pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0027189**
Facility Type	**Municipal**	APS ID	**276153**
Major / Minor	**Major**	Authorization ID	**1378843**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Lower Allen Township Authority**	Facility Name	**Lower Allen Township WWTP**
Applicant Address	120 Limekiln Road	Facility Address	120 Limekiln Road
	New Cumberland, PA 17070-2428		New Cumberland, PA 17070-2428
Applicant Contact	Brian Kauffman	Facility Contact	Brian Kauffman
Applicant Phone	(717) 774-0610	Facility Phone	(717) 774-0610
Client ID	41367	Site ID	252334
Ch 94 Load Status	Not Overloaded	Municipality	Lower Allen Township
Connection Status	No Limitations	County	Cumberland
Date Application Received	December 2, 2021	EPA Waived?	No
Date Application Accepted	December 15, 2021	If No, Reason	Major Facility, Pretreatment, Significant CB Discharge
Purpose of Application	NPDES Renewal w/re-rating.		

Summary of Review

Lower Allen Township Authority (LATA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on May 5, 2017 and became effective on June 1, 2017. The permit will expire on May 31, 2022. LATA has also applied for an WQM permit amendment to modify the design capacity of the existing treatment plant. This NPDES permit renewal will incorporate this modification and the WQM permit amendment application will be separately reviewed.

It is recommended that the NPDES permit be drafted.

Sludge use and disposal description and location(s): Sludge is processed onsite prior to being land applied under PAG073519 or sent to other facility (Harrisburg 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*, 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		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	March 14, 2022
x		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	March 17, 2022
x		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	March 17, 2022

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	7.5
Latitude	40º 13' 33.95"	Longitude	-76º 51' 31.47"
Quad Name	Steelton	Quad Code	1731
Wastewater Description:	Treated Sewage		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	56404165	RMI	68.3
Drainage Area	24300	Yield (cfs/mi^2)	0.1328
Q_{7-10} Flow (cfs)	3,227	Q_{7-10} Basis	USGS gage no. 01570500
Elevation (ft)	291	Slope (ft/ft)	N/A
Watershed No.	7-E	Chapter 93 Class.	CWF, MF
Existing Use	None	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	pH, PCB, pathogens		
Source(s) of Impairment	Unknown		
TMDL Status	N/A	Name	
Nearest Downstream Public Water Supply Intake	Wrightsville Borough Municipal Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	N/A
PWS RMI	43.54	Distance from Outfall (mi)	24.76

Drainage Area
A drainage area upstream of the outfall is estimated to be 24,300 sq.mi, according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow
The USGS gauging station no. 01570500 is located approximately 2.5 miles upstream of the outfall. It is an active station where the drainage area is estimated to be 24,100 sq.mi. The latest USGS report provides low flows of 3,020 cfs (Q1-10), 3,200 cfs (Q7-10), and 3,690 cfs (Q30-10) at this station. As shown below, this information has been correlated with the outfall drainage area to calculate estimated low-flows at the outfall:

$$\text{Low-Flow Yield} = Q7\text{-}10_{\text{gauge}} / \text{Drainage Area}_{\text{gauge}} = 3200 \text{ cfs} / 24100 \text{ sq.mi} = 0.1328 \text{ cfs/sq.mi}$$
$$Q7\text{-}10_{\text{site}} = \text{Low-Flow Yield} \times \text{Drainage Area}_{\text{site}} = 0.1328 \text{ cfs/sq.mi} \times 24{,}300 \text{ sq.mi} = 3{,}227 \text{ cfs}$$

Other flows have been calculated in the same manner and are determined to be: 3,045 cfs (Q1-10) & 3,720 cfs (Q30-10).

Susquehanna River
Under 25 Pa Code §93.9o, Susquehanna River has protected designated water uses of warm water and migratory fishes. No special protection water is impacted by this discharge. DEP's 2020 integrated water quality report shows that the river near the vicinity of the discharge point is determined to be impaired for pH as a result of unknown source(s). This determination was made in 2018 and identified as a Category 5 impairment in which waters listed as this category would require the development of a Total Maximum Daily Load (TMDL). A TMDL has not yet been developed to address this impairment. The river has also been assessed for fish consumption uses and is determined to be impaired for PCBs as a result of unknown source(s). Just upstream of the outfall, the river also has been assessed for recreational uses and is determined to be impaired for pathogens as a result of unknown source(s). Both PCB and pathogen impairments are also listed as Category 5 impairments; yet, no TMDL has been developed to address these impairments as of the date of this fact sheet.

Water Supply Intake
The nearest downstream public water supply intake is Wrightsville Borough Municipal Authority on the Susquehanna River, located approximately 25 miles from the outfall. Considering nature of discharge and its distance to the intake, the discharge is not expected to impact the water supply intake. Steelton's intake is located just opposite side of the river; therefore, the

discharge is not expected to impact this intake as well. All of the above information has been considered in developing appropriate permit requirements to protect the receiving water.

Treatment Facility Summary

Treatment Facility Name: Lower Allen WWTP

WQM Permit No.	Issuance Date
2170410	02/03/1971
2199408	11/19/1998
2170410 (amendment)	07/24/2001, 11/05/2004, 07/29/2008, 07/21/2011
2101411	01/30/2002
2112403	04/25/2012
2170410	05/05/2017

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Total Nitrogen Reduction	Activated Sludge	Ultraviolet Disinfection	See comments below

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
See comments below	See comments below	Not Overloaded	Aeration/Thickening	Land Application

Lower Allen Wastewater Treatment Plant located 120 Limekiln Road, New Cumberland currently serves Lower Allen Township/Shiremanstown Borough (51%), Upper Allen Township (31.78%), Department of Corrections SCIC (10.50%), and Fairview Township (6.72%) areas. All sewer systems are 100% separated. The discharge is to Susquehanna River via Outfall 001. This outfall also serves discharges from Fairview Township North WWTP (PA0081868). Stormwater Outfall 002 was eliminated as of late 2011. The facility has previously completed the biological nutrient removal (BNR) upgrade (Five Step Kruger BNR Process) in which the current treatment process, according to the application, is as follows:

Influent Wet Well/Pump Station → Primary Clarifier Distribution Box → Primary Clarifiers (2) → Aeration Tank Distribution Box → Aeration Trains (2) including primary anoxic zones (2), oxic zones (2) and secondary anoxic zones (2) → Final Clarifiers (3) → UV Disinfection Tank → Outfall to Susquehanna River

LATA proposed a paper rerate of the design hydraulic capacity from 10.5 MGD to 13.5 MGD as part of the submitted WQM permit amendment. Also, LATA requested a reduction in design organic loading capacity from 14,700 lbs BOD5/day to 10,000 lbs BOD5/day. No change is proposed for the annual average design flow which is 7.5 MGD. More details will be discussed in the internal review and recommendation report (IRR) prepared for the WQM permit amendment.

Solids generated from the treatment system are processed through Autothermal Thermophilic aerobic digestion (ATAD), Storage Nitrification Denitrification Reactor (SNDR), sludge thickeners (2) and centrifuges (2). All sludge is land applied (permit nos. PAG073519, PAG083510).

Aluminum Sulfate is used for phosphorous control, ferrous sulfate is used for dewatering process, and sodium hypochlorite is used for disinfection back-up and for scrubber no. 1.

