending on which data analysis method was used).

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
7/13/16	100	100	--	100	100	--	Yes
7/24/17	100	100	--	100	100	--	Yes
6/19/18	100	100	--	100	100	--	Yes
7/16/19	100	100	--	100	100	--	Yes

***** *A "passing" result is that which is greater than or equal to the TIWC value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: None.

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **0.022** Chronic Partial Mix Factor (PMFc): **0.156**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(3.62 MGD x 1.547) / ((1120 cfs x 0.022) + (3.62 MGD x 1.547))] x 100 = **18.52%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

Type of Test for Permit Renewal: **Chronic Tests Required**

2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(3.62 MGD x 1.547) / ((1120 cfs x 0.156) + (3.62 MGD x 1.547))] x 100 = **3.10%**

3. Determine Dilution Series

Dilution Series = 100%, 60%, 30%, 3%, and 1%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

Part C of the permit will contain following requirements for this major sewage facility:

1. Part C Condition 114 "Whole Effluent Toxicity (WET)"

Stormwater Requirements

The industrial activities associated with Danville Municipal Authority's WWTP are identified in 40 CFR 122.26(b)(14)(ix) and thus the facility required to obtain an NPDES permit to discharge stormwater into waters of the Commonwealth of Pennsylvania. The facility is classified under SIC Code 4952- Sewerage Systems. Establishments primarily engaged in the collection and disposal of wastes conducted through a sewer system, including such treatment processes as may be provided. SIC code major group 4952 is under the coverage of Appendix J. For that reason, General Stormwater (PAG-03) Appendix J Monitoring Requirements and Best Management Practices (BMPs) have been assigned.

Part C of the permit will contain following requirements for this stormwater facility:

1. Applicable Discharges
2. Preparedness, Prevention and Contingency (PPC) Plan
3. Minimum Required BMPs
4. Annual Inspection and Compliance Evaluation
5. Stormwater Sampling Requirements

Compliance History

Summary of Inspections -The most recent Clean Water Program Compliance Evaluation for this facility was a Compliance Evaluation Inspection on 7/31/2020. The inspection reports indicated that the facility was operating normally.

WMS Query Summary - A WMS Query was run at *Reports - Violations & Enforcements – Open Violations for Client Report* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed no open violations.

eDMRs Summary - Upon review of the eDMR's, the facility has generally been in compliance with the existing effluent limits.

Compliance History

DMR Data for Outfall 001 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
Flow (MGD) Average Monthly	1.402	1.336	1.537	1.557	1.966	2.144	2.184	2.173	2.095	1.953	1.746	1.487
Flow (MGD) Daily Maximum	2.308	1.512	2.205	4.304	3.626	2.871	4.154	3.554	2.783	3.589	3.042	2.089
pH (S.U.) Minimum	6.9	7.0	7.0	6.8	6.8	6.8	6.8	6.8	6.9	6.7	6.9	6.9
pH (S.U.) Maximum	7.4	7.3	7.3	7.2	7.2	7.2	7.2	7.3	7.7	7.3	7.3	7.4
DO (mg/L) Minimum	5.8	5.9	5.9	6.0	6.8	6.2	6.3	6.2	6.2	5.8	6.1	5.5
TRC (mg/L) Average Monthly	0.23	0.20	0.16	0.23	0.29	0.24	0.35	0.28	0.29	0.26	0.27	0.29
TRC (mg/L) Instantaneous Maximum	0.4	0.71	0.76	0.65	0.66	0.47	0.61	0.55	0.5	0.63	0.46	0.78
CBOD5 (lbs/day) Average Monthly	52	47	40	51	65	82	53	60	71	59	53	41
CBOD5 (lbs/day) Weekly Average	86	58	41	59	93	104	64	71	92	85	85	47
CBOD5 (mg/L) Average Monthly	4.0	4.24	3.19	3.25	4.04	4.6	3.22	3.4	3.92	3.75	3.56	3.29
CBOD5 (mg/L) Weekly Average	4.87	5.34	4.67	3.69	5.64	5.73	3.83	4.11	5.97	5.44	5.81	3.83
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	1900	1709	1856	1817	1435	2460	3062	2630	1737	2771	2675	1933
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	4004	2123	3081	2533	2436	2961	4243	3949	2610	6334	5749	2668
BOD5 (mg/L) Raw Sewage Influent Average Monthly	151	155	147	116	90	139	188	151	96	180	178	157
TSS (lbs/day) Average Monthly	44	59	40	59	40	55	38	41	67	49	53	49

TSS (lbs/day) Raw Sewage Influent Average Monthly	1945	1763	2070	2366	1304	1789	1670	1672	1961	1933	1930	1408
TSS (lbs/day) Raw Sewage Influent Daily Maximum	3103	1995	2958	5128	2228	2615	2534	2257	2850	2677	2715	2355
TSS (lbs/day) Weekly Average	58	104	50	79	57	97	52	58	107	67	80	72
TSS (mg/L) Average Monthly	3.7	5.4	3.2	3.8	2.5	3.05	2.3	2.3	3.6	3.1	3.4	3.9
TSS (mg/L) Raw Sewage Influent Average Monthly	158	160	164	158	82	102	104	93	107	123	129	113
TSS (mg/L) Weekly Average	5.5	9.6	3.8	4.4	3.0	5.6	2.6	3.2	5.4	4.1	4.8	5.8
Fecal Coliform (CFU/100 ml) Geometric Mean	1.0	2	2	3	1	2	1.09	1.4	3.0	16	5	3
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2.0	6.3	6.1	46.4	4.1	6.3	2	9.6	12	2419	20.3	12
Nitrate-Nitrite (mg/L) Average Monthly	5.174	5.252	8.863	6.643	10.315	6.327	4.703	6.082	7.051	7.984	5.96	5.615
Nitrate-Nitrite (lbs) Total Monthly	1978.4	1794.1	3320.8	3298.5	4898	3473.6	2227.9	3333	4065.4	3797.4	2761.5	2110.1
Total Nitrogen (mg/L) Average Monthly	6.322	5.76	9.917	7.444	10.815	7.284	6.871	7.3	7.879	8.984	6.96	< 7.006
Total Nitrogen (lbs) Effluent Net Total Monthly	2423.9	1967.7	3714.3	3671.1	5136.8	4006.6	3305.4	3996.2	4512.6	4272.6	3225.8	< 2628.2
Total Nitrogen (lbs) Total Monthly	2423.9	1967.7	3714.3	3671.1	5136.8	4006.6	3305.4	3996.2	4512.6	4272.6	3225.8	< 2628.2
Total Nitrogen (lbs) Effluent Net Total Annual												58784
Total Nitrogen (lbs) Total Annual												58784
Ammonia (mg/L) Average Monthly	0.15	0.107	0.1	0.381	0.1	0.59	1.686	0.835	0.213	0.101	0.186	< 0.672
Ammonia (lbs) Total Monthly	56.8	36.5	37.8	169.3	47.8	334	841.4	450.9	126.5	48.1	90.5	< 251.3

