pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0026131**
Facility Type	**Municipal**	APS ID	**957768**
Major / Minor	**Major**	Authorization ID	**1211192**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Upper Merion Sanitary And Stormwater Authority**	Facility Name	**Upper Merion Municipal Authority Sewer System & STP Trout Run**
Applicant Address	175 W Valley Forge Road	Facility Address	900 Mancill Mill Road
	King Of Prussia, PA 19406-1851		King Of Prussia, PA 19406
Applicant Contact	Sally Slook	Facility Contact	Robert Mckernan
Applicant Phone	(610) 265-2600	Facility Phone	(610) 783-0688
Client ID	72994	Site ID	457789
Ch 94 Load Status	Not Overloaded	Municipality	Upper Merion Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	December 20, 2017	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility, Pretreatment
Purpose of Application	Permit Renewal.		

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application for Trout Run WPCC (facility) from Upper Merion Municipal Utility Authority (new name is Upper Merion Sanitary and Stormwater Authority, UMSSA) on December 20, 2017. The draft permit was published in the PA Bulletin on September 8, 2018. The permit was redrafted and republished in the Bulletin on October 20, 2018. A final decision on the renewal was not made. Since it was more than 6 months the permit last drafted and there may be regulations/guidance/policy changed since then, a redraft of the permit is warranted. The facility is in Upper Merion Township, Montgomery County. This is a major facility with design flow of 6.0 MGD. The treated effluent discharges through Outfall 002 into Schuylkill River, WWF/MF, at RMI 27.7. The existing permit expired on June 30, 2018. The terms and conditions were automatically extended since the renewal application was received at least 180 days prior to permit expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.

This fact sheet is developed in accordance with 40 CFR §124.56

Changes in the permit: Limit for TDS; Total Copper limits; TN monitoring, Dry weather PCB sampling; and $CBOD_5$, NH_3-N, and TSS mass limits recalculated.

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
√		Reza H. Chowdhury, E.I.T. / Project Manager	January 5, 2021
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	01/07/2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	6
Latitude	40º 6' 38"	Longitude	-75º 24' 30"
Quad Name	Valley Forge	Quad Code	1842
Wastewater Description:	Sewage Effluent		
Receiving Waters	Schuylkill River (WWF, MF)	Stream Code	00833
NHD Com ID	26003394	RMI	27.7
Drainage Area	1720 mi^2	Yield (cfs/mi^2)	0.151
Q_{7-10} Flow (cfs)	259	Q_{7-10} Basis	Please see below
Elevation (ft)	58.04	Slope (ft/ft)	
Watershed No.	3-F	Chapter 93 Class.	WWF, MF
Existing Use	**WWF/MF**	Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Schuylkill River PCB TMDL

Background/Ambient Data		Data Source
pH (SU)	7.0	Default per 391-2000-013
Temperature (°C)	25	Default per 391-2000-013 for WWF
Hardness (mg/L)	206	Application data
Other:		

Nearest Downstream Public Water Supply Intake	PA American Water Co Norristown Dist		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI	25.07	Distance from Outfall (mi)	2.63

Changes Since Last Permit Issuance: None

Other Comments:

Streamflow:

Streamflow will be correlated with the USGS's web-based GIS application (https://streamstats.usgs.gov/ss/) accessed on October 28, 2020. Q_{7-10} and Q_{30-10} values at Outfall 002 were found to be 259 cfs and 311 cfs respectively. The drainage area at Outfall 002 was found to be 1720 mi^2 from StreamStats.

Q_{7-10} runoff rate = 259 cfs/ 1720 mi^2 = 0.151 cfs/mi^2
Q_{30-10}/Q_{7-10} = 311 cfs/259 cfs = 1.2
Default Q_{1-10}: Q_{7-10} of 0.64 from 391-2000-007 will be used in modeling, if needed.

PWS Intake:

The nearest downstream public water supply intake is PA American CO. Norristown Dist, on Schuylkill River at RMI 25.07. Its approximately 2.63 miles downstream of Outfall 002.

Wastewater Characteristics:
A median pH of 6.9 from daily DMR during dry months July through September for the year 2020 and a default temperature of 20^{0}C (per 391-2000-013) will be used for modeling, if needed. The application data indicated an average Total Hardness of 191 mg/l out of 3 samples.

Background data:
There is currently no nearby WQN stations from Outfall 002. In absence of site-specific temperature data, a default temperature of 25°C and default pH of 7.0 (per 391-2000-013, WWF) will be used in modeling, if needed. The application data indicated stream hardness of 206 mg/l.

303d Listed Streams:
Schuylkill River is impaired for Fish Consumption and Aquatic Life due to PCB but supporting Potable Water Use. A TMDL has been finalized by EPA on 04/07/2007 for PCB.