The current renewal application lists the following three (3) significant industrial users contributing industrial wastewater to the system:

- Dairy Farmers of America – Dairy Product Processing: Hot Bottled Drinks; 134,000 GPD (including +/- 1,500 GPD of sanitary)
- The Warrell Corporation – Sugar Processing: Candy and Nut Roasting; 11,200 GPD (including +/- 1,000 GPD of sanitary)
- Supply Chain Facility at Yetter Court – Meat Processing: Beef and Pork cutting and repacking; 61,650 GPD (including +/- 11,500 GPD of sanitary)

LATA is currently implementing an EPA approved pretreatment program. The draft permit will therefore include permit conditions requesting the permittee to continue the implementation of its pretreatment program.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	11/05/21: Brandon Bettinger, DEP Water Quality Specialist, conducted a routine inspection; no violation was identified at the time of inspection. 02/03/21: Brandon Bettinger conducted an administrative inspection of Chesapeake Bay nutrient monitoring. No issues were found at the time of inspection. 02/10/20: Michael Benham, former DEP Water Quality Specialist, conducted a routine inspection and noted that the entire facility appeared clean and well maintained. 11/12/19: Michael Benham conducted an incident inspection in response to a reported sanitary sewer overflow. 01/02/19: Michael Benham conducted a routine inspection. No issues were found at the time of inspection.
Other Comments:	Since the last permit reissuance, there were three (3) permit violations (8/14/2017, 4/16/2019 and 12/14/2021). These violations have been resolved and closed. There is one open violation associated with this facility identified by SCRO Storage Tank Program on February 24, 2021 for failure to comply with UST system monthly operation and maintenance walkthrough inspections. A draft permit cover letter will indicate that the permit may not be finalized until all violations are resolved and closed.

Effluent Data

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	6.444	8.19	5.562	6.280	4.706	5.407	6.607	6.595	6.055	6.147	5.345	3.946
Flow (MGD) Daily Maximum	7.570	15.160	6.61	8.530	6.4	6.470	9.090	10.070	8.990	7.040	9.770	5.280
pH (S.U.) Minimum	7.4	7.2	7.2	7.4	6.4	6.6	7.0	7.1	7.1	7.1	6.8	7.0
pH (S.U.) Maximum	8.0	8.1	8.1	8.0	7.8	8.0	7.9	8.1	8.1	8.4	8.3	8.5
DO (mg/L) Minimum	7.4	7.0	6.7	6.9	7.0	7.7	8.3	8.3	8.8	8.3	8.2	7.3
CBOD5 (lbs/day) Average Monthly	83	155	86	82	62	69	83	143	145	119	105	74
CBOD5 (lbs/day) Weekly Average	101.9	204.6	143.4	116.3	83.5	77.6	106	218.3	163.3	126.3	125.5	88.8
CBOD5 (mg/L) Average Monthly	1.5	2.4	1.8	1.6	1.6	1.5	1.5	2.6	2.8	2.4	2.5	2.2
CBOD5 (mg/L) Weekly Average	1.9	3.3	2.4	1.9	2.0	1.6	1.7	3.1	3.0	2.5	3.0	2.6
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	6802	7589	6031	6386	6147	6437	6672	7805	6284	6327	5391	6126
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	9392	15482	8959	9669	9835	10489	8544	23517	7758	8177	7226	12949
BOD5 (mg/L) Raw Sewage Influent Average Monthly	123	111	123	110	122	124	117	128	124	120	124	177
TSS (lbs/day) Average Monthly	229	637	< 232	< 282	186	< 124	< 144	< 305	304	262	217	< 142
TSS (lbs/day) Raw Sewage Influent Average Monthly	5373	4974	4926	5032	4588	5198	6160	4910	5154	5008	4553	4628
TSS (lbs/day) Raw Sewage Influent Daily Maximum	8070	6193	7046	7759	6800	6886	13061	7710	7897	7119	9283	8329
TSS (lbs/day) Weekly Average	362.9	783	512.6	384.7	265	< 141.8	< 161.3	531.4	351.4	322.5	280.2	153.7
TSS (mg/L) Average Monthly	4.1	9.8	< 5.0	< 5.3	4.6	< 2.7	< 2.6	< 5.5	5.8	5.2	5.0	< 4.4

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
TSS (mg/L) Raw Sewage Influent Average Monthly	97	73	100	87	92	101	107	80	101	95	104	132
TSS (mg/L) Weekly Average	6.3	12.4	8.8	6.7	6.3	< 2.9	< 3.0	7.5	6.7	6.8	5.6	5.6
Fecal Coliform (CFU/100 ml) Geometric Mean	< 2.3	2.8	< 2.9	3.5	< 2.7	< 1.5	< 1.0	2.2	2.7	1.6	2.7	3.1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	27.1	9.9	7.5	1.0	13.7	3.1	1.0	7.5	6.4	4.2	20.7	6.4
UV Intensity (µw/cm²) Minimum	24.69	25.50	25.02	25.06	25.14	25.11	24.42	25.04	24.92	25.05	24.48	25.20
Nitrate-Nitrite (mg/L) Average Monthly	2.43	2.951	2.222	2.159	2.423	2.228	2.233	2.327	2.83	3.26	3.87	3.27
Nitrate-Nitrite (lbs) Total Monthly	4106.7	5633.2	3214.6	3453.1	2749.3	3122.9	3712.9	4053.2	4060.3	5198.6	5108.4	3200.9
Total Nitrogen (mg/L) Average Monthly	< 3.74	< 4.319	< 3.454	< 3.406	< 3.575	< 3.272	< 3.273	< 4.089	< 3.9	< 4.29	< 5.08	< 4.4
Total Nitrogen (lbs) Effluent Net Total Monthly	< 6319	< 8301.4	< 4991.4	< 5439.5	< 4083.1	< 4580.5	< 5427.5	< 6951.1	< 5616.4	< 6826.4	< 6733.8	< 4321.9
Total Nitrogen (lbs) Total Monthly	< 6319	< 8301.4	< 4991.4	< 5439.5	< 4083.1	< 4580.5	< 5427.5	< 6951.1	< 5616.4	< 6826.4	< 6733.8	< 4321.9
Total Nitrogen (lbs) Effluent Net Total Annual		< 98935										
Total Nitrogen (lbs) Total Annual		< 66671										
Ammonia (lbs/day) Average Monthly	3.5	5.86	4.15	6.71	2.6	2.34	3.33	4.13	4.09	< 3.9	3.20	2.21
Ammonia (mg/L) Average Monthly	0.064	0.093	0.090	0.133	0.067	0.051	0.061	0.076	0.08	< 0.077	0.077	0.069
Ammonia (lbs) Total Monthly	107.7	175.8	128.7	208.1	78	72.8	99.7	128	114.6	< 122	99.4	65.9
Ammonia (lbs) Total Annual		< 1357										
TKN (mg/L) Average Monthly	< 1.31	< 1.37	< 1.23	< 1.25	< 1.15	< 1.04	< 1.04	< 1.76	< 1.07	< 1.03	< 1.22	< 1.14
TKN (lbs) Total Monthly	2213.3	< 2668.2	< 1776.8	< 1986.4	< 1333.8	< 1457.6	< 1714.7	< 2897.9	< 1556.1	< 1627.8	< 1625.4	< 1121

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
Total Phosphorus (lbs/day) Average Monthly	26.4	49.2	17.4	22.1	18.8	16.3	20.4	19.3	21.4	21.0	19.9	17.4
Total Phosphorus (mg/L) Average Monthly	0.484	0.760	0.373	0.427	0.495	0.361	0.368	0.346	0.408	0.41	0.467	0.519
Total Phosphorus (lbs) Effluent Net Total Monthly	817.2	1474.6	538.6	684.3	562.9	504.8	610.8	598	599.8	650.9	616.1	523.3
Total Phosphorus (lbs) Total Monthly	817.2	1474.6	538.6	684.3	562.9	504.8	610.8	598	599.8	650.9	616.1	523.3
Total Phosphorus (lbs) Effluent Net Total Annual		13704										
Total Phosphorus (lbs) Total Annual		7721										

Existing Effluent Limits and Monitoring Requirements

Tables below summarize effluent limits and monitoring requirements specified in the current permit.

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	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
UV intensity (µw/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
CBOD5	1564	2502 Wkly Avg	XXX	25.0	40.0	50	3/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Suspended Solids	1877	2815 Wkly Avg	XXX	30.0	45.0	60	3/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	3/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	3/week	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Phosphorus	125	XXX	XXX	2.0	XXX	4.0	3/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Net Total Nitrogen [3]	Report	114,154	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus [3]	Report	15,221	XXX	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 7.5
Latitude 40º 13' 33.34" **Longitude** -76º 51' 30.94"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The facility is subject to secondary treatment standards found in 25 Pa. Code § 92a.47 and 40 CFR § 133.102. These standards are as follows:

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: These standards apply, subject to water quality analysis and BPJ where applicable.