Ammonia (lbs) Total Annual												< 4998
TKN (mg/L) Average Monthly	1.148	0.509	1.054	0.801	0.5	0.905	2.168	1.18	0.83	1.0	1.0	< 1.391
TKN (lbs) Total Monthly	445.5	173.6	393.4	372.6	238.8	505.4	1077.5	645.7	447.3	475.2	464.3	< 518.2
Total Phosphorus (mg/L) Average Monthly	1.338	1.332	1.761	0.725	0.764	0.839	0.744	0.755	0.965	1.155	1.95	1.801
Total Phosphorus (lbs) Effluent Net Total Monthly	509.3	456	665	343	364.2	454.8	360.6	410.9	551.7	546.6	898.1	668.1
Total Phosphorus (lbs) Total Monthly	509.3	456	665	343	364.2	454.8	360.6	410.9	551.7	546.6	898.1	668.1
Total Phosphorus (lbs) Effluent Net Total Annual												7062
Total Phosphorus (lbs) Total Annual												7062

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **A**)
☒	PENTOXSD for Windows Model (see Attachment **B**)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment **D**)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☒	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

APPENDIX A

Q_{7-10} ANALYSIS AND STREAM DATA

Q_{7-10} Analysis

Facility: Danille Municipal Authority WWTP
Outfall: 001

NPDES Permit No.: PA0023531
RMI at Outfall: 136.6

Reference Stream Gage Information	
Stream Name	Susquehanna River
Reference Gage	1540500
Station Name	Susquehanna River Near Danville, PA
Gage Drainage Area (sq. mi.)	11220
Q_{7-10} at gage (cfs)	1120
Yield Ratio (cfs/mi^2)	0.0998

Was Ecoflows Used?	No
Correlation From Ecoflows	NA

Check Dilution Ratio		
Discharge at Outfall (wf) (mgd)	3.62	
	sf (cfs)	wf (cfs)
Dilution Ratio = sf/wf	1120.0000	5.600968081
Dilution Ratio =	199.9654317 to 1	

Q_{7-10} at Outfall	
Drainage Area at site (sq. mi.)	11220
Q_{7-10} at discharge site (cfs)	1120.0000
Q_{7-10} at discharge site (mgd)	723.8749
Low Flow Yield Ratio of 0.1 cfs/mi^2 (For Approx. Comparison Only)	
Q_{7-10} at discharge site (cfs)	1122.0000
Q_{7-10} at discharge site (mgd)	725.1675

Q_{7-10} at Downstream Reach #1	
Drainage Area at Reach (sq. mi.)	11270.83
RMI	136.24
Q_{7-10} at reach (cfs)	1125.0739
Q_{7-10} at reach (mgd)	727.1542

Q_{7-10} at Downstream Reach #2	
Drainage Area at Reach (sq. mi.)	
RMI	
Q_{7-10} at reach (cfs)	0.0000
Q_{7-10} at reach (mgd)	0.0000

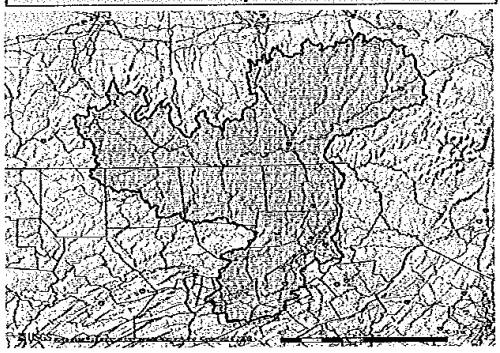
Q_{7-10} at Downstream Reach #3	
Drainage Area at Reach (sq. mi.)	
RMI	
Q_{7-10} at reach (cfs)	0.0000
Q_{7-10} at reach (mgd)	0.0000

Basin Characteristics Report at Reach #1

Date: Tue Jul 23 2013 07:48:32 Mountain Daylight Time
NAD27 Latitude: 40.9637 (40 57 49)
NAD27 Longitude: -76.6329 (-76 37 59)
NAD83 Latitude: 40.9638 (40 57 50)
NAD83 Longitude: -76.6326 (-76 37 57)

