pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026620**
Facility Type	**Municipal**	APS ID	**18**
Major / Minor	**Major**	Authorization ID	**1079810**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Millersville Borough**	Facility Name	**Millersville Borough WWTP**
Applicant Address	100 Municipal Drive	Facility Address	100 Municipal Drive
	Millersville, PA 17551		Millersville, PA 17551
Applicant Contact	Edward Arnold	Facility Contact	Les McMullen
Applicant Phone	(717) 872-4645	Facility Phone	(717) 872-5323
Client ID	66615	Site ID	271423
Ch 94 Load Status	Not Overloaded	Municipality	Millersville Borough
Connection Status	No Limitations	County	Lancaster
Date Application Received	July 2, 2015	EPA Waived?	No
Date Application Accepted	July 8, 2015	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: NPDES Renewal.

Summary of Review

Millersville Borough has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on December 17, 2010 and became effective on January 1, 2011, authorizing discharge of treated sewage from the existing wastewater treatment plant (WWTP) located in Millersville Borough, Lancaster County into Conestoga River. The existing permit expiration date was December 31, 2015, and the permit has been administratively extended since that time.

Per the previous fact sheet, this WWTP serves the Millersville Borough which includes the University of Millersville, a development (Crossgates – less than 1% of total flow), and a small portion of Lancaster Township (less than 1% of total flow).

Changes to renewal permit: Fecal coliform IMAX limits have been added to the permit. E. Coli monitoring has been added. Total Aluminum and Total Copper monitoring was added. TN monitoring has been increased to 2/week.

Sludge use and disposal description and location(s): Class B land applied or disposed of at offsite landfill.

Supplemental information has been attached to this fact sheet.

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

Approve	Deny	Signatures	Date
X		*Benjamin Lockwood* Benjamin R. Lockwood / Environmental Engineering Specialist	May 5, 2021
X		*Maria D. Bebenek for Daniel W. Martin* Daniel W. Martin, P.E. / Environmental Engineer Manager	May 12, 2021
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	May 12, 2021

Summary of Review
or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	1.85
Latitude	39º 59' 7"	Longitude	76º 20' 49"
Quad Name	Conestoga	Quad Code	1935
Wastewater Description:	Sewage Effluent		
Receiving Waters	Conestoga River (WWF)	Stream Code	07548
NHD Com ID	57465803	RMI	7.6
Drainage Area	395 mi^2	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	47.4	Q_{7-10} Basis	USGS Gage #01576500
Elevation (ft)	197	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens, Pathogens		
Source(s) of Impairment	Agriculture, Urban Runoff/Storm Sewers		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	17.7

Changes Since Last Permit Issuance: None

Streamflows: A drainage area of 395 mi^2 and a Q_{7-10} flow of 47.4 cubic feet per second (cfs) were determined by establishing a correlation to the yield of USGS Gage Station #01576500 on the Conestoga River. The Q_{7-10} and drainage area at the gage are 38.6 cfs and 324 mi^2, respectively. These values are taken from the USGS document "Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania". The Q_{7-10} runoff rate at the gage station was calculated as follows:

Yield = (38.6 cfs)/ 324 mi^2 = 0.12 cfs/mi^2

The drainage area at the discharge point, taken from USGS PA StreamStats = 395 mi^2

The Q_{7-10} at the discharge point = 395 mi^2 x 0.12 cfs/mi^2 = 47.4 cfs

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	Variable (Stormwater)
Latitude	39º 59' 6"	Longitude	76º 20' 53"
Quad Name	Conestoga	Quad Code	1935
Wastewater Description:	Stormwater		
Receiving Waters	Conestoga River (WWF)	Stream Code	07548
NHD Com ID	57465803	RMI	7.6
Drainage Area	395 mi^2	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	47.4	Q_{7-10} Basis	USGS Gage #01576500
Elevation (ft)	197	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens, Pathogens		
Source(s) of Impairment	Agriculture, Urban Runoff/Storm Sewers		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	17.7

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	Variable (Stormwater)
Latitude	39º 59' 6"	Longitude	76º 20' 54"
Quad Name	Conestoga	Quad Code	1935
Wastewater Description:	Stormwater		
Receiving Waters	Conestoga River (WWF)	Stream Code	07548
NHD Com ID	57465799	RMI	7.6
Drainage Area	395 mi^2	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	47.4	Q_{7-10} Basis	USGS Gage #01576500
Elevation (ft)	197	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens, Pathogens		
Source(s) of Impairment	Agriculture, Urban Runoff/Storm Sewers		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	17.7

Changes Since Last Permit Issuance: None

Other Comments: None

Treatment Facility Summary				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Sequencing Batch Reactor	Gas Chlorine	1.85
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
1.85	3,860	Not Overloaded	Aerobic Digestion w/ Dewatering & Lime Treatment	Class B Land Applied Off Site

Changes Since Last Permit Issuance: None

Other Comments: The treatment process is as follows: Screening – Primary Clarification – Activated Sludge SBR Process – Phosphorus Removal Using Alum – Chlorine Gas Disinfection – Aerobic Digesters - Outfall 001 to Conestoga River