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's technical guidance no. 391-2000-007 describes the technical methods contained in the model for conducting wasteload allocation analyses and for determining recommended limits for point source discharges. A multiple discharge analysis is necessary as there are a number of facilities located in the close vicinity of LATA's discharge that have similar effluent characteristics. Accordingly, upstream dischargers including Norfolk Southern (PA0009229; 0.5 MGD), New Cumberland Borough STP (PA0026654; 1.25 MGD) and Lemoyne Borough STP (PA0026441; 0.9 MGD) are included in the analysis. The design flow of Fairview Township STP (PA0081868) was also added to LATA's design flow since these two municipalities share the same outfall (0.726 MGD + 7.5 MGD = 8.226 MGD). All of these facilities are located within 2 miles from each other. Facilities having discharge points located other side of the river were excluded from this analysis considering the mixing/dilution condition of the river.

The model assumes immediate and complete mixing of the discharge with the receiving water within the stream reach but this assumption is likely invalid when the discharge is to Susquehanna River. It is therefore necessary to adjust low-flows to reflect the site-specific mixing condition. DEP SCRO has been consistently using one-fourth of the original Q7-10 of the river in water quality analysis for a number of facilities located in the lower Susquehanna River basin. This approach assumes that one-fourth of the river flow is completely mixed with the discharge within the given stream reach. This method will also be used in the analysis for Norfolk Southern, New Cumberland Borough and Lemoyne Borough's discharges. The model was utilized and the output showed that all permit requirements are still appropriate. No change is therefore recommended.

Toxics
DEP's Toxics Management Spreadsheet (TMS) was utilized using effluent sample results reported on the application. The TMS output shows a routine monitoring is needed for Total Aluminum and Total Zinc as effluent concentrations exceeded

10% of the recommended WQBEL but no reasonable potential is determined. As a result, the requirement to monitor for Total Aluminum and Total Zinc will be included in the permit.

Total Residual Chlorine
Since LATA currently uses sodium hypochlorite as a back-up disinfection method, Total Residual Chlorine (TRC) effluent levels must be controlled at the time this chemical product is being used. DEP's TRC_CALC excel worksheet was therefore utilized to determine appropriate effluent limits for Total Residual Chlorine (TRC). The worksheet output recommended an average monthly limit of 0.29 mg/L and instantaneous maximum limit of 0.96 mg/L. Since it is used as back-up, the following Part C condition will be included in the draft permit:

"In the event that chlorine or chlorine-contained product is used for backup disinfection, the permittee must notify DEP prior to initiating use of that product. The permittee shall also monitor Total Residual Chlorine (TRC) concentrations in the effluent on each day in which the product is used. When the product is used, TRC concentration in the effluent shall not exceed 0.29 mg/L (30-day average) and 0.96 mg/L (Instantaneous Maximum). Samples shall be collected at the location identified in Part A.I.A of the permit. The results shall be submitted as an attachment to the Discharge Monitoring Report (DMR)."

Best Professional Judgment (BPJ) Limitations

Total Phosphorus
For Total Phosphorus (TP), the current NPDES permit requires the permittee to comply with average monthly and instantaneous maximum (IMAX) limits of 2.0 mg/L and 4.0 mg/L, respectively. These limits were previously established based upon the fact that the loading from this facility likely exceeds the minimum 0.25% contribution requirement per DEP's technical guidance no. 391-2000-018. Total Phosphorus (TP) is still a parameter of concern for all sewage treatment facilities in the Chesapeake Bay watershed; therefore, these limits are still necessary to protect both local receiving water and Chesapeake Bay watershed. The relaxation or removal of these limits is also prohibited by EPA's anti-backsliding regulation found in 40 CFR § 122.44(l)(1).

Dissolved Oxygen
A minimum of 5.0 mg/L for D.O. is an existing effluent limit and will remain unchanged in the draft permit as recommended by DEP's SOP. This requirement has also been assigned to other major sewage facilities in the region. 5.0 mg/L is taken directly from 25 Pa. Code § 93.7(a) (i.e., water quality criteria for WWF waters) and it is also determined to be appropriate according to water quality modeling.

Additional Considerations

Flow Monitoring Requirement
The requirement to monitor the volume of effluent will remain in the permit per 40 CFR § 122.44(i)(1)(ii).

Influent Monitoring Requirement
As a result of negotiation with EPA, the existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities.

E. Coli Monitoring Requirement
DEP's SOP no. BCW-PMT-033 recommends a routine monitoring for E. Coli in all new and reissued sewage permits. As a result, a monthly monitoring requirement for E. Coli will be included in the permit given the facility's design flow is greater than 1.0 MGD.

Total Dissolved Solids (TDS)
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

> *For point source discharges and upon issuance or reissuance of an individual NPDES permit:*
>
> *-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and*

report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

-Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

The sample result shows that effluent contains a TDS concentration level of 544 mg/L and 1,4-dioxane of <0.5 µg/L. The net TDS load (effluent TDS minus influent TDS) is calculated to be -1,557 lbs/day. As a result, the requirement to monitor for these parameters is not needed. For Bromide, the permittee reported the effluent concentration of 1.1 mg/L. Given the size of this facility and the above-referenced directive, a routine monitoring will be included in the permit.

Local Watershed Total Maximum Daily Load (TMDL)
Although the discharge is located in a stream segment that is impaired for pH (aquatic life uses), pathogens (recreational uses) and PCB (fish consumption uses), a TMDL has not been developed to address these impairments; therefore, no TMDL has been taken into consideration during this review. PCB is not a typical parameter of concern for sanitary wastewater facilities and the application for major sewage facilities does not require sampling for PCBs. LATA has not had any issue with meeting pH and fecal coliform effluent limits which are secondary treatment standards and has not had any issue with operating the current UV system. DEP has therefore determined that no further permit requirements are necessary to address these impairments.

Chesapeake Bay TMDL
Chesapeake Bay TMDL identifies the necessary pollution reductions of nitrogen, phosphorus and sediment across Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia and sets pollution limits necessary to meet applicable water quality standards in the Chesapeake Bay and its tidal tributaries. In order to meet these reduction goals, DEP has developed multiple plans for years including Chesapeake Bay Tributary Strategy (12/2004), Phase 1 Watershed Implementation Plan (January 2011), Phase 2 Watershed Implementation Plan (March 2012), and Phase 3 Watershed Implementation Plan (August 2019). More details on these plans are available at www.dep.pa.gov.

As part of Phase 3 Watershed Implementation Plan, Phase 3 Watershed Implementation Plan Wastewater Supplement was developed to provide an update on Chesapeake Bay TMDL implementation activities for point sources and current implementation strategy for wastewater. The following Cap Loads, annual effluent net mass load limits, specified in this document will be included in the draft permit:

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0027189	1	Lower Allen Township Authority	05/05/2017	05/31/2022	10/1/2015	114,154		15,221	0.951	0.436

These Cap Loads were based on the original design flow of 6.25 MGD as no remaining nutrient capacity is available for sewage dischargers and expansion will not result in any increase in Cap Loads.

LATA is currently authorized to use 200 lbs of TN as the TN offset based on the connection of eight (8) retired on-lot sewage disposal systems (8 EDU * 25 lbs/EDU). No further offsets request has been received since the last permit reissuance. Therefore, LATA will continue to be authorized to use 200 lbs as TN offsets toward compliance with the TN Cap Load. The permit will continue to include the following note:

"The permittee is authorized to use 200 lbs/year as Total Nitrogen (TN) Offsets toward compliance with the Annual Net TN mass load limitations (Cap Loads), in accordance with Part C of this permit. These Offsets may be applied throughout the

Compliance Year or during the Truing Period. The application of offsets must be reported to DEP as described in Part C. The Offsets are authorized for the following pollutant load reduction activities:

- *Connection of 8 on-lot sewage disposal systems to the public sewer system after January 1, 2003, in which 25 lbs/year of TN offsets are granted per connection."*

Stormwater Requirements
Stormwater discharges from any POTWs (SIC Code 4952) described in 40 CFR § 122.26(b)(14)(ix) require coverage under an NPDES permit. DEP's standard Part C stormwater requirements and best management practices (BMPs) for POTWs will be included in the permit.