Parameter	Value
Area in square miles	11270.83
Mean Basin Elevation in feet	1434.2
Unadjusted basin slope, in degrees	7.5
Adjusted basin slope, in degrees	7.3
Total stream length in miles	19229.70
Stream density (miles/square mile)	1.71
Percent of area covered by lakes, ponds, reservoirs and wetlands	1.2
Percent of area covered by carbonate bedrock	1.0
Percent of area covered by glacial activity	93.9
Depth to rock in feet	4.6
Mean annual precipitation in inches	38.3
Maximum Daily Temperature in degrees F	54.8
Percent of area covered by forest	67.6
Percentage of impervious area determined from NLCD 2001 Impervious dataset	1.2
Percent of area covered by urban land according to an enhanced version of NLCD 1992	3.1
Percentage of urban land cover determined from NLCD 2001 land cover dataset	6.5
Drainage quality index from STATSGO	3.8
X coordinate of the centroid, in map projection, meters	151315.0
Y coordinate of the centroid, in map projection, meters	151315.0
X coordinate of the outlet, in map projection, meters	115085.0
Y coordinate of the outlet, in map projection, meters	218935.0
Longitude of the outlet, in decimal degrees	-76.63263

Basin Map at Outfall



USGS
science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011–1070

U.S. Department of the Interior
U.S. Geological Survey

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01530500	1940–2008	69	5.0	6.1	11.0	7.6	13	9.0
01531000	[2]1981–2008	28	138	147	237	169	296	203
01531000	[3]1905–1979	68	86.3	97.0	175	116	219	161
01531500	[2]1981–2008	28	550	592	1,030	733	1,340	952
01531500	[3]1915–1979	65	539	571	990	675	1,230	928
01532000	1915–2008	94	2.2	2.8	9.7	4.6	14.4	9.4
01532850	1967–1979	13	.1	.2	.4	.3	.8	.7
01533400	[2]1981–2008	28	602	648	1,110	790	1,430	1,060
01533500	1942–1958	17	.4	.6	1.5	.8	2.0	1.7
01533950	1962–1978	17	.2	.3	1.0	.6	1.4	1.0
01534000	1915–2008	94	15.2	17.3	35.9	24.2	51.0	38.7
01534300	1960–2008	49	1.1	1.7	5.1	2.8	7.6	4.8
01534500	[2]1961–2008	48	16.7	18.8	29.2	21.9	35.8	27.6
01534500	[3]1941–1959	19	18.8	23.0	33.3	25.6	39.2	34.9
01536000	[2]1961–2008	48	28.7	32.7	51.7	40.8	68.1	54.3
01536000	[3]1940–1959	20	77.8	93.9	119	105	138	124
01536500	[2]1981–2008	28	828	872	1,450	1,030	1,830	1,350
01536500	[3]1901–1979	79	778	811	1,350	927	1,640	1,260
01537000	1943–1993	51	1.3	2.0	4.9	3.1	6.4	4.7
01537500	1941–1990	50	.2	.3	1.9	.5	3.1	1.6
01538000	1921–2008	88	3.1	3.6	7.1	5.0	9.3	7.5
01539000	1940–2008	69	15.4	16.8	36.8	21.1	51.1	36.8
01539500	1942–1958	17	.1	.3	1.4	1.0	3.3	2.3
01540200	1965–1981	17	0	0	.3	.1	.3	.1
01540500	[2]1981–2008	28	1,080	1,120	1,870	1,320	2,330	1,690
01540500	[3]1906–1979	74	927	978	1,660	1,160	2,050	1,590
01541000	1915–2008	94	25.3	27.9	50.7	35.3	66.6	49.6
01541200	[2]1967–2008	40	34.6	45.2	66.0	63.1	100	92.4
01541200	[3]1957–1965	9	22.9	24.7	44.7	27.7	58.2	36.4
01541303	1980–2008	29	53.4	58.5	94.0	74.4	123	102
01541308	1969–1979	11	1.3	1.3	1.9	1.6	2.4	2.1
01541500	[2]1962–2008	47	39.0	41.9	66.5	51.9	86.3	70.6
01541500	[3]1915–1960	46	14.9	21.3	41.9	28.5	55.0	42.9
01542000	1942–1993	52	8.1	9.1	14.8	11.3	17.8	14.6
01542500	[2]1967–2008	33	216	235	326	285	435	402
01542500	[3]1941–1965	20	—	131	189	152	243	221
01542810	1966–2008	43	.1	.1	.3	.2	.5	.3
01543000	1915–2008	94	2.9	4.2	16.0	9.6	27.4	19.2
01543500	1940–2008	69	10.7	14.5	44.9	26.6	74.9	50.5
01544000	[2]1957–2008	52	3.3	6.9	19.0	11.2	31.1	19.0
01544500	1942–2008	67	4.2	4.9	12.5	7.5	17.4	11.7
01545000	[2]1964–2008	45	6.8	8.2	21.2	12.0	32.7	20.7
01545500	[2]1963–2008	46	217	238	446	306	629	428
01545500	[3]1909–1961	53	125	141	278	190	387	296
01545600	1966–2008	43	1.2	1.5	4.4	2.4	6.7	4.2