Compliance History	
Summary of DMRs:	A summary of past DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	6/2/2011: A routine inspection was conducted. It was noted that the WWTP operation looked good, all treatment units were operating properly, and the WWTP effluent was clear. 7/10/2012: A routine inspection was conducted. It was noted that the air lines to the grit chamber were broken, and were expected to be replaced in mid-August. The SBR #2 had a leaking effluent pipe which was recommended to be fixed. The air lines to digesters # 3 and 4 were also broken. All 4 digesters were still being aerated. 2/13/2013: A brief inspection was conducted. The broken air lines had been replaced and are now above ground. The operator was still having issued with leaking alum valves for the SBRs. The operator was hoping to replace the blowers and utilize VFDs. No other issues were noted. 9/12/2013: A routine inspection was conducted. No issues were noted at the WWTP. 7/13/2014: A routine inspection was conducted. No issues were noted at the WWTP. 9/16/2014: A follow up inspection was conducted to re-sample the WWTP effluent. Field readings were within permitted limits. Upstream and downstream of Outfall 001 appeared ok/normal. 9/15/2015: A routine inspection was conducted. The EQ tank had very little floatables or grease. The SBRs had good aeration and mixing. The decant to the chlorine contact tank was clear. The effluent was clear at Outfall 001, with no water quality concerns. Field readings were within permitted limits. 3/15/2016: A routine inspection was conducted. All treatment units were online, but the WWTP was not discharging at the time of inspection. Field readings were within permitted limits. 2/21/2018: A routine inspection was conducted. It was noted that the primary clarifier would be refurbished in 2018. No other issues were noted. Field readings were within permitted limits. 3/28/2019: A routine inspection was conducted. The chlorine contact tanks appeared clear with a slight green tint. The effluent appeared clear. Field readings were within permitted limits. A high flow event was reported on 3/22/2019, when the WWTP entered storm-mode and had higher effluent TSS. No other issues were noted. 6/5/2020: An administrative inspection was conducted. The primary clarifier was taken out of service on 4/22/2020 due to decreased flows. The tank is typically taken offline when schools are out for summer. All treatment units were operable. The WWTP had not experienced any emergency conditions. No other outstanding issues or needs were noted.

Other Comments: There are currently no open violations associated with the permittee or facility.

Compliance History

DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.558	0.503	0.459	0.464	0.477	0.506	0.447	0.518	0.581	0.563	0.547	0.624
Flow (MGD) Daily Maximum	0.684	1.033	0.698	0.677	0.627	0.865	0.551	0.653	0.747	1.021	0.712	0.737
pH (S.U.) Minimum	6.7	6.6	6.7	6.8	6.9	7.0	7.0	7.0	7.0	6.8	6.8	6.9
pH (S.U.) Maximum	7.0	7.0	7.2	7.1	7.1	7.3	7.3	7.2	7.2	7.1	7.2	7.1
DO (mg/L) Minimum	7.3	7.2	7.0	6.9	6.4	6.1	6.2	6.4	6.5	7.0	7.2	7.2
TRC (mg/L) Average Monthly	0.25	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
TRC (mg/L) Instantaneous Maximum	0.32	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.2
CBOD5 (lbs/day) Average Monthly	20	8	8	8	8.2	8.0	7.8	9.2	9.5	10.1	9	15
CBOD5 (lbs/day) Weekly Average	52	8	11	10	9.3	8.9	9.4	10.2	12.8	10.1	10	26
CBOD5 (mg/L) Average Monthly	< 4	2	2	2	2.0	2.0	2.1	2.0	2	2.0	2	3
CBOD5 (mg/L) Weekly Average	12	2	2	2	2.0	2.0	2.4	2.0	2	2.0	2	5
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	838	794	793	771	832	648	675	894	709	786	840	1054
BOD5 (mg/L) Raw Sewage Influent Average Monthly	187	211	206	207	209	170	184	207	147	156	179	195
TSS (lbs/day) Average Monthly	18	15	16	16	16.4	16.0	15.6	18.3	19	20.1	18	22
TSS (lbs/day) Raw Sewage Influent Average Monthly	761	637	800	830	829	1212	692	766	723	899	864	965

TSS (lbs/day) Weekly Average	19	16	22	19	18.5	17.8	18.6	20.5	25.6	20.1	19	23
TSS (mg/L) Average Monthly	< 4	4	4	4	4.0	4.0	4.2	4.0	4	4.0	4	4
TSS (mg/L) Raw Sewage Influent Average Monthly	170	169	209	221	209	327	188	176	149	178	184	178
TSS (mg/L) Weekly Average	< 4	4	4	4	4.0	4.0	4.8	4.0	4	4.0	4	4
Fecal Coliform (CFU/100 ml) Geometric Mean	2	1.8	1.6	2.9	3.4	6.7	5.8	3.5	3.3	3	2	3
Nitrate-Nitrite (mg/L) Average Monthly	10.84	12.4	11.1	10.5	9.8	3.2	2.0	1.7	3.3	7.7	6.1	7.8
Nitrate-Nitrite (lbs) Total Monthly	1541	1510	1319	1230	1132	382	238	233	504	1159	849	1231
Total Nitrogen (mg/L) Average Monthly	11.34	13.0	11.8	11.1	10.3	3.9	2.7	2.5	4.0	8.5	6.9	8.4
Total Nitrogen (lbs) Effluent Net Total Monthly	1612	1579	1404	1305	1199	471	319	338	604	1280	956	1328
Total Nitrogen (lbs) Total Monthly	1612	1579	1404	1305	1199	471	319	338	604	1280	956	1328
Total Nitrogen (lbs) Effluent Net Total Annual					12457							
Total Nitrogen (lbs) Total Annual					12457							
Ammonia (mg/L) Average Monthly	< 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Ammonia (lbs) Total Monthly	14	12	12	12	12	12	12	14	15	15	14	16
Ammonia (lbs) Total Annual					165							
TKN (mg/L) Average Monthly	< 0.5	0.6	0.7	0.6	0.6	0.7	0.7	0.8	0.7	0.8	0.8	0.6
TKN (lbs) Total Monthly	72	69	86	75	66	89	81	105	101	121	107	97
Total Phosphorus (lbs/day) Average Monthly	1	1.45	2.87	1.98	2.56	2.25	1.98	2.09	2	2.0	3	3
Total Phosphorus (mg/L) Average Monthly	0.2	0.38	0.65	0.50	0.63	0.56	0.53	0.46	0.37	0.3	0.6	0.5

Total Phosphorus (lbs) Effluent Net Total Monthly	33	45	86	61	77	70	61	63	55	47	84	84
Total Phosphorus (lbs) Total Monthly	33	45	86	61	77	70	61	63	55	47	84	84
Total Phosphorus (lbs) Effluent Net Total Annual					849							
Total Phosphorus (lbs) Total Annual					849							

Existing Effluent Limitations and Monitoring Requirements

The tables below summarize the effluent limits and monitoring requirements implemented in the existing NPDES permit.