UV Monitoring
DEP's Standard Operating Procedure (SOP no. BPNPSM-PMT-033) recommends a routine monitoring of Ultraviolet (UV) transmittance or intensity when the facility is utilizing an UV disinfection system in lieu of chlorination to ensure proper operation and maintenance requirement and ask permittees to demonstrate the effectiveness of UV disinfection system. This is a reasonable approach and has been assigned to other facilities equipped with similar technology. Accordingly, UV monitoring will continue to be included in the permit.

Monitoring Frequency and Sample Type
Unless otherwise specified throughout this fact sheet, monitoring frequencies and sample types are derived from the "NPDES Permit Writer's Manual" (362-0400-001) and/or BPJ.

Mass Loading Limitations
All effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34. The increased hydraulic design capacity did not result in higher mass load effluent limits as the annual average design flow remains unchanged.

Anti-Degradation Requirements
All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

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%, 7%, and 3%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 7%.

Summary of Four Most Recent Test Results

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
June 2021	100	100		100	100		Yes
August 2020	100	30		100	100		Yes
August 2019	30	30		100	100		Yes
August 2018	100	100		100	60		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: DEP's WET Analysis Spreadsheet is attached to this fact sheet.

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

Acute Partial Mix Factor (PMFa): **0.007** Chronic Partial Mix Factor (PMFc): **0.047**

1. Determine IWC – Acute (IWCa):

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

[(7.5 MGD x 1.547) / ((3227 cfs x 0.007) + (7.5 MGD x 1.547))] x 100 = **33.93%**

Is IWCa < 1%? ☐ **YES** ☒ **NO** **(YES - Acute Tests Required OR NO - Chronic Tests Required)**

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

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

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

[(7.5 MGD x 1.547) / ((3227 cfs x 0.047) + (7.5 MGD x 1.547))] x 100 = **7.2% = 7%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 60%, 30%, 7%, and 3%.

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

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	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
UV intensity (µw/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
CBOD5	1564	2502 Wkly Avg	XXX	25.0	40.0	50	3/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Suspended Solids	1877	2815 Wkly Avg	XXX	30.0	45.0	60	3/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	3/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	3/week	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Phosphorus	125	XXX	XXX	2.0	XXX	4.0	3/week	24-Hr Composite
Total Aluminum	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/month	24-Hr Composite
Total Zinc	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/month	24-Hr Composite
Bromide	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/month	24-Hr Composite

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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia—N	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Kjeldahl—N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Net Total Nitrogen	XXX	114,154	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	XXX	15,221	XXX	XXX	XXX	XXX	1/month	Calculation

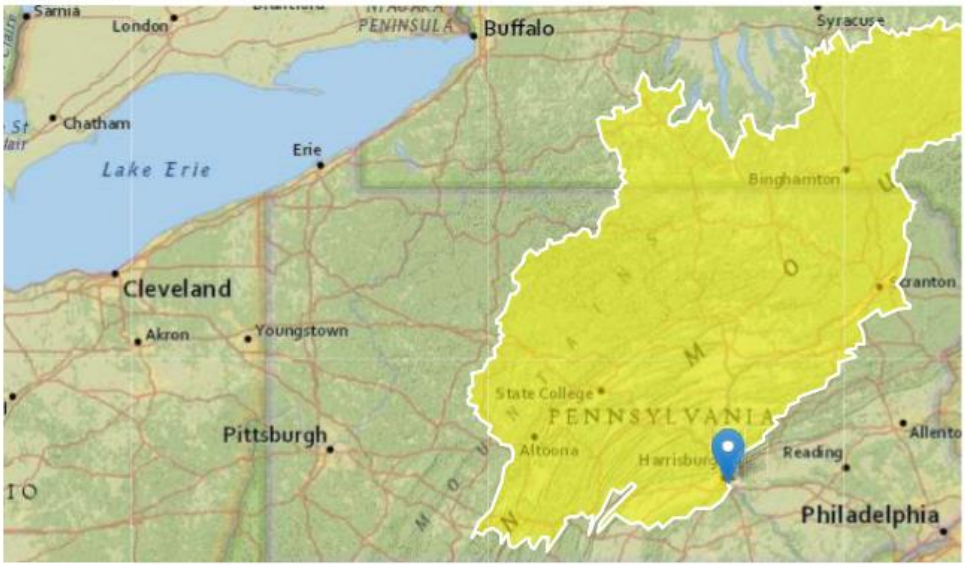
Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical 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:

Attachments

1. StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20211229125653557000
Clicked Point (Latitude, Longitude): 40.22778, -76.85690
Time: 2021-12-29 07:57:20 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	24300	square miles
PRECIP	Mean Annual Precipitation	39	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.75	miles per square mile
ROCKDEP	Depth to rock	4.5	feet
CARBON	Percentage of area of carbonate rock	6.06	percent
ELEV	Mean Basin Elevation	1378	feet

Parameter Code	Parameter Description	Value	Unit
GLACIATED	Percentage of basin area that was historically covered by glaciers	48.5331	percent
FOREST	Percentage of area covered by forest	70.1967	percent

Low-Flow Statistics Parameters [42.7 Percent (10400 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	24300	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.75	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	6.06	percent	0	99

Low-Flow Statistics Parameters [6.6 Percent (1610 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	24300	square miles	2.33	1720
ELEV	Mean Basin Elevation	1378	feet	898	2700
PRECIP	Mean Annual Precipitation	39	inches	38.7	47.9

Low-Flow Statistics Parameters [50.5 Percent (12300 square miles) Low Flow Region 5]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	24300	square miles	4.84	982
PRECIP	Mean Annual Precipitation	39	inches	33.1	47.1
GLACIATED	Percent of Glaciation	48.5331	percent	0	100
FOREST	Percent Forest	70.1967	percent	41	100

Low-Flow Statistics Disclaimers [42.7 Percent (10400 square miles) Low Flow Region 2]

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

Low-Flow Statistics Flow Report [42.7 Percent (10400 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	5020	ft^3/s
30 Day 2 Year Low Flow	5970	ft^3/s
7 Day 10 Year Low Flow	3720	ft^3/s
30 Day 10 Year Low Flow	4410	ft^3/s
90 Day 10 Year Low Flow	5580	ft^3/s

Low-Flow Statistics Disclaimers [6.6 Percent (1610 square miles) Low Flow Region 3]

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

Low-Flow Statistics Flow Report [6.6 Percent (1610 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	2180	ft^3/s
30 Day 2 Year Low Flow	2670	ft^3/s
7 Day 10 Year Low Flow	1270	ft^3/s
30 Day 10 Year Low Flow	1580	ft^3/s
90 Day 10 Year Low Flow	2180	ft^3/s

Low-Flow Statistics Disclaimers [50.5 Percent (12300 square miles) Low Flow Region 5]

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

Low-Flow Statistics Flow Report [50.5 Percent (12300 square miles) Low Flow Region 5]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3140	ft^3/s
30 Day 2 Year Low Flow	3960	ft^3/s
7 Day 10 Year Low Flow	2000	ft^3/s
30 Day 10 Year Low Flow	2590	ft^3/s
90 Day 10 Year Low Flow	3370	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	3870	ft^3/s
30 Day 2 Year Low Flow	4720	ft^3/s
7 Day 10 Year Low Flow	2680	ft^3/s
30 Day 10 Year Low Flow	3290	ft^3/s
90 Day 10 Year Low Flow	4230	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