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01508803	West Branch Tioughnioga River at Homer, N.Y.	42.638	-76.176	71.5	N
01509000	Tioughnioga River at Cortland, N.Y.	42.603	-76.159	292	N
01510000	Otselic River at Cincinnatus, N.Y.	42.541	-75.900	147	N
01512500	Chenango River near Chenango Forks, N.Y.	42.218	-75.848	1,483	N
01515000	Susquehanna River near Waverly, N.Y.	41.985	-76.501	4,773	N
01516350	Tioga River near Mansfield, Pa.	41.797	-77.080	153	N
01516500	Corey Creek near Mainesburg, Pa.	41.791	-77.015	12.2	N
01518000	Tioga River at Tioga, Pa.	41.908	-77.129	282	Y
01518700	Tioga River at Tioga Junction, Pa.	41.953	-77.115	446	Y
01518862	Cowanesque River at Westfield, Pa.	41.923	-77.532	90.6	N
01520000	Cowanesque River near Lawrenceville, Pa.	41.997	-77.140	298	Y
01520500	Tioga River at Lindley, N.Y.	42.029	-77.132	771	Y
01521500	Canisteo River at Arkport, N.Y.	42.396	-77.711	30.6	Y
01523500	Canacadea Creek near Hornell, N.Y.	42.335	-77.683	57.9	Y
01524500	Canisteo River below Canacadea Creek at Hornell, N.Y.	42.314	-77.651	158	Y
01526500	Tioga River near Erwins, N.Y.	42.121	-77.129	1,377	Y
01527000	Cohocton River at Cohocton, N.Y.	42.500	-77.500	52.2	N
01527500	Cohocton River at Avoca, N.Y.	42.398	-77.417	152	N
01528000	Fivemile Creek near Kanona, N.Y.	42.388	-77.358	66.8	N
01529000	Mud Creek near Savona, N.Y.	42.308	-77.197	76.6	Y
01529500	Cohocton River near Campbell, N.Y.	42.253	-77.217	470	N
01529950	Chemung River at Corning, N.Y.	42.146	-77.057	2,006	Y
01530332	Chemung River at Elmira, N.Y.	42.086	-76.801	2,162	Y
01530500	Newtown Creek at Elmira, N.Y.	42.105	-76.798	77.5	Y
01531000	Chemung River at Chemung, N.Y.	42.002	-76.635	2,506	Y
01531500	Susquehanna River at Towanda, Pa.	41.765	-76.441	7,797	Y
01532000	Towanda Creek near Monroeton, Pa.	41.707	-76.485	215	N
01532850	MB Wyalusing Creek near Birchardville, Pa.	41.863	-76.007	5.67	N
01533400	Susquehanna River at Meshoppen, Pa.	41.607	-76.050	8,720	Y
01533500	North Branch Mehoopany Creek near Lovelton, Pa.	41.531	-76.156	35.2	N
01533950	SB Tunkhannock Creek near Montdale, Pa.	41.575	-75.642	12.6	N
01534000	Tunkhannock Creek near Tunkhannock, Pa.	41.558	-75.895	383	N
01534300	Lackawanna River near Forest City, Pa.	41.680	-75.472	38.8	Y
01534500	Lackawanna River at Archbald, Pa.	41.505	-75.542	108	Y
01536000	Lackawanna River at Old Forge, Pa.	41.359	-75.744	332	Y
01536500	Susquehanna River at Wilkes-Barre, Pa.	41.251	-75.881	9,960	Y
01537000	Toby Creek at Luzerne, Pa.	41.281	-75.896	32.4	Y
01537500	Solomon Creek at Wilkes-Barre, Pa.	41.228	-75.904	15.7	N
01538000	Wapwallopen Creek near Wapwallopen, Pa.	41.059	-76.094	43.8	N
01539000	Fishing Creek near Bloomsburg, Pa.	41.078	-76.431	274	N
01539500	Little Fishing Creek at Byers Grove, Pa.	41.080	-76.511	56.5	N
01540200	Trexler Run near Ringtown, Pa.	40.853	-76.280	1.77	N
01540500	Susquehanna River at Danville, Pa.	40.958	-76.619	11,220	Y
01541000	West Branch Susquehanna River at Bower, Pa.	40.897	-78.677	315	N
01541200	West Branch Susquehanna River near Curwensville, Pa.	40.961	-78.519	367	Y

APPENDIX B

WQM 7.0 MODEL INPUT/OUTPUT

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
07K	6685	SUSQUEHANNA RIVER	136.600	438.00	11220.00	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	0.100	0.00	1120.00	0.000	0.000	0.0	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
Danville MA	PA0023531	3.6200	3.6200	3.6200	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA 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												
136.600	1120.00	0.00	1120.00	5.6001	0.00053	1.105	760.81	688.35	1.34	0.016	20.02	7.00
Q1-10 Flow												
136.600	1079.68	0.00	1079.68	5.6001	0.00053	NA	NA	NA	1.31	0.017	20.03	7.00
Q30-10 Flow												
136.600	1320.48	0.00	1320.48	5.6001	0.00053	NA	NA	NA	1.47	0.015	20.02	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	0.964	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.179	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA 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
136.600	Danville MA	9.66	50	9.66	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
136.600	Danville MA	1.91	25	1.91	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)		
136.60	Danville MA	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
136.600	3.620	20.025	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
760.807	1.105	688.350	1.339
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.11	0.087	0.12	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.217	3.287	Tsivoglou	6
Reach Travel Time (days)			
0.016			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.002	2.11	0.12	8.22
0.003	2.11	0.12	8.22
0.005	2.11	0.12	8.23
0.007	2.11	0.12	8.23
0.008	2.11	0.12	8.24
0.010	2.11	0.12	8.24
0.012	2.11	0.12	8.24
0.013	2.11	0.12	8.24
0.015	2.11	0.12	8.24
0.016	2.11	0.12	8.24

Tuesday, November 17, 2020 Version 1.0b Page 1 of 1

APPENDIX C

TOXICS SCREENING ANALYSIS V2.7 / REASONABLE POTENTIAL ANALYSIS

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.7

Facility: Danville Municipal Authority
Analysis Hardness (mg/L): 100
Stream Flow, Q_{7-10} (cfs): 1120