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	386	617	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	463	694	XXX	30	45	60	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	2/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	XXX	2/week	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Phosphorus	9.7	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite

Outfall 001, continued

Discharge Parameter	Chesapeake Bay Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/l)				
	Monthly	Annual	Minimum	Monthly Average	Maximum	Monitoring Frequency	Sample Type
Ammonia-N	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite
Kjeldahl-N	Report	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	33,790	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	4,505	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.85
Latitude 39º 59' 7" **Longitude** 76º 20' 49"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Water Quality-Based Limitations

$CBOD_5$ & NH_3-N.

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.1b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), ammonia (NH_3-N) and dissolved oxygen (D.O.) The model simulates two basic processes: In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3-N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions. The model was utilized for this permit application. The flow data used to run the model was acquired from USGS PA StreamStats and USGS Gage # 01576500, and is included in the attachment. Default discharge temperature and pH values were used. The model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, a NH_3-N average monthly limit of 25 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The $CBOD_5$ limit is the same as the existing permit limit, which will remain in the renewal permit. DEP's SOP No. BCW-PMT-033 states that for existing discharges, if WQM modeling results for summer indicates that an average monthly limit of 25 mg/l is acceptable, a year-round monitoring requirement for NH_3-N should generally be established, at a minimum. The existing permit has a year-round monitoring requirement for NH_3-N, which is consistent with this statement.

Toxics

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.3 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. Based on effluent sample results reported on the application, the Toxics Management Spreadsheet recommended monitoring for Total Aluminum and Total Copper.

This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. The results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

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

Since the reported maximum concentrations for Total Aluminum and Total Copper were greater than 10% of their respective WQBELs, per DEP's SOP No. BPNPSM-PMT-033, a monitoring requirement will be added to the permit for Total Aluminum and Total Copper. A measurement frequency of 1/quarter will be used.

Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns. It is recommended that a TRC limit of 0.5 mg/l monthly average and 1.6 mg/l instantaneous maximum be applied this permit cycle, the same as the existing permit.

Best Professional Judgement (BPJ) Limitations

Dissolved Oxygen
A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). This is the existing permit limit, and it is recommended that it remain in the permit to ensure that the facility continues to achieve compliance with water quality standards.

Total Phosphorus
Historically, a Total Phosphorus (TP) effluent limit of 2.0 mg/l was established in the permit when it was determined that the facility was expected to contribute 0.25% or more of the total point source phosphorus loading at the point of discharge. This determination was based on the Department's *Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams* (Guidance No. 391-2000-018). DEP previously determined that the Millersville Borough WWTP met this criteria, and phosphorus limitations were required in the permit. The TP average monthly limit of 2.0 mg/l and instantaneous maximum (IMAX) limit of 4.0 mg/l will remain in the permit to protect the local watershed.

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. A new update to the WIP was published as the Phase 3 WIP in August 2019. As part of the Phase 3 WIP, a *Phase 3 Watershed Implementation Plan Wastewater Supplement* (Phase 3 Supplement) was developed, and was most recently revised on December 17, 2019, and is the basis for the development of any Chesapeake Bay related permit parameters. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow. For new Phase 4 and 5 sewage dischargers, in general DEP will issue new permits containing Cap Loads of "0" and new facilities will be expected to purchase credits and/or apply offsets to achieve compliance.

Millersville Borough WWTP is a Phase 3 significant discharger. The facility's waste load allocation (WLA) is tracked under an individual WLA as a significant discharger in the Phase 3 Supplement. The following Cap Loads specified in the current Phase 3 Supplement 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
PA0026620	3	Millersville Borough	12/17/2010	12/31/2015	10/1/2013	33,790	-	4,505	0.891	0.436

The Cap Loads are unchanged from the existing permit. DEP's SOP for New and Reissuance Sewage Individual NPDES Permit Applications recommends that Significant Chesapeake Bay sewage discharges should monitor for nutrients at a minimum of 1/week as 24-hour composites. The Phase 3 Supplement states that "the minimum monitoring frequency for TN species and TP in new or renewed NPDES permits for significant sewage dischargers will be 2/week." Therefore, the monitoring frequency for all Chesapeake Bay parameters has been increased to 2/week. DEP no longer offers any tools to calculate monthly loads for Net TN and Net TP, and it is no longer needed since offsets and credits are applied annually. Therefore, this reporting requirement is no longer needed and will be removed from the permit.

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Total Dissolved Solids (TDS)

Total Dissolved Solids and its major constituents including Bromide, Chloride, and Sulfate have become statewide pollutants of concern and threats to DEP's mission to prevent violations of water quality standards. The requirement to monitor these pollutants is necessary under the following 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.

Based on the sampling data provided in the application, the maximum TDS concentration was 679 mg/l, and the maximum Bromide concentration was <1.00 mg/l. Therefore, monitoring requirements for these parameters will not be required.

Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater than 10,000/100 mL from October through April for fecal coliform. The instantaneous maximum fecal coliform limits have been included in the renewal permit.

E. Coli

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of >= 1 mgd will include E. Coli monitoring with a frequency of 1/month. This parameter has been added to the renewal permit.

Sampling Frequency & Sample Type

The monitoring requirements were established based on the BPJ and/or Table 6-3 of DEP's technical guidance No. 362-0400-001.

Flow Monitoring

Flow monitoring is recommended by DEP's technical guidance and is also required by 25 PA Code §§ 92a.27 and 92a.61.

Influent BOD_5 and Total Suspended Solids (TSS) Monitoring

As a result of negotiation with US EPA, influent monitoring of TSS and BOD_5 are required for any publicly owned treatment works (POTWs); therefore, influent sampling of BOD_5 and TSS will be included in the permit. A 24-hr composite sample type will be required to be consistent with the proposed sampling frequency for effluent TSS and $CBOD_5$.