2. WQM 7.0 ver. 1.1

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	73.700	295.00	23600.00	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	0.033	0.00	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
Norfok Southern	PA0009229	0.5000	0.5000	0.5000	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	5.00	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)	Drsinage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	**70.220**	293.00	24084.00	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	0.033	0.00	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
Lemoyne Borough	PA0026441	0.9000	0.9000	0.9000	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	5.00	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)	Drsinage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	**69.230**	292.00	24086.00	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	0.033	0.00	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
New Cumberland	PA0026654	1.2500	1.2500	1.2500	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	5.00	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)	Drsinage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	68.300	287.00	24299.00	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	0.033	0.00	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
Fairview&Allen	PA0081868	8.2260	8.2260	8.2260	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	5.00	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)	Drsinage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6685	SUSQUEHANNA RIVER	**68.240**	286.00	24300.00	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	0.033	0.00	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	0.00	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												
73.700	778.80	0.00	778.80	.7735	0.00011	1.266	689.07	544.38	0.89	0.238	25.00	7.00
70.220	794.77	0.00	794.77	2.1658	0.00019	1.247	686.97	551.05	0.93	0.065	25.00	7.00
69.230	794.84	0.00	794.84	4.0996	0.00102	1.226	637.97	520.44	1.02	0.056	25.00	7.00
68.300	801.87	0.00	801.87	16.8252	0.00316	1.282	580.29	452.73	1.10	0.003	25.00	7.00
Q1-10 Flow												
73.700	498.43	0.00	498.43	.7735	0.00011	NA	NA	NA	0.70	0.305	25.00	7.00
70.220	508.65	0.00	508.65	2.1658	0.00019	NA	NA	NA	0.73	0.083	25.00	7.00
69.230	508.70	0.00	508.70	4.0996	0.00102	NA	NA	NA	0.80	0.071	25.00	7.00
68.300	513.19	0.00	513.19	16.8252	0.00316	NA	NA	NA	0.86	0.004	25.00	7.00
Q30-10 Flow												
73.700	1059.17	0.00	1059.17	.7735	0.00011	NA	NA	NA	1.06	0.200	25.00	7.00
70.220	1080.89	0.00	1080.89	2.1658	0.00019	NA	NA	NA	1.10	0.055	25.00	7.00
69.230	1080.98	0.00	1080.98	4.0996	0.00102	NA	NA	NA	1.21	0.047	25.00	7.00
68.300	1090.54	0.00	1090.54	16.8252	0.00316	NA	NA	NA	1.30	0.003	25.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
73.700	0.500	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
689.067	1.266	544.381	0.894
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.02	0.015	0.02	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.240	0.511	Tsivoglou	5
Reach Travel Time (days)			
0.238			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.024	2.02	0.02	7.54
0.048	2.02	0.02	7.54
0.071	2.02	0.02	7.54
0.095	2.02	0.02	7.54
0.119	2.02	0.02	7.54
0.143	2.02	0.02	7.54
0.167	2.02	0.02	7.54
0.190	2.02	0.02	7.54
0.214	2.01	0.02	7.54
0.238	2.01	0.02	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
70.220	1.400	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
686.966	1.247	551.049	0.931
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.05	0.041	0.06	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.548	0.935	Tsivoglou	5
Reach Travel Time (days)			
0.065			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.007	2.05	0.06	7.54
0.013	2.05	0.06	7.54
0.020	2.05	0.06	7.54
0.026	2.05	0.06	7.54
0.033	2.05	0.06	7.54
0.039	2.05	0.06	7.54
0.046	2.05	0.06	7.54
0.052	2.05	0.06	7.54
0.059	2.05	0.06	7.54
0.065	2.05	0.06	7.54

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
69.230	2.650	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
637.968	1.226	520.439	1.022
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.10	0.077	0.12	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.532	5.463	Tsivoglou	5
Reach Travel Time (days)			
0.056			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.10	0.12	7.54
0.011	2.10	0.12	7.54
0.017	2.10	0.12	7.54
0.022	2.10	0.12	7.54
0.028	2.10	0.12	7.54
0.033	2.10	0.11	7.54
0.039	2.09	0.11	7.54
0.045	2.09	0.11	7.54
0.050	2.09	0.11	7.54
0.056	2.09	0.11	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
68.300	10.876	25.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
580.288	1.282	452.731	1.101
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.45	0.298	0.50	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.505	18.246	Tsivoglou	5
Reach Travel Time (days)			
0.003			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.000	2.45	0.50	7.51
0.001	2.45	0.50	7.51
0.001	2.45	0.50	7.52
0.001	2.45	0.50	7.52
0.002	2.44	0.50	7.53
0.002	2.44	0.50	7.53
0.002	2.44	0.50	7.53
0.003	2.44	0.50	7.54
0.003	2.44	0.50	7.54
0.003	2.44	0.50	7.54

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
73.700	Norfok Southern	11.07	50	11.07	50	0	0
70.220	Lemoyne Boroug	11.07	50	11.07	50	0	0
69.230	New Cumberland	11.07	50	11.07	50	0	0
68.300	Fairview&Allen	11.07	50	11.07	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
73.700	Norfok Southern	1.37	25	1.37	25	0	0
70.220	Lemoyne Boroug	1.37	25	1.37	25	0	0
69.230	New Cumberland	1.37	25	1.37	25	0	0
68.300	Fairview&Allen	1.37	25	1.37	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
73.70	Norfok Southern	25	25	25	25	5	5	0	0
70.22	Lemoyne Borough	25	25	25	25	5	5	0	0
69.23	New Cumberland	25	25	25	25	5	5	0	0
68.30	Fairview&Allen	25	25	25	25	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
73.700	Norfok Southern	PA0009229	0.500	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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)
70.220	Lemoyne Borough	PA0026441	0.900	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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)
69.230	New Cumberland	PA0026654	1.250	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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)
68.300	Fairview&Allen	PA0081868	8.226	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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3.

4. Toxics Management Spreadsheet

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Lower Allen Township** NPDES Permit No.: **PA0027189** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
7.5	264	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		544									
	Chloride (PWS)	mg/L		177									
	Bromide	mg/L		1.1									
	Sulfate (PWS)	mg/L		56.1									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		140									
	Total Antimony	µg/L	<	2									
	Total Arsenic	µg/L	<	5									
	Total Barium	µg/L		29									
	Total Beryllium	µg/L	<	2									
	Total Boron	µg/L		83									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	2.5									
	Hexavalent Chromium	µg/L		0.11									
	Total Cobalt	µg/L	<	2.5									
	Total Copper	µg/L	<	1.7									
	Free Cyanide	µg/L	<	2									
	Total Cyanide	µg/L	<	5									
	Dissolved Iron	µg/L	<	60									
	Total Iron	µg/L		39									
	Total Lead	µg/L	<	3									
	Total Manganese	µg/L		14									
	Total Mercury	µg/L	<	0.02									
	Total Nickel	µg/L	<	10									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	2									
	Total Zinc	µg/L		55									
	Total Molybdenum	µg/L	<	10									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L											
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

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Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L		0.5									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	5									
	Chloroform	µg/L	<	0.5									
	Dichlorobromomethane	µg/L	<	0.5									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	0.5									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L		1.5									
	Methyl Chloride	µg/L	<	1									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	2.9									
	2,4-Dichlorophenol	µg/L	<	2.9									
	2,4-Dimethylphenol	µg/L	<	5.7									
	4,6-Dinitro-o-Cresol	µg/L	<	5.7									
	2,4-Dinitrophenol	µg/L	<	2.9									
	2-Nitrophenol	µg/L	<	2.9									
	4-Nitrophenol	µg/L	<	2.9									
	p-Chloro-m-Cresol	µg/L	<	2.9									
	Pentachlorophenol	µg/L	<	5.7									
	Phenol	µg/L	<	7.7									
	2,4,6-Trichlorophenol	µg/L	<	2.9									
Group 5	Acenaphthene	µg/L	<	1.4									
	Acenaphthylene	µg/L	<	1.4									
	Anthracene	µg/L	<	1.4									
	Benzidine	µg/L	<	3.8									
	Benzo(a)Anthracene	µg/L	<	1.4									
	Benzo(a)Pyrene	µg/L	<	1.4									
	3,4-Benzofluoranthene	µg/L	<	1.4									
	Benzo(ghi)Perylene	µg/L	<	1.4									
	Benzo(k)Fluoranthene	µg/L	<	1.4									
	Bis(2-Chloroethoxy)Methane	µg/L	<	2.9									
	Bis(2-Chloroethyl)Ether	µg/L	<	2.9									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	2.9									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.9									
	4-Bromophenyl Phenyl Ether	µg/L	<	2.9									
	Butyl Benzyl Phthalate	µg/L	<	2.9									
	2-Chloronaphthalene	µg/L	<	2.9									
	4-Chlorophenyl Phenyl Ether	µg/L	<	2.9									
	Chrysene	µg/L	<	1.4									
	Dibenzo(a,h)Anthrancene	µg/L	<	1.4									
	1,2-Dichlorobenzene	µg/L	<	1									
	1,3-Dichlorobenzene	µg/L	<	1									
	1,4-Dichlorobenzene	µg/L	<	1									
	3,3-Dichlorobenzidine	µg/L	<	2.9									
	Diethyl Phthalate	µg/L	<	2.9									
	Dimethyl Phthalate	µg/L	<	2.9									
	Di-n-Butyl Phthalate	µg/L	<	2.9									
	2,4-Dinitrotoluene	µg/L	<	2.9									