NPDES Permit No.: PA0023531
Discharge Flow (MGD): 3.62

Outfall: 001
Analysis pH (SU): 7

	Parameter	Maximum Concentration in Application or DMRs (µg/L)		Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Group 1	Total Dissolved Solids		497000	500000	No		
	Chloride		140000	250000	No		
	Bromide		560	N/A	No		
	Sulfate		65900	250000	No		
Group 2	Total Aluminum		100	750	No		
	Total Antimony		0.6	5.6	No		
	Total Arsenic		0.7	10	No		
	Total Barium		8.2	2400	No		
	Total Beryllium	<	0.26	N/A	No		
	Total Boron		140	1600	No		
	Total Cadmium	<	0.25	0.271	No		
	Total Chromium		1.2	N/A	No		
	Hexavalent Chromium		0.99	10.4	No		
	Total Cobalt	<	0.45	19	No (Value < QL)		
	Total Copper		5.3	9.3	No		
	Free Available Cyanide		22.2	5.2	Yes	77.724	Monitor
	Total Cyanide		0.026	N/A	No		
	Dissolved Iron		53.7	300	No		
	Total Iron		67	1500	No		
	Total Lead		0.6	3.2	No		
	Total Manganese		44.9	1000	No		
	Total Mercury		0.03	0.05	No		
	Total Nickel		3.8	52.2	No		
	Total Phenols (Phenolics)	<	0.22	5	No (Value < QL)		
	Total Selenium	<	3.8	5.0	No (Value < QL)		
	Total Silver	<	0.3	3.8	No (Value < QL)		
	Total Thallium		0.2	0.24	No		
	Total Zinc		65.4	119.8	No		
	Total Molybdenum		8.3	N/A	No		
Group 3	Acrolein	<	1.8	3	No (Value < QL)		
	Acrylonitrile	<	0.58	0.051	No (Value < QL)		
	Benzene	<	0.41	1.2	No (Value < QL)		
	Bromoform	<	0.55	4.3	No		
	Carbon Tetrachloride	<	0.52	0.23	Yes	32.013	No Limits/Monitoring
	Chlorobenzene	<	0.19	130	No (Value < QL)		
	Chlorodibromomethane		10.6	0.4	Yes	55.674	No Limits/Monitoring
	Chloroethane	<	0.75	N/A	No		
	2-Chloroethyl Vinyl Ether	<	0.34	3500	No (Value < QL)		
	Chloroform		22.7	5.7	Yes	793.362	No Limits/Monitoring
	Dichlorobromomethane		2.5	0.55	Yes	76.552	No Limits/Monitoring
	1,1-Dichloroethane	<	0.26	N/A	No		
	1,2-Dichloroethane	<	0.35	0.38	No (Value < QL)		
	1,1-Dichloroethylene	<	0.28	33	No (Value < QL)		
	1,2-Dichloropropane	<	0.3	2200	No (Value < QL)		
	1,3-Dichloropropylene	<	0.34	0.34	No (Value < QL)		
	1,4-Dioxane	<	72.8	N/A	No		
	Ethylbenzene	<	0.31	530	No (Value < QL)		
	Methyl Bromide	<	0.83	47	No		
	Methyl Chloride	<	0.34	5500	No (Value < QL)		
	Methylene Chloride	<	0.75	4.6	No		
	1,1,2,2-Tetrachloroethane	<	0.24	0.17	No (Value < QL)		
	Tetrachloroethylene	<	0.3	0.69	No (Value < QL)		
	Toluene	<	0.24	330	No (Value < QL)		
	1,2-trans-Dichloroethylene	<	0.33	140	No (Value < QL)		
	1,1,1-Trichloroethane	<	0.43	610	No (Value < QL)		
	1,1,2-Trichloroethane	<	0.21	0.59	No (Value < QL)		
	Trichloroethylene	<	0.33	2.5	No (Value < QL)		
	Vinyl Chloride	<	0.28	0.025	No (Value < QL)		
Group 4	2-Chlorophenol	<	0.32	81	No (Value < QL)		
	2,4-Dichlorophenol	<	0.33	77	No (Value < QL)		
	2,4-Dimethylphenol		0.36	130	No		
	4,6-Dinitro-o-Cresol		0.63	13	No		
	2,4-Dinitrophenol		0.58	69	No		
	2-Nitrophenol		0.35	1600	No		
	4-Nitrophenol		0.75	470	No		
	p-Chloro-m-Cresol			30			
	Pentachlorophenol		1.03	0.27	Yes	30.819	No Limits/Monitoring
	Phenol	<	0.22	10400	No (Value < QL)		
	2,4,6-Trichlorophenol		0.35	1.4	No		