Mass Loading Limitation

All mass loading effluent limitations recommended in the draft permit are concentration-based, calculated using a formula: design flow (MGD) x concentration limit (mg/l) x conversion factor of 8.34.

Anti-Degradation

The effluent limits for this discharge 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. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303(d) Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is a recreational impairment due to pathogens from agriculture and urban runoff/storm sewers. There is an existing fecal coliform limit in the permit, and an E. Coli monitoring requirement has been added.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Development of Effluent Limitations

Outfall No.	002, 003	**Design Flow (MGD)**	Variable (Stormwater)
Latitude	39º 59' 6" (002) 39º 59' 6" (003)	**Longitude**	76º 20' 53" (002) 76º 20' 54" (003)

Wastewater Description: Stormwater

Stormwater Limitations

The application lists two (2) stormwater outfalls for this facility, Outfall 002 and Outfall 003. No monitoring is needed for the stormwater outfalls since the SIC Code does not dictate NPDES coverage. Part C requirements for stormwater outfalls will be included in the permit.

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%, 5%, and 2%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 5.

Summary of Four Most Recent Test Results

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

NOEC/LC50 Data Analysis

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
8/4/2014	100	100	100	100	100	100	Yes
10/13/2014	100	100	100	100	100	100	Yes
2/23/2015	100	100	100	60	60	82.2	Yes
4/27/2015	100	100	100	100	100	100	Yes

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

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

☐ **YES** ☒ **NO**

Comments: All of the endpoint results were greater than the TIWC.

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

Acute Partial Mix Factor (PMFa): **0.157** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

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

[(1.85 MGD x 1.547) / ((47.4 cfs x 0.157) + (1.85 MGD x 1.547))] x 100 = **27.8%**

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

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

N/A

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

2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = N/A

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

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

[(1.85 MGD x 1.547) / ((47.4 cfs x 1) + (1.85 MGD x 1.547))] x 100 = **5.69%**

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%, 6%, 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

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

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)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	386	617	XXX	25	40	50	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	463	694	XXX	30	45	60	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Phosphorus	31	XXX	XXX	2.0	XXX	4.0	2/week	24-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	24-Hr Composite
Total Copper	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

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

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

Discharge Parameter	Chesapeake Bay Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/l)				
	Monthly	Annual	Minimum	Monthly Average	Maximum	Monitoring Frequency	Sample Type
Ammonia-N	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite
Kjeldahl-N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen	XXX	33,790	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	4,505	XXX	XXX	XXX	1/year	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: SOP No. BCW-PMT-033
☐	Other:

Enter report title:

Millersville Borough PA0026620 Outfall 001

Enter comments:

Some comments here

Millersville Borough PA0026620 Outfall 001

Region ID:	PA
Workspace ID:	PA20210429145230311000
Clicked Point (Latitude, Longitude):	39.98526, -76.34689
Time:	2021-04-29 10:52:49 -0400

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	395	square miles
BSLOPD	Mean basin slope measured in degrees	4.1071	degrees
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	9.539	percent

Low-Flow Statistics Parameters [99.9 Percent (394 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	395	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.1071	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	9.539	percent	0	89

Low-Flow Statistics Flow Report [99.9 Percent (394 square miles) Low Flow Region 1]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	103	ft^3/s	46	46
30 Day 2 Year Low Flow	129	ft^3/s	38	38
7 Day 10 Year Low Flow	59.1	ft^3/s	51	51
30 Day 10 Year Low Flow	72.8	ft^3/s	46	46
90 Day 10 Year Low Flow	107	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p.

Application Version: 4.5.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.1

Enter report title:

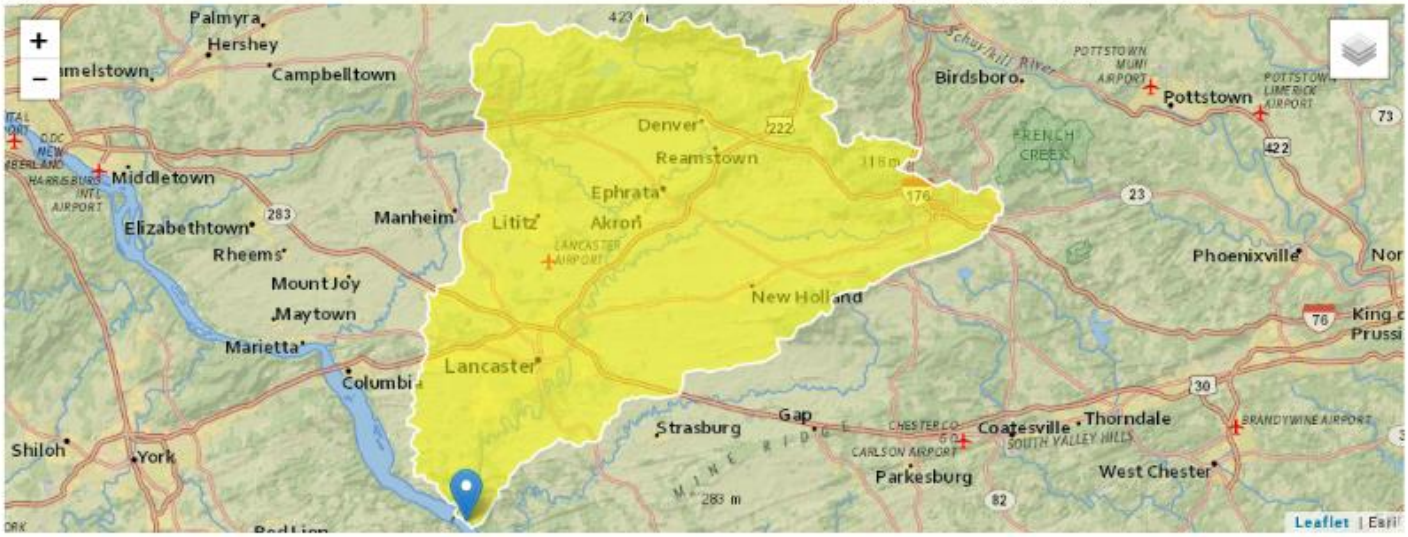
Millersville Borough PA0026620 Downstream Point RMI = 0.0