	2,6-Dinitrotoluene	µg/L	<	2.9									
	Di-n-Octyl Phthalate	µg/L	<	2.9									
	1,2-Diphenylhydrazine	µg/L	<	2.9									
	Fluoranthene	µg/L	<	1.4									
	Fluorene	µg/L	<	1.4									
	Hexachlorobenzene	µg/L	<	2.9									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	2.9									
	Hexachloroethane	µg/L	<	2.9									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	1.4									
	Isophorone	µg/L	<	2.9									
	Naphthalene	µg/L	<	1.4									
	Nitrobenzene	µg/L	<	2.9									
	n-Nitrosodimethylamine	µg/L	<	2.9									
	n-Nitrosodi-n-Propylamine	µg/L	<	2.9									
	n-Nitrosodiphenylamine	µg/L	<	2.9									
	Phenanthrene	µg/L	<	1.4									
	Pyrene	µg/L	<	1.4									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
Group 6	Aldrin	µg/L	<	0.04									
	alpha-BHC	µg/L	<	0.04									
	beta-BHC	µg/L	<	0.04									
	gamma-BHC	µg/L	<	0.04									
	delta BHC	µg/L	<	0.04									
	Chlordane	µg/L	<	0.4									
	4,4-DDT	µg/L	<	0.04									
	4,4-DDE	µg/L	<	0.04									
	4,4-DDD	µg/L	<	0.04									
	Dieldrin	µg/L	<	0.04									
	alpha-Endosulfan	µg/L	<	0.04									
	beta-Endosulfan	µg/L	<	0.04									
	Endosulfan Sulfate	µg/L	<	0.04									
	Endrin	µg/L	<	0.04									
	Endrin Aldehyde	µg/L	<	0.04									
	Heptachlor	µg/L	<	0.04									
	Heptachlor Epoxide	µg/L	<	0.04									
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<	0.5									
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Lower Allen Township, NPDES Permit No. PA0027189, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Susquehanna River**

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	006685	68.3	291	24300			Yes
End of Reach 1	006685	65.5	279	24400			Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	68.3	0.1328										116	7		
End of Reach 1	65.5	0.1328													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	68.3														
End of Reach 1	65.5														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Lower Allen Township, NPDES Permit No. PA0027189, Outfall 001

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

Hydrodynamics

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
68.3	3227.04		3227.04	11.603	0.00081	0.717	2046.877	2854.362	2.206	0.078	329552.798
65.5	3240.32		3240.32								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
68.3	8663.31		8663.31	11.603	0.00081	1.106	2046.877	1850.257	3.831	0.045	172768.466
65.5	8694.461		8694.46								

Wasteload Allocations

AFC CCT (min): 15 PMF: 0.007 Analysis Hardness (mg/l): 167.45 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	2,157	
Total Antimony	0	0		0	1,100	1,100	3,164	
Total Arsenic	0	0		0	340	340	978	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	60,405	
Total Boron	0	0		0	8,100	8,100	23,299	
Total Cadmium	0	0		0	3.323	3.6	10.4	Chem Translator of 0.922 applied
Total Chromium (III)	0	0		0	869.084	2,750	7,911	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	46.9	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	273	
Total Copper	0	0		0	21.843	22.8	65.4	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	63.3	
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	112.664	157	453	Chem Translator of 0.716 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	4.74	Chem Translator of 0.85 applied
Total Nickel	0	0		0	724.230	726	2,087	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	7.807	9.19	26.4	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	187	
Total Zinc	0	0		0	181.367	185	533	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	8.63	
Acrylonitrile	0	0		0	650	650	1,870	
Benzene	0	0		0	640	640	1,841	
Bromoform	0	0		0	1,800	1,800	5,178	
Carbon Tetrachloride	0	0		0	2,800	2,800	8,054	
Chlorobenzene	0	0		0	1,200	1,200	3,452	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	51,776	
Chloroform	0	0		0	1,900	1,900	5,465	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	43,147	
1,1-Dichloroethylene	0	0		0	7,500	7,500	21,573	
1,2-Dichloropropane	0	0		0	11,000	11,000	31,641	
1,3-Dichloropropylene	0	0		0	310	310	892	
Ethylbenzene	0	0		0	2,900	2,900	8,342	
Methyl Bromide	0	0		0	550	550	1,582	
Methyl Chloride	0	0		0	28,000	28,000	80,540	
Methylene Chloride	0	0		0	12,000	12,000	34,517	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,876	
Tetrachloroethylene	0	0		0	700	700	2,014	
Toluene	0	0		0	1,700	1,700	4,890	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	19,560	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	8,629	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	9,780	
Trichloroethylene	0	0		0	2,300	2,300	6,616	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,611	
2,4-Dichlorophenol	0	0		0	1,700	1,700	4,890	
2,4-Dimethylphenol	0	0		0	660	660	1,898	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	230	
2,4-Dinitrophenol	0	0		0	660	660	1,898	
2-Nitrophenol	0	0		0	8,000	8,000	23,012	
4-Nitrophenol	0	0		0	2,300	2,300	6,616	
p-Chloro-m-Cresol	0	0		0	160	160	460	
Pentachlorophenol	0	0		0	8.723	8.72	25.1	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,323	
Acenaphthene	0	0		0	83	83.0	239	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	300	300	863	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.44	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	86,293	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	12,944	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	777	
Butyl Benzyl Phthalate	0	0		0	140	140	403	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	2,359	
1,3-Dichlorobenzene	0	0		0	350	350	1,007	
1,4-Dichlorobenzene	0	0		0	730	730	2,100	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	11,506	
Dimethyl Phthalate	0	0		0	2,500	2,500	7,191	
Di-n-Butyl Phthalate	0	0		0	110	110	316	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	4,602	
2,6-Dinitrotoluene	0	0		0	990	990	2,848	
1,2-Diphenylhydrazine	0	0		0	15	15.0	43.1	
Fluoranthene	0	0		0	200	200	575	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	28.8	
Hexachlorocyclopentadiene	0	0		0	5	5.0	14.4	
Hexachloroethane	0	0		0	60	60.0	173	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	28,764	
Naphthalene	0	0		0	140	140	403	
Nitrobenzene	0	0		0	4,000	4,000	11,506	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	48,900	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	863	
Phenanthrene	0	0		0	5	5.0	14.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	374	
Aldrin	0	0		0	3	3.0	8.63	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	2.73	
Chlordane	0	0		0	2.4	2.4	6.9	
4,4-DDT	0	0		0	1.1	1.1	3.16	
4,4-DDE	0	0		0	1.1	1.1	3.16	
4,4-DDD	0	0		0	1.1	1.1	3.16	
Dieldrin	0	0		0	0.24	0.24	0.69	
alpha-Endosulfan	0	0		0	0.22	0.22	0.63	

beta-Endosulfan	0	0		0	0.22	0.22	0.63	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.25	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	1.5	
Heptachlor Epoxide	0	0		0	0.5	0.5	1.44	
Toxaphene	0	0		0	0.73	0.73	2.1	