Danville_Toxic_Screening_2.7.xlsm, 12/16/2020

Group 5	Acenaphthene		0.39	17	No		
	Acenaphthylene		0.38	N/A	No		
	Anthracene	<	0.26	8300	No (Value < QL)		
	Benzidine	<	4.8	0.000086	No (Value < QL)		
	Benzo(a)Anthracene	<	0.2	0.0038	No (Value < QL)		
	Benzo(a)Pyrene	<	0.18	0.0038	No (Value < QL)		
	3,4-Benzofluoranthene	<	0.23	0.0038	No (Value < QL)		
	Benzo(ghi)Perylene	<	0.29	N/A	No		
	Benzo(k)Fluoranthene	<	0.25	0.0038	No (Value < QL)		
	Bis(2-Chloroethoxy)Methane		0.35	N/A	No		
	Bis(2-Chloroethyl)Ether		0.41	0.03	Yes	4.176	No Limits/Monitoring
	Bis(2-Chloroisopropyl)Ether		0.4	1400	No		
	Bis(2-Ethylhexyl)Phthalate		0.99	1.2	No		
	4-Bromophenyl Phenyl Ether		0.39	54	No		
	Butyl Benzyl Phthalate	<	0.29	35	No (Value < QL)		
	2-Chloronaphthalene	<	0.33	1000	No (Value < QL)		
	4-Chlorophenyl Phenyl Ether		0.36	N/A	No		
	Chrysene	<	0.2	0.0038	No (Value < QL)		
	Dibenzo(a,h)Anthrancene	<	0.31	0.0038	No (Value < QL)		
	1,2-Dichlorobenzene	<	0.26	160	No (Value < QL)		
	1,3-Dichlorobenzene	<	0.23	69	No (Value < QL)		
	1,4-Dichlorobenzene	<	0.26	150	No (Value < QL)		
	3,3-Dichlorobenzidine	<	0.22	0.021	No (Value < QL)		
	Diethyl Phthalate		0.36	800	No		
	Dimethyl Phthalate	<	0.43	500	No (Value < QL)		
	Di-n-Butyl Phthalate		0.32	21	No		
	2,4-Dinitrotoluene	<	0.35	0.05	No (Value < QL)		
	2,6-Dinitrotoluene		0.4	0.05	Yes	3497.561	No Limits/Monitoring
	Di-n-Octyl Phthalate		3.1	N/A	No		
	1,2-Diphenylhydrazine		0.35	0.036	Yes	5.011	No Limits/Monitoring
	Fluoranthene	<	0.23	40	No (Value < QL)		
	Fluorene		3.6	1100	No		
	Hexachlorobenzene	<	0.3	0.00028	No (Value < QL)		
	Hexachlorobutadiene		0.98	0.44	Yes	35.329	No Limits/Monitoring
	Hexachlorocyclopentadiene	<	0.19	1	No (Value < QL)		
	Hexachloroethane		0.3	1.4	No		
	Indeno(1,2,3-cd)Pyrene	<	0.3	0.0038	No (Value < QL)		
	Isophorone		0.33	35	No		
	Naphthalene	<	0.86	43	No		
	Nitrobenzene		0.37	17	No		
	n-Nitrosodimethylamine	<	0.26	0.00069	No (Value < QL)		
	n-Nitrosodi-n-Propylamine	<	0.53	0.005	No (Value < QL)		
	n-Nitrosodiphenylamine	<	0.25	3.3	No (Value < QL)		
	Phenanthrene		0.34	1	No		
	Pyrene		0.3	830	No		
	1,2,4-Trichlorobenzene	<	0.76	26	No		
Group 6	Aldrin			0.000049			
	alpha-BHC			0.0026			
	beta-BHC			0.0091			
	gamma-BHC			0.098			
	delta BHC			N/A			
	Chlordane			0.0008			
	4,4-DDT			0.00022			
	4,4-DDE			0.00022			
	4,4-DDD			0.00031			
	Dieldrin			0.000052			
	alpha-Endosulfan			0.056			
	beta-Endosulfan			0.056			
	Endosulfan Sulfate			N/A			
	Endrin			0.036			
	Endrin Aldehyde			0.29			
	Heptachlor			0.000079			
	Heptachlor Epoxide			0.000039			
	Toxaphene			0.0002			
	2,3,7,8-TCDD			0.000000005			
Group 7	Gross Alpha (pCi/L)			N/A			
	Total Beta (pCi/L)			N/A			
	Radium 226/228 (pCi/L)			N/A			
	Total Strontium			4000			
	Total Uranium			N/A			

APPENDIX D

PENTOXSD V2.0D MODEL INPUT/OUTPUT

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
6685	136.60	438.00	11220.00	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.1	0	1120	0	0	0	0	0	100	7	100	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Danville MA	PA0023531	3.62	3.62	3.62	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
1,2-DIPHENYLHYDRAZINE	0.35	0	0.5	0.5	0	0	0	0	1	0
2,6-DINITROTOLUENE	0.41	0	0.5	0.5	0	0	0	0	1	0
BIS(2-CHLOROETHYL) ETHER	0.41	0	0.5	0.5	0	0	0	0	1	0
CARBON TETRACHLORIDE	0.52	0	0.5	0.5	0	0	0	0	1	0
CHLORODIBROMOMETHANE	10.6	0	0.5	0.5	0	0	0	0	1	0
CHLOROFORM	22.7	0	0.5	0.5	0	0	0	0	1	0
CYANIDE, FREE	22.2	0	0.5	0.5	0	0	0	0	1	0
DICHLOROBROMOMETHANE	2.5	0	0.5	0.5	0	0	0	0	1	0
DINITROTOLUENE, TOTAL	0.41	0	0.5	0.5	0	0	0	0	1	0
HEXACHLOROBUTA-DIENE	0.98	0	0.5	0.5	0	0	0	0	1	0
PENTACHLOROPHENOL	1.03	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
07K	6685	SUSQUEHANNA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
136.600	1120	0	1120	5.60013	0.0005	1.1053	760.81	688.35	1.3386	0.0164	1000+
136.240	1125	0	1125	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
136.600	3435.6	0	3435.6	5.60013	0.0005	1.8072	760.81	420.98	2.5028	0.0088	1000+
136.240	3449.0	0	3449.0	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
136.60	**Danville MA**	**PA0023531**

AFC

Q7-10: CCT (min) 15 **PMF** 0.022 **Analysis pH** 7 **Analysis Hardness** 100

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
CYANIDE, FREE	0	0	0	0	22	22	121.261
PENTACHLOROPHENOL	0	0	0	0	8.723	8.723	48.082
CARBON TETRACHLORIDE	0	0	0	0	2800	2800	15433.25
CHLORODIBROMOMETHANE	0	0	0	0	NA	NA	NA
CHLOROFORM	0	0	0	0	1900	1900	10472.57
DICHLOROBROMOMETHANE	0	0	0	0	NA	NA	NA
BIS(2-CHLOROETHYL) ETHER	0	0	0	0	30000	30000	165356.3
2,6-DINITROTOLUENE	0	0	0	0	990	990	5456.758
1,2-DIPHENYLHYDRAZINE	0	0	0	0	15	15	82.678
HEXACHLOROBUTA-DIENE	0	0	0	0	10	10	55.119
DINITROTOLUENE, TOTAL	0	0	0	0	NA	NA	NA

CFC

Q7-10: CCT (min) 720 **PMF** 0.156 **Analysis pH** 7 **Analysis Hardness** 100

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
CYANIDE, FREE	0	0	0	0	5.2	5.2	167.748
PENTACHLOROPHENOL	0	0	0	0	6.693	6.693	215.897
CARBON TETRACHLORIDE	0	0	0	0	560	560	18065.15
CHLORODIBROMOMETHANE	0	0	0	0	NA	NA	NA
CHLOROFORM	0	0	0	0	390	390	12581.09
DICHLOROBROMOMETHANE	0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