Enter comments:

Some comments here

Millersville Borough PA0026620 Downstream Point RMI = 0.0

Region ID:	PA
Workspace ID:	PA20210503192155049000
Clicked Point (Latitude, Longitude):	39.91362, -76.38249
Time:	2021-05-03 15:22:13 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	476	square miles
BSLOPD	Mean basin slope measured in degrees	3.9912	degrees
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	11.4489	percent

Low-Flow Statistics Parameters [99.9 Percent (476 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	476	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	3.9912	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	11.4489	percent	0	89

Low-Flow Statistics Flow Report [99.9 Percent (476 square miles) Low Flow Region 1]

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

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	124	ft^3/s	46	46
30 Day 2 Year Low Flow	156	ft^3/s	38	38
7 Day 10 Year Low Flow	71.8	ft^3/s	51	51
30 Day 10 Year Low Flow	88.5	ft^3/s	46	46
90 Day 10 Year Low Flow	131	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p.

Application Version: 4.5.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.1

1	1A							
2	2	**TRC EVALUATION**						
3	3	Input appropriate values in B4:B8 and E4:E7						
4	4	47.4	= Q stream (cfs)		0.5	= CV Daily		
5	5	1.85	= Q discharge (MGD)		0.5	= CV Hourly		
6	6	30	= no. samples		1	= AFC_Partial Mix Factor		
7	7	0.3	= Chlorine Demand of Stre		1	= CFC_Partial Mix Factor		
8	8	0	= Chlorine Demand of Disc		15	= AFC_Criteria Compliance Time (min)		
9	9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)		
10		0	= % Factor of Safety (FOS)			=Decay Coefficient (K)		
11	10	Source	Reference	AFC Calculations		Reference	CFC Calculations	
12	11	TRC	1.3.2.iii	WLA afc = 5.302		1.3.2.iii	WLA cfc = 5.162	
13	12	PENTOXSD TRC	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581	
14	13	PENTOXSD TRC	5.1b	LTA_afc= 1.976		5.1d	LTA_cfc = 3.001	
15	14							
16	15	Source		Effluent Limit Calculations				
17	16	PENTOXSD TRC	5.1f	AML MULT = 1.231				
18	17	PENTOXSD TRC	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ		
19	18			INST MAX LIMIT (mg/l) = 1.635				
20								
21								
22								
23		WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...**					
24			**...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**					
25		LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)					
26		LTA_afc	wla_afc*LTAMULT_afc					
27								
28		**WLA_cfc**	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...**					
29			**...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**					
30		LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)					
31		**LTA_cfc**	wla_cfc*LTAMULT_cfc					
32								
33		AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))					
34		AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)					
35		INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**					
36								
37								
38								
39								
40								
41								
42		**(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....**						
43		**....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)**						
44								
45								
46								
47								

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
07J	7548	CONESTOGA RIVER (formerly CREE	7.600	197.00	395.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	47.40	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Millersville	PA0026620	1.8500	1.8500	1.8500	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)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07J	7548	CONESTOGA RIVER (formerly CREE	0.000	168.00	476.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	57.10	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		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
07J	7548	CONESTOGA RIVER (formerly CREEK)

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
7.600	47.40	0.00	47.40	2.8619	0.00072	1.003	116.39	116.08	0.43	1.078	20.28	7.00
Q1-10 Flow												
7.600	37.92	0.00	37.92	2.8619	0.00072	NA	NA	NA	0.38	1.212	20.35	7.00
Q30-10 Flow												
7.600	66.36	0.00	66.36	2.8619	0.00072	NA	NA	NA	0.52	0.901	20.21	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	0.8	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.4	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07J	7548	CONESTOGA RIVER (formerly CREEK)

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
7.600	Millersville	16.28	50	16.28	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
7.600	Millersville	1.86	25	1.86	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)		
7.60	Millersville	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07J	7548	CONESTOGA RIVER (formerly CREEK)

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
7.600	1.850	20.285	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
116.392	1.003	116.076	0.431
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.31	0.389	1.42	0.716
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.058	1.462	Tsivoglou	5
Reach Travel Time (days)			
1.078			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.108	3.17	1.32	7.57
0.216	3.04	1.22	7.20
0.324	2.91	1.13	6.92
0.431	2.79	1.05	6.72
0.539	2.68	0.97	6.58
0.647	2.56	0.90	6.49
0.755	2.46	0.83	6.44
0.863	2.35	0.77	6.43
0.971	2.26	0.71	6.44
1.078	2.16	0.66	6.48

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07J	7548	CONESTOGA RIVER (formerly CREEK)

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
7.600	Millersville	PA0026620	1.850	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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Toxics Management Spreadsheet
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Discharge Information

Instructions | Discharge | Stream

Facility: **Millersville Borough** NPDES Permit No.: **PA0026620** Outfall No.: **001**