☑ ***CFC*** CCT (min): 720 PMF: 0.047 Analysis Hardness (mg/l): 126.57 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	3,080	
Total Arsenic	0	0		0	150	150	2,100	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	57,402	
Total Boron	0	0		0	1,600	1,600	22,401	
Total Cadmium	0	0		0	0.290	0.32	4.51	Chem Translator of 0.899 applied
Total Chromium (III)	0	0		0	89.891	105	1,463	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	146	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	266	
Total Copper	0	0		0	10.953	11.4	160	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	72.8	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	418,700	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.250	4.29	60.1	Chem Translator of 0.757 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	12.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	63.479	63.7	891	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	69.9	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	182	
Total Zinc	0	0		0	144.245	146	2,048	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	42.0	
Acrylonitrile	0	0		0	130	130	1,820	
Benzene	0	0		0	130	130	1,820	
Bromoform	0	0		0	370	370	5,180	
Carbon Tetrachloride	0	0		0	560	560	7,840	
Chlorobenzene	0	0		0	240	240	3,360	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	49,001	
Chloroform	0	0		0	390	390	5,460	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	

1,2-Dichloroethane	0	0		0	3,100	3,100	43,401	
1,1-Dichloroethylene	0	0		0	1,500	1,500	21,001	
1,2-Dichloropropane	0	0		0	2,200	2,200	30,801	
1,3-Dichloropropylene	0	0		0	61	61.0	854	
Ethylbenzene	0	0		0	580	580	8,120	
Methyl Bromide	0	0		0	110	110	1,540	
Methyl Chloride	0	0		0	5,500	5,500	77,002	
Methylene Chloride	0	0		0	2,400	2,400	33,601	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,940	
Tetrachloroethylene	0	0		0	140	140	1,960	
Toluene	0	0		0	330	330	4,620	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	19,601	
1,1,1-Trichloroethane	0	0		0	610	610	8,540	
1,1,2-Trichloroethane	0	0		0	680	680	9,520	
Trichloroethylene	0	0		0	450	450	6,300	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,540	
2,4-Dichlorophenol	0	0		0	340	340	4,760	
2,4-Dimethylphenol	0	0		0	130	130	1,820	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	224	
2,4-Dinitrophenol	0	0		0	130	130	1,820	
2-Nitrophenol	0	0		0	1,600	1,600	22,401	
4-Nitrophenol	0	0		0	470	470	6,580	
p-Chloro-m-Cresol	0	0		0	500	500	7,000	
Pentachlorophenol	0	0		0	6.693	6.69	93.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,274	
Acenaphthene	0	0		0	17	17.0	238	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	826	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.4	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	84,002	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	12,740	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	756	
Butyl Benzyl Phthalate	0	0		0	35	35.0	490	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	2,240	
1,3-Dichlorobenzene	0	0		0	69	69.0	966	
1,4-Dichlorobenzene	0	0		0	150	150	2,100	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	11,200	

Dimethyl Phthalate	0	0		0	500	500	7,000	
Di-n-Butyl Phthalate	0	0		0	21	21.0	294	
2,4-Dinitrotoluene	0	0		0	320	320	4,480	
2,6-Dinitrotoluene	0	0		0	200	200	2,800	
1,2-Diphenylhydrazine	0	0		0	3	3.0	42.0	
Fluoranthene	0	0		0	40	40.0	560	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	28.0	
Hexachlorocyclopentadiene	0	0		0	1	1.0	14.0	
Hexachloroethane	0	0		0	12	12.0	168	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	29,401	
Naphthalene	0	0		0	43	43.0	602	
Nitrobenzene	0	0		0	810	810	11,340	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	47,601	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	826	
Phenanthrene	0	0		0	1	1.0	14.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	364	
Aldrin	0	0		0	0.1	0.1	1.4	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.06	
4,4-DDT	0	0		0	0.001	0.001	0.014	
4,4-DDE	0	0		0	0.001	0.001	0.014	
4,4-DDD	0	0		0	0.001	0.001	0.014	
Dieldrin	0	0		0	0.056	0.056	0.78	
alpha-Endosulfan	0	0		0	0.056	0.056	0.78	
beta-Endosulfan	0	0		0	0.056	0.056	0.78	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.5	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.053	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.053	
Toxaphene	0	0		0	0.0002	0.0002	0.003	

☑ ***THH*** CCT (min): 720 PMF: 0.047 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	

Total Antimony	0	0		0	5.6	5.6	78.4	
Total Arsenic	0	0		0	10	10.0	140	
Total Barium	0	0		0	2,400	2,400	33,601	
Total Boron	0	0		0	3,100	3,100	43,401	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	56.0	
Dissolved Iron	0	0		0	300	300	4,200	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	14,000	
Total Mercury	0	0		0	0.050	0.05	0.7	
Total Nickel	0	0		0	610	610	8,540	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	3.36	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	42.0	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	1,400	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	462	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	952	
Methyl Bromide	0	0		0	100	100.0	1,400	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	798	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,400	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	140,004	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	

2-Chlorophenol	0	0		0	30	30.0	420	
2,4-Dichlorophenol	0	0		0	10	10.0	140	
2,4-Dimethylphenol	0	0		0	100	100.0	1,400	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	28.0	
2,4-Dinitrophenol	0	0		0	10	10.0	140	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	56,002	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	980	
Anthracene	0	0		0	300	300	4,200	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	2,800	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	1.4	
2-Chloronaphthalene	0	0		0	800	800	11,200	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	14,000	
1,3-Dichlorobenzene	0	0		0	7	7.0	98.0	
1,4-Dichlorobenzene	0	0		0	300	300	4,200	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	8,400	
Dimethyl Phthalate	0	0		0	2,000	2,000	28,001	
Di-n-Butyl Phthalate	0	0		0	20	20.0	280	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	280	
Fluorene	0	0		0	50	50.0	700	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	56.0	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	476	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	140	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	

n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	280	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.98	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	58.8	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	280	
beta-Endosulfan	0	0		0	20	20.0	280	
Endosulfan Sulfate	0	0		0	20	20.0	280	
Endrin	0	0		0	0.03	0.03	0.42	
Endrin Aldehyde	0	0		0	1	1.0	14.0	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.065 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	

Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	2.95	
Benzene	0	0		0	0.58	0.58	28.5	
Bromoform	0	0		0	7	7.0	344	
Carbon Tetrachloride	0	0		0	0.4	0.4	19.7	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	39.4	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	280	
Dichlorobromomethane	0	0		0	0.95	0.95	46.7	
1,2-Dichloroethane	0	0		0	9.9	9.9	487	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	44.3	
1,3-Dichloropropylene	0	0		0	0.27	0.27	13.3	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	984	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	9.84	
Tetrachloroethylene	0	0		0	10	10.0	492	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	27.1	
Trichloroethylene	0	0		0	0.6	0.6	29.5	
Vinyl Chloride	0	0		0	0.02	0.02	0.98	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	1.48	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	73.8	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.005	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.049	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.005	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.049	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.49	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.48	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	15.7	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	5.9	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.005	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	2.46	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	2.46	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	2.46	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.48	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.004	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.49	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	4.92	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.049	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.034	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.25	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	162	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	
Aldrin	0	0		0	0.0000008	8.00E-07	0.00004	
alpha-BHC	0	0		0	0.0004	0.0004	0.02	
beta-BHC	0	0		0	0.008	0.008	0.39	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.015	
4,4-DDT	0	0		0	0.00003	0.00003	0.001	
4,4-DDE	0	0		0	0.00002	0.00002	0.001	
4,4-DDD	0	0		0	0.0001	0.0001	0.005	
Dieldrin	0	0		0	0.000001	0.000001	0.00005	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	

Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.0003	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.001	
Toxaphene	0	0		0	0.0007	0.0007	0.034	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,383	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	342	AFC	Discharge Conc > 10% WQBEL (no RP)

Other Pollutants without Limits or Monitoring

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	140	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	33,601	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	14,934	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	4.51	µg/L	Discharge Conc < TQL
Total Chromium (III)	1,463	µg/L	Discharge Conc < TQL
Hexavalent Chromium	30.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	175	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	42.0	µg/L	Discharge Conc < TQL
Free Cyanide	40.6	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	4,200	µg/L	Discharge Conc ≤ 10% WQBEL