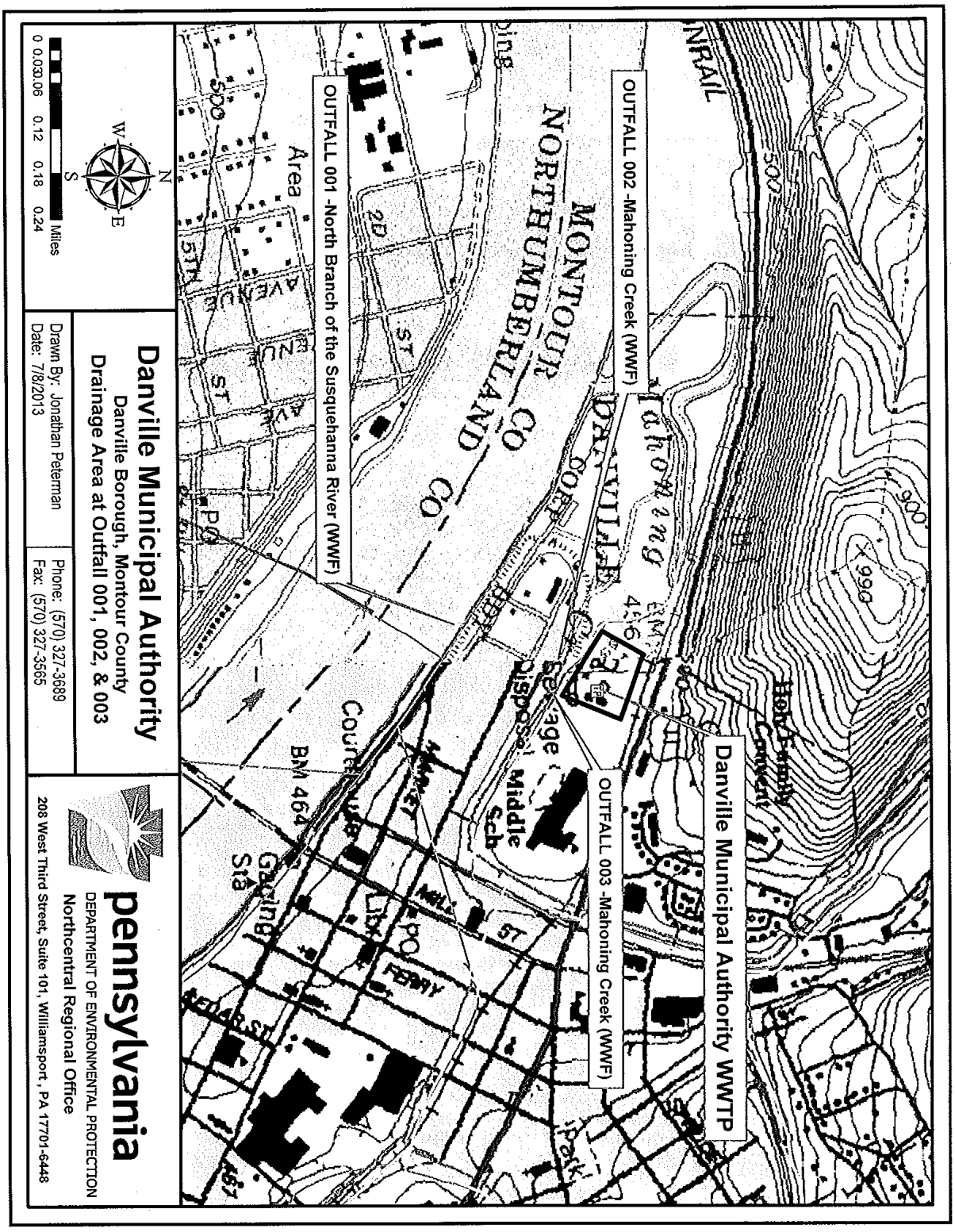
SWP Basin	Stream Code:	Stream Name:
07K	6685	SUSQUEHANNA RIVER