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

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
1.85	260	8.4						

					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		679									
	Chloride (PWS)	mg/L		243									
	Bromide	mg/L	<	1									
	Sulfate (PWS)	mg/L		112									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		196									
	Total Antimony	µg/L	<	0.4									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		16									
	Total Beryllium	µg/L	<	0.4									
	Total Boron	µg/L		191									
	Total Cadmium	µg/L		0.1									
	Total Chromium (III)	µg/L	<	1									
	Hexavalent Chromium	µg/L	<	0.1									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		25									
	Free Cyanide	µg/L	<	5									
	Total Cyanide	µg/L	<	5									
	Dissolved Iron	µg/L		12									
	Total Iron	µg/L		26									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		16									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		3									
	Total Phenols (Phenolics) (PWS)	µg/L	<	50									
	Total Selenium	µg/L	<	2									
	Total Silver	µg/L		0.067									
	Total Thallium	µg/L	<	0.4									
	Total Zinc	µg/L		59									
	Total Molybdenum	µg/L		2									
	Acrolein	µg/L	<	0.5									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5										
	Chlorobenzene	µg/L		0.5										
	Chlorodibromomethane	µg/L		1.1										
	Chloroethane	µg/L	<	0.5										
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5										
	Chloroform	µg/L		3.2										
	Dichlorobromomethane	µg/L		2.8										
	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	<	0.5										
	Methyl Chloride	µg/L	<	0.5										
	Methylene Chloride	µg/L		2.6										
	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	<	1										
	2,4-Dichlorophenol	µg/L	<	1										
	2,4-Dimethylphenol	µg/L	<	1										
	4,6-Dinitro-o-Cresol	µg/L	<	1										
	2,4-Dinitrophenol	µg/L	<	3.1										
	2-Nitrophenol	µg/L	<	1										
	4-Nitrophenol	µg/L	<	1										
	p-Chloro-m-Cresol	µg/L	<	1										
	Pentachlorophenol	µg/L	<	1										
	Phenol	µg/L	<	5.2										
	2,4,6-Trichlorophenol	µg/L	<	1										
Group 5	Acenaphthene	µg/L	<	1										
	Acenaphthylene	µg/L	<	1										
	Anthracene	µg/L	<	1										
	Benzidine	µg/L	<	5.2										
	Benzo(a)Anthracene	µg/L	<	1										
	Benzo(a)Pyrene	µg/L	<	1										
	3,4-Benzofluoranthene	µg/L	<	1										
	Benzo(ghi)Perylene	µg/L	<	0.2										
	Benzo(k)Fluoranthene	µg/L	<	1										
	Bis(2-Chloroethoxy)Methane	µg/L	<	1										
	Bis(2-Chloroethyl)Ether	µg/L	<	1										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	1										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	3.1										
	4-Bromophenyl Phenyl Ether	µg/L	<	1										
	Butyl Benzyl Phthalate	µg/L	<	1										
	2-Chloronaphthalene	µg/L	<	1										
	4-Chlorophenyl Phenyl Ether	µg/L	<	1										
	Chrysene	µg/L	<	1										
	Dibenzo(a,h)Anthrancene	µg/L	<	0.4										
	1,2-Dichlorobenzene	µg/L	<	0.5										
	1,3-Dichlorobenzene	µg/L	<	0.5										
	1,4-Dichlorobenzene	µg/L	<	0.5										
	3,3-Dichlorobenzidine	µg/L	<	1										
	Diethyl Phthalate	µg/L	<	1										
	Dimethyl Phthalate	µg/L	<	1										
	Di-n-Butyl Phthalate	µg/L		1.36										
	2,4-Dinitrotoluene	µg/L	<	1										

	2,6-Dinitrotoluene	µg/L	<	1										
	Di-n-Octyl Phthalate	µg/L	<	1										
	1,2-Diphenylhydrazine	µg/L	<	1										
	Fluoranthene	µg/L	<	1										
	Fluorene	µg/L	<	1										
	Hexachlorobenzene	µg/L	<	1										
	Hexachlorobutadiene	µg/L	<	0.4										
	Hexachlorocyclopentadiene	µg/L	<	1										
	Hexachloroethane	µg/L	<	0.6										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	1										
	Isophorone	µg/L	<	1										
	Naphthalene	µg/L	<	0.1										
	Nitrobenzene	µg/L	<	1										
	n-Nitrosodimethylamine	µg/L	<	1										
	n-Nitrosodi-n-Propylamine	µg/L	<	1										
	n-Nitrosodiphenylamine	µg/L	<	1										
	Phenanthrene	µg/L	<	1										
	Pyrene	µg/L	<	1										
	1,2,4-Trichlorobenzene	µg/L	<	0.1										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	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	<											
	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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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Millersville Borough, NPDES Permit No. PA0026620, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Conestoga River**

No. Reaches to Model: **1**

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	007548	7.6	197	395			Yes
End of Reach 1	007548	0	168	476			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi^2)*	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	7.6	0.1	47.4									270	8.4		
End of Reach 1	0	0.1	57.1									270	8.4		

Q_h

Location	RMI	LFY (cfs/mi^2)	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	7.6														
End of Reach 1	0														

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Model Results

Millersville Borough, NPDES Permit No. PA0026620, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ *AFC* CCT (min): 15 PMF: 0.157 Analysis Hardness (mg/l): 267.22 Analysis pH: 8.40

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	2,695	
Total Antimony	0	0		0	1,100	1,100	3,953	
Total Arsenic	0	0		0	340	340	1,222	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	75,460	
Total Boron	0	0		0	8,100	8,100	29,106	
Total Cadmium	0	0		0	5.231	5.79	20.8	Chem Translator of 0.903 applied
Total Chromium (III)	0	0		0	1274.373	4,033	14,491	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	58.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	341	
Total Copper	0	0		0	33.928	35.3	127	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	79.1	
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	184.824	285	1,025	Chem Translator of 0.648 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	5.92	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1075.454	1,078	3,872	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	17.443	20.5	73.7	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	234	
Total Zinc	0	0		0	269.487	276	990	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	10.8	