Total Iron	418,700	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	60.1	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	14,000	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.7	µg/L	Discharge Conc < TQL
Total Nickel	891	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	69.9	µg/L	Discharge Conc < TQL
Total Silver	16.9	µg/L	Discharge Conc < TQL
Total Thallium	3.36	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	5.53	µg/L	Discharge Conc < TQL
Acrylonitrile	2.95	µg/L	Discharge Conc < TQL
Benzene	28.5	µg/L	Discharge Conc < TQL
Bromoform	344	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	19.7	µg/L	Discharge Conc < TQL
Chlorobenzene	1,400	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	39.4	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	33,186	µg/L	Discharge Conc < TQL
Chloroform	280	µg/L	Discharge Conc < TQL
Dichlorobromomethane	46.7	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	487	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	462	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	44.3	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	13.3	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	952	µg/L	Discharge Conc < TQL
Methyl Bromide	1,014	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	51,623	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	984	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	9.84	µg/L	Discharge Conc < TQL
Tetrachloroethylene	492	µg/L	Discharge Conc < TQL
Toluene	798	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,400	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	5,531	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	27.1	µg/L	Discharge Conc < TQL
Trichloroethylene	29.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.98	µg/L	Discharge Conc < TQL
2-Chlorophenol	420	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	140	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,217	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	28.0	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	140	µg/L	Discharge Conc < TQL
2-Nitrophenol	14,749	µg/L	Discharge Conc < TQL
4-Nitrophenol	4,240	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	295	µg/L	Discharge Conc < TQL

Pentachlorophenol	1.48	µg/L	Discharge Conc < TQL
Phenol	56,002	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	73.8	µg/L	Discharge Conc < TQL
Acenaphthene	153	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	4,200	µg/L	Discharge Conc < TQL
Benzidine	0.005	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.049	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.005	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.049	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.49	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	1.48	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	2,800	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	15.7	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	498	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	1.4	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	11,200	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	5.9	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.005	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,512	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	98.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	1,346	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	2.46	µg/L	Discharge Conc < TQL
Diethyl Phthalate	7,375	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	4,609	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	203	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	2.46	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	2.46	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.48	µg/L	Discharge Conc < TQL
Fluoranthene	280	µg/L	Discharge Conc < TQL
Fluorene	700	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.004	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.49	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	9.22	µg/L	Discharge Conc < TQL
Hexachloroethane	4.92	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.049	µg/L	Discharge Conc < TQL
Isophorone	476	µg/L	Discharge Conc < TQL
Naphthalene	258	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	140	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.034	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.25	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	162	µg/L	Discharge Conc < TQL
Phenanthrene	9.22	µg/L	Discharge Conc < TQL

Pyrene	280	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.98	µg/L	Discharge Conc < TQL
Aldrin	0.00004	µg/L	Discharge Conc < TQL
alpha-BHC	0.02	µg/L	Discharge Conc < TQL
beta-BHC	0.39	µg/L	Discharge Conc < TQL
gamma-BHC	1.75	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.015	µg/L	Discharge Conc < TQL
4,4-DDT	0.001	µg/L	Discharge Conc < TQL
4,4-DDE	0.001	µg/L	Discharge Conc < TQL
4,4-DDD	0.005	µg/L	Discharge Conc < TQL
Dieldrin	0.00005	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.41	µg/L	Discharge Conc < TQL
beta-Endosulfan	0.41	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	280	µg/L	Discharge Conc < TQL
Endrin	0.16	µg/L	Discharge Conc < TQL
Endrin Aldehyde	14.0	µg/L	Discharge Conc < TQL
Heptachlor	0.0003	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.001	µg/L	Discharge Conc < TQL
Toxaphene	0.003	µg/L	Discharge Conc < TQL

5. Whole Effluent Toxicity Analysis Spreadsheet

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.07
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Lower Allen Township WWTP

Permit No.: PA0027189

Test Completion Date: 6/15/2021

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	9	9
4	10	8
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.250
Std Dev.	0.500	0.957
# Replicates	4	4

T-Test Result: 3.3502
Deg. of Freedom: 4
Critical T Value: 0.7407
Pass or Fail: **PASS**

Test Completion Date: 8/25/2020

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	10
4	9	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	10.000
Std Dev.	0.500	0.000
# Replicates	4	4

T-Test Result: 12.5523
Deg. of Freedom: 3
Critical T Value: 0.7649
Pass or Fail: **PASS**

Test Completion Date: 8/22/2019

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	4	4

T-Test Result:
Deg. of Freedom:
Critical T Value:
Pass or Fail: **PASS**

Test Completion Date: 8/11/2018

Replicate No.	Control	TIWC
1	10	10
2	9	9
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.750
Std Dev.	0.500	0.500
# Replicates	4	4

T-Test Result: 6.7314
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.07
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.25

Facility Name: Lower Allen Township WWTP

Permit No.: PA0027189

Test Completion Date: 6/15/2021

Replicate No.	Control	TIWC
1	0.644	0.529
2	0.677	0.603
3	0.533	0.537
4	0.653	0.521
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.627	0.548
Std Dev.	0.064	0.038
# Replicates	4	4

T-Test Result	2.5399
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 8/25/2020

Replicate No.	Control	TIWC
1	0.41	0.618
2	0.476	0.578
3	0.56	0.444
4	0.399	0.43
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.461	0.518
Std Dev.	0.074	0.095
# Replicates	4	4

T-Test Result	3.1286
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 8/22/2019

Replicate No.	Control	TIWC
1	0.528	0.473
2	0.543	0.449
3	0.483	0.485
4	0.558	0.483
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.528	0.473
Std Dev.	0.032	0.017
# Replicates	4	4

T-Test Result	5.2063
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 8/11/2018

Replicate No.	Control	TIWC
1	0.603	0.562
2	0.625	0.489
3	0.574	0.657
4	0.51	0.53
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.578	0.560
Std Dev.	0.050	0.072
# Replicates	4	4

T-Test Result	3.1211
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.07
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Lower Allen Township WWTP

Permit No.: PA0027189

Test Completion Date: 6/14/2021

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 8/25/2020

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 8/21/2019

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 8/11/2018

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.07
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Lower Allen Township WWTP

Permit No.: PA0027189

Test Completion Date: 6/14/2021

Replicate No.	Control	TIWC
1	28	35
2	28	30
3	33	15
4	37	25
5	30	30
6	33	25
7	26	27
8	30	32
9	27	31
10	29	33
11		
12		
13		
14		
15		
Mean	30.100	28.300
Std Dev.	3.348	5.716
# Replicates	10	10

T-Test Result	2.8996
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	PASS

Test Completion Date: 8/25/2020

Replicate No.	Control	TIWC
1	28	37
2	35	28
3	39	24
4	28	38
5	35	28
6	36	32
7	30	31
8	32	21
9	35	43
10	30	37
11		
12		
13		
14		
15		
Mean	32.800	31.900
Std Dev.	3.736	6.871
# Replicates	10	10

T-Test Result	3.1110
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	PASS

Test Completion Date: 8/21/2019

Replicate No.	Control	TIWC
1	44	45
2	37	27
3	38	38
4	39	14
5	34	30
6	42	37
7	38	23
8	44	38
9	36	40
10	36	38
11		
12		
13		
14		
15		
Mean	38.800	33.000
Std Dev.	3.458	9.369
# Replicates	10	10

T-Test Result	1.2687
Deg. of Freedom	12
Critical T Value	0.8726
Pass or Fail	PASS

Test Completion Date: 8/11/2018

Replicate No.	Control	TIWC
1	29	24
2	34	25
3	27	31
4	31	33
5	22	27
6	28	9
7	27	29
8	21	24
9	27	22
10	23	25
11		
12		
13		
14		
15		
Mean	26.900	24.900
Std Dev.	4.040	6.557
# Replicates	10	10

T-Test Result	2.0687
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	PASS

WET Summary and Evaluation

Facility Name	Lower Allen Township WWTP
Permit No.	PA0027189
Design Flow (MGD)	7.5
Q_{7-10} Flow (cfs)	3227
PMF_a	0.007
PMF_c	0.047

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/15/21	8/25/20	8/22/19	8/11/18
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/15/21	8/25/20	8/22/19	8/11/18
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/14/21	8/25/20	8/21/19	8/11/18
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/14/21	8/25/20	8/21/19	8/11/18
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**	
TIWC	**7**	% Effluent
Dilution Series	**3, 7, 30, 60, 100**	% Effluent
Permit Limit	**None**	
Permit Limit Species		