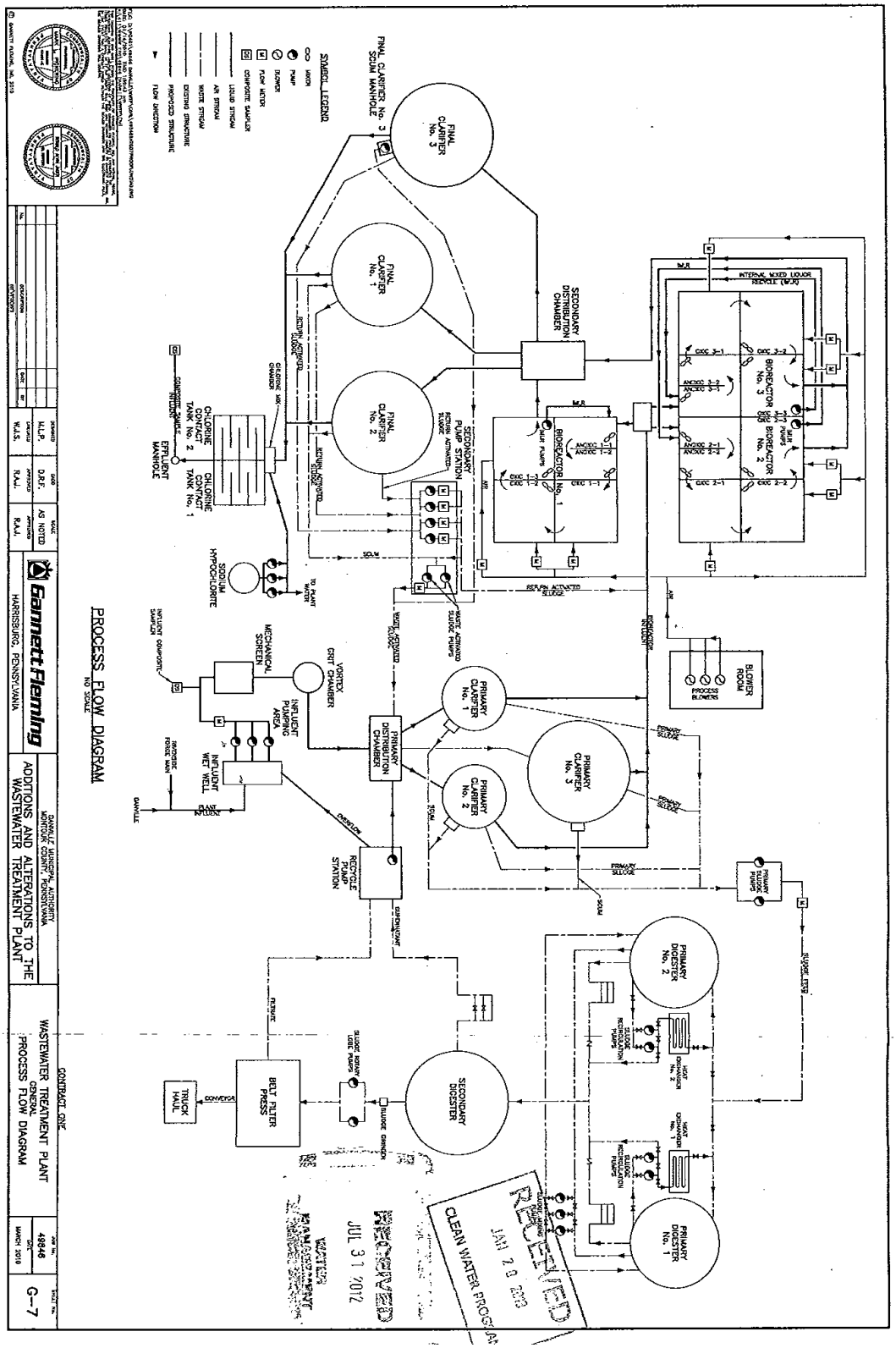
RMI	Name	Permit Number	Disc Flow (mgd)
136.60	Danville MA	PA0023531	3.6200

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
1,2-DIPHENYLHYDRAZINE	0.35	INPUT	0.546	5.011	CRL
2,6-DINITROTOLUENE	0.41	INPUT	0.64	3497.561	AFC
BIS(2-CHLOROETHYL) ETHER	0.41	INPUT	0.64	4.176	CRL
CARBON TETRACHLORIDE	0.52	INPUT	0.811	32.013	CRL
CHLORODIBROMOMETHANE	10.6	INPUT	16.538	55.674	CRL
CHLOROFORM	22.7	INPUT	35.416	793.362	CRL
CYANIDE, FREE	22.2	INPUT	34.636	77.724	AFC
DICHLOROBROMOMETHANE	2.5	INPUT	3.9	76.552	CRL
DINITROTOLUENE, TOTAL	0.41	INPUT	0.64	6.959	CRL
HEXACHLOROBUTA-DIENE	0.98	INPUT	1.529	35.329	AFC
PENTACHLOROPHENOL	1.03	INPUT	1.607	30.819	AFC

APPENDIX E

FACILITY MAP AND SCHEMATIC


Danville Municipal Authority WWTP
OUTFALL 002 -Mahoning Creek (WWF)
OUTFALL 003 -Mahoning Creek (WWF)
OUTFALL 001 -North Branch of the Susquehanna River (WWF)
Danville Municipal Authority
Danville Borough, Montour County
Drainage Area at Outfall 001, 002, & 003
Drawn By: Jonathan Peterman
Date: 7/8/2013
Phone: (570) 327-3689
Fax: (570) 327-3565
0 0.03 0.06 0.12 0.18 0.24 Miles
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Northcentral Regional Office
208 West Third Street, Suite 101, Williamsport, PA 17701-6448


PROCESS FLOW DIAGRAM
NO SCALE
SYMBOL LEGEND
FINAL CLARIFIER No. 3
FINAL CLARIFIER No. 1
FINAL CLARIFIER No. 2
SECONDARY DISTRIBUTION CHAMBER
BIOREACTOR No. 3
BIOREACTOR No. 2
BIOREACTOR No. 1
CHLORINE CONTACT TANK No. 2
CHLORINE CONTACT TANK No. 1
EFFLUENT MANHOLE
SODIUM HYPOCHLORITE
MECHANICAL SCREEN
VORTEX GRIT CHAMBER
INFLUENT PUMPING AREA
INFLUENT WET WELL
PRIMARY DISTRIBUTION CHAMBER
PRIMARY CLARIFIER No. 1
PRIMARY CLARIFIER No. 2
PRIMARY CLARIFIER No. 3
BLOWER ROOM
RECYCLE PUMP STATION
PRIMARY DIGESTER No. 2
PRIMARY DIGESTER No. 1
SECONDARY DIGESTER
BELT FILTER PRESS
TRUCK HAUL
Gannett Fleming
HARRISBURG, PENNSYLVANIA
ADDITIONS AND ALTERATIONS TO THE WASTEWATER TREATMENT PLANT
WASTEWATER TREATMENT PLANT
GENERAL
PROCESS FLOW DIAGRAM
CONTRACT ONE
48946
MARCH 2010
G-7
RECEIVED
JAN 28 2013
CLEAN WATER PROGRAM
RECEIVED
JUL 31 2012
WATER MANAGEMENT

APPENDIX F

TRC ANALYSIS SPREADSHEET

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			Danville Municipal Authority		
3	Input appropriate values in B4:B8 and E4:E7					
4	1120	= Q stream (cfs)		0.5	= CV Daily	
5	3.62	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		0.022	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		0.156	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 1.423		1.3.2.iii	WLA cfc = 9.714
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.530		5.1d	LTA_cfc = 5.647
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			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)**