Acrylonitrile	0	0		0	650	650	2,336	
Benzene	0	0		0	640	640	2,300	
Bromoform	0	0		0	1,800	1,800	6,468	
Carbon Tetrachloride	0	0		0	2,800	2,800	10,061	
Chlorobenzene	0	0		0	1,200	1,200	4,312	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	64,680	
Chloroform	0	0		0	1,900	1,900	6,827	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	53,900	
1,1-Dichloroethylene	0	0		0	7,500	7,500	26,950	
1,2-Dichloropropane	0	0		0	11,000	11,000	39,527	
1,3-Dichloropropylene	0	0		0	310	310	1,114	
Ethylbenzene	0	0		0	2,900	2,900	10,421	
Methyl Bromide	0	0		0	550	550	1,976	
Methyl Chloride	0	0		0	28,000	28,000	100,614	
Methylene Chloride	0	0		0	12,000	12,000	43,120	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,593	
Tetrachloroethylene	0	0		0	700	700	2,515	
Toluene	0	0		0	1,700	1,700	6,109	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	24,435	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	10,780	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	12,217	
Trichloroethylene	0	0		0	2,300	2,300	8,265	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	2,012	
2,4-Dichlorophenol	0	0		0	1,700	1,700	6,109	
2,4-Dimethylphenol	0	0		0	660	660	2,372	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	287	
2,4-Dinitrophenol	0	0		0	660	660	2,372	
2-Nitrophenol	0	0		0	8,000	8,000	28,747	
4-Nitrophenol	0	0		0	2,300	2,300	8,265	
p-Chloro-m-Cresol	0	0		0	160	160	575	
Pentachlorophenol	0	0		0	35.623	35.6	128	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,653	
Acenaphthene	0	0		0	83	83.0	298	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,078	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.8	
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	107,800	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	16,170	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	970	
Butyl Benzyl Phthalate	0	0		0	140	140	503	

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	2,947	
1,3-Dichlorobenzene	0	0		0	350	350	1,258	
1,4-Dichlorobenzene	0	0		0	730	730	2,623	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	14,373	
Dimethyl Phthalate	0	0		0	2,500	2,500	8,983	
Di-n-Butyl Phthalate	0	0		0	110	110	395	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	5,749	
2,6-Dinitrotoluene	0	0		0	990	990	3,557	
1,2-Diphenylhydrazine	0	0		0	15	15.0	53.9	
Fluoranthene	0	0		0	200	200	719	
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	35.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	18.0	
Hexachloroethane	0	0		0	60	60.0	216	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	35,933	
Naphthalene	0	0		0	140	140	503	
Nitrobenzene	0	0		0	4,000	4,000	14,373	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	61,087	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,078	
Phenanthrene	0	0		0	5	5.0	18.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	467	

☑ *CFC* CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 269.43 Analysis pH: 8.40

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	3,864	
Total Arsenic	0	0		0	150	150	2,634	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	72,005	
Total Boron	0	0		0	1,600	1,600	28,099	
Total Cadmium	0	0		0	0.489	0.56	9.91	Chem Translator of 0.868 applied
Total Chromium (III)	0	0		0	166.893	194	3,408	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	183	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	334	
Total Copper	0	0		0	20.889	21.8	382	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	5.2	5.2	91.3	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	26,343	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	7.265	11.2	197	Chem Translator of 0.647 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	15.9	Chem Translator of 0.85 applied
Total Nickel	0	0		0	120.286	121	2,119	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	87.6	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	228	
Total Zinc	0	0		0	273.597	277	4,873	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	52.7	
Acrylonitrile	0	0		0	130	130	2,283	
Benzene	0	0		0	130	130	2,283	
Bromoform	0	0		0	370	370	6,498	
Carbon Tetrachloride	0	0		0	560	560	9,835	
Chlorobenzene	0	0		0	240	240	4,215	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	61,467	
Chloroform	0	0		0	390	390	6,849	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	54,443	
1,1-Dichloroethylene	0	0		0	1,500	1,500	26,343	
1,2-Dichloropropane	0	0		0	2,200	2,200	38,637	
1,3-Dichloropropylene	0	0		0	61	61.0	1,071	
Ethylbenzene	0	0		0	580	580	10,186	
Methyl Bromide	0	0		0	110	110	1,932	
Methyl Chloride	0	0		0	5,500	5,500	96,592	
Methylene Chloride	0	0		0	2,400	2,400	42,149	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	3,688	
Tetrachloroethylene	0	0		0	140	140	2,459	
Toluene	0	0		0	330	330	5,796	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	24,587	
1,1,1-Trichloroethane	0	0		0	610	610	10,713	
1,1,2-Trichloroethane	0	0		0	680	680	11,942	
Trichloroethylene	0	0		0	450	450	7,903	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,932	
2,4-Dichlorophenol	0	0		0	340	340	5,971	
2,4-Dimethylphenol	0	0		0	130	130	2,283	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	281	
2,4-Dinitrophenol	0	0		0	130	130	2,283	
2-Nitrophenol	0	0		0	1,600	1,600	28,099	
4-Nitrophenol	0	0		0	470	470	8,254	

p-Chloro-m-Cresol	0	0		0	500	500	8,781	
Pentachlorophenol	0	0		0	27.330	27.3	480	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,598	
Acenaphthene	0	0		0	17	17.0	299	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	1,036	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.76	
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	105,373	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	15,982	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	948	
Butyl Benzyl Phthalate	0	0		0	35	35.0	615	
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	2,810	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,212	
1,4-Dichlorobenzene	0	0		0	150	150	2,634	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	14,050	
Dimethyl Phthalate	0	0		0	500	500	8,781	
Di-n-Butyl Phthalate	0	0		0	21	21.0	369	
2,4-Dinitrotoluene	0	0		0	320	320	5,620	
2,6-Dinitrotoluene	0	0		0	200	200	3,512	
1,2-Diphenylhydrazine	0	0		0	3	3.0	52.7	
Fluoranthene	0	0		0	40	40.0	702	
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	35.1	
Hexachlorocyclopentadiene	0	0		0	1	1.0	17.6	
Hexachloroethane	0	0		0	12	12.0	211	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	36,880	
Naphthalene	0	0		0	43	43.0	755	
Nitrobenzene	0	0		0	810	810	14,225	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	59,711	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	1,036	
Phenanthrene	0	0		0	1	1.0	17.6	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	457	

☑ *THH* CCT (min): ###### PMF: 1 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	98.3	
Total Arsenic	0	0		0	10	10.0	176	
Total Barium	0	0		0	2,400	2,400	42,149	
Total Boron	0	0		0	3,100	3,100	54,443	
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	70.2	
Dissolved Iron	0	0		0	300	300	5,269	
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	17,562	
Total Mercury	0	0		0	0.050	0.05	0.88	
Total Nickel	0	0		0	610	610	10,713	
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	4.21	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	52.7	
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	1,756	
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	580	
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	1,194	

Methyl Bromide	0	0		0	100	100.0	1,756	
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	1,001	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,756	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	175,621	
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	527	
2,4-Dichlorophenol	0	0		0	10	10.0	176	
2,4-Dimethylphenol	0	0		0	100	100.0	1,756	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	35.1	
2,4-Dinitrophenol	0	0		0	10	10.0	176	
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	70,249	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,229	
Anthracene	0	0		0	300	300	5,269	
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	3,512	
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	1.76	
2-Chloronaphthalene	0	0		0	800	800	14,050	
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	17,562	
1,3-Dichlorobenzene	0	0		0	7	7.0	123	
1,4-Dichlorobenzene	0	0		0	300	300	5,269	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	10,537	
Dimethyl Phthalate	0	0		0	2,000	2,000	35,124	
Di-n-Butyl Phthalate	0	0		0	20	20.0	351	
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	351	
Fluorene	0	0		0	50	50.0	878	
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	70.2	
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	597	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	176	
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	351	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.23	

☑ *CRL* CCT (min): ###### PMF: 1 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	4.6	
Benzene	0	0		0	0.58	0.58	44.5	
Bromoform	0	0		0	7	7.0	537	
Carbon Tetrachloride	0	0		0	0.4	0.4	30.7	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	61.3	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	437	
Dichlorobromomethane	0	0		0	0.95	0.95	72.8	
1,2-Dichloroethane	0	0		0	9.9	9.9	759	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	69.0	
1,3-Dichloropropylene	0	0		0	0.27	0.27	20.7	
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	1,534	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	15.3	
Tetrachloroethylene	0	0		0	10	10.0	767	
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	42.2	
Trichloroethylene	0	0		0	0.6	0.6	46.0	
Vinyl Chloride	0	0		0	0.02	0.02	1.53	
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	2.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	115	
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	0.008	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.077	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.008	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.077	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.77	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	2.3	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	24.5	
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	9.2	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.008	
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	3.83	
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	3.83	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.83	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	2.3	
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	0.006	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.77	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	7.67	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.077	
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	0.054	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.38	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	253	
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	

☑ ***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	1,727	AFC	Discharge Conc > 10% WQBEL (no RP)

Total Copper	Report	Report	Report	Report	Report	µg/L	81.4	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	N/A	N/A	Discharge Conc < TQL
Total Barium	42,149	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	18,656	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	9.91	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	3,408	µg/L	Discharge Conc < TQL
Hexavalent Chromium	37.5	µg/L	Discharge Conc < TQL
Total Cobalt	219	µg/L	Discharge Conc < TQL
Free Cyanide	50.7	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	5,269	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	26,343	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	197	µg/L	Discharge Conc < TQL
Total Manganese	17,562	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.88	µg/L	Discharge Conc < TQL
Total Nickel	2,119	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	87.6	µg/L	Discharge Conc < TQL
Total Silver	47.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	4.21	µg/L	Discharge Conc < TQL
Total Zinc	635	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	6.91	µg/L	Discharge Conc < TQL
Acrylonitrile	4.6	µg/L	Discharge Conc < TQL
Benzene	44.5	µg/L	Discharge Conc < TQL
Bromoform	537	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	30.7	µg/L	Discharge Conc < TQL
Chlorobenzene	1,756	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	61.3	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	41,457	µg/L	Discharge Conc < TQL

Chloroform	437	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	72.8	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	759	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	580	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	69.0	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	20.7	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	1,194	µg/L	Discharge Conc < TQL
Methyl Bromide	1,267	µg/L	Discharge Conc < TQL
Methyl Chloride	64,489	µg/L	Discharge Conc < TQL
Methylene Chloride	1,534	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	15.3	µg/L	Discharge Conc < TQL
Tetrachloroethylene	767	µg/L	Discharge Conc < TQL
Toluene	1,001	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	1,756	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	6,910	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	42.2	µg/L	Discharge Conc < TQL
Trichloroethylene	46.0	µg/L	Discharge Conc < TQL
Vinyl Chloride	1.53	µg/L	Discharge Conc < TQL
2-Chlorophenol	527	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	176	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,520	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	35.1	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	176	µg/L	Discharge Conc < TQL
2-Nitrophenol	18,426	µg/L	Discharge Conc < TQL
4-Nitrophenol	5,297	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	369	µg/L	Discharge Conc < TQL
Pentachlorophenol	2.3	µg/L	Discharge Conc < TQL
Phenol	70,249	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	115	µg/L	Discharge Conc < TQL
Acenaphthene	191	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	5,269	µg/L	Discharge Conc < TQL
Benzidine	0.008	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.077	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.008	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.077	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.77	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	2.3	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	3,512	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	24.5	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	622	µg/L	Discharge Conc < TQL

Butyl Benzyl Phthalate	1.76	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	14,050	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	9.2	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.008	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	1,889	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	123	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	1,681	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	3.83	µg/L	Discharge Conc < TQL
Diethyl Phthalate	9,213	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	5,758	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	253	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	3.83	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.83	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	2.3	µg/L	Discharge Conc < TQL
Fluoranthene	351	µg/L	Discharge Conc < TQL
Fluorene	878	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.006	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.77	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	11.5	µg/L	Discharge Conc < TQL
Hexachloroethane	7.67	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.077	µg/L	Discharge Conc < TQL
Isophorone	597	µg/L	Discharge Conc < TQL
Naphthalene	322	µg/L	Discharge Conc < TQL
Nitrobenzene	176	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.054	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.38	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	253	µg/L	Discharge Conc < TQL
Phenanthrene	11.5	µg/L	Discharge Conc < TQL
Pyrene	351	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	1.23	µg/L	Discharge Conc < TQL