Schuylkill River PCB TMDL:
During the previous permit cycle, the permittee collected one wet weather and one dry weather sample and analyzed for PCBs using Method 1668A. The results were: 4,145 pg/l (WW 04/08/2014); 3,560 pg/l (DW 05/2014)

The PCB results indicate that there are PCB concentrations that are above natural background and statewide surface water criteria levels. Based on the concentration of PCBs and volume of wastewater, this facility is considered a less significant source of PCBs. The influent to the STP consists primarily domestic raw sewage with no significant industrial users.

The facility is required to develop and implement a PCB PMP (Pollution Minimization Plan). PCB sampling using Analytical Method 1668A is required to provide a baseline PCB level and to show progress towards achieving the instream PCB criteria of 44 pg/l. Guidelines developed by DRBC for the Delaware River TMDL recommend once per year dry weather sampling using method 1668A for less significant point sources of PCBs. The facility is also required to submit annual PMP reports.

Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as Warm Water Fishes (WWF) and Migratory Fishes (MF.) No High Quality stream or Exceptional Value water is impacted by this discharge, therefore, no Antidegradation Analysis is performed for the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0
Latitude	40º 6' 35"	Longitude	-75º 24' 24"
Quad Name	Valley Forge	Quad Code	1842
Wastewater Description:	Stormwater		

Other Comments: Per Phase II stormwater regulations, major POTWs are required to have a permit for the discharge of stormwater. Therefore, stormwater monitoring requirements are included in Part A and Part C of the permit for this outfall.

Treatment Facility Summary

Treatment Facility Name: Trout Run STP

WQM Permit No.	Issuance Date
4612404	8/27/2012
4611401	3/21/2011
4610403	9/23/2010

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	6
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
6	12510	Not Overloaded	Gravity Thickening	Landfill

Changes Since Last Permit Issuance: None

Treatment Plant Description

Trout WPCC is a 6.0 MGD Major Sewer Facility (MASF2) located in Upper Merion Township, Montgomery County which discharges treated sewage through outfall 002 to Schuylkill River in watershed 3-F. This is a trickling filter, alternative to secondary treatment facility, and chlorine disinfection system. The treatment train consists of influent screening and grit removal, primary clarifier, secondary biological treatment through oxidation towers, reaeration, secondary clarifier, and disinfection by sodium hypochlorite. The effluent is dechlorinated using sodium bisulfite.

The facility receives flows mostly from Upper Merion Township and small contributions from few other townships as listed in the next page.

Municipalities served	Flow contribution (%)	Type of Sewer System	
		Separate (%)	Combined (%)
Upper Merion Township	60.0	100	0
Tredyffrin Township	39.8	100	0
Eastown Township	0.2	100	0

Per the renewal application, there is no significant or categorical industrial facility that discharges into the collection system.

Per PADEP's most recent inspection on September 3, 2020, the treatment train consists of the following treatment units:

- Four primary clarifiers
- Four trickling filters
- Four secondary clarifiers
- Two chlorine contact tanks
- Two grit removal

Sodium Hypochlorite is used at a maximum rate of 90 GPD and Sodium Bisulfite is used at maximum rate of 9.6 GPD.

Biosolids Management:
Sludge is handled through gravity thickener units prior to being dewatered by a rotary press. The dewatered cake is stabilized with lime prior to being hauled to one of two Waste Management owned landfills. The landfills are Fairless Landfill and GROWS North landfill in Morrisville, PA.

Pre-treatment Program implementation:

Facilities greater than 5.0 MGD or less than 5.0 MGD with categorical and significant industrial users are required to develop or implement an EPA administered pre-treatment program. The facility is implementing an approved pretreatment program for which most recent local limits were approved by EPA in March 2017. The Part C of the permit will require continuation of the pre-treatment program implementation.

Compliance History

DMR Data for Outfall 002 (from October 1, 2019 to September 30, 2020)

Parameter	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19
Flow (MGD) Average Monthly	2.469	3.067	2.829	2.525	2.698	2.764	2.565	2.779	2.662	2.694	2.48	2.589
Flow (MGD) Daily Maximum	2.761	6.842	5.487	3.208	3.302	4.54	3.401	3.318	4.432	3.678	3.055	3.309
pH (S.U.) Minimum	6.8	6.7	6.1	6.6	6.4	6.2	6.2	5.6	6.2	6.0	6.4	6.7
pH (S.U.) Maximum	7.6	7.0	7.0	6.9	7.0	6.8	6.8	6.8	7.0	6.9	7.0	7.2
DO (mg/L) Minimum	8.8	7.9	7.8	8.4	9.3	9.7	10.1	10.2	9.9	10.0	9.3	8.6
TRC (mg/L) Average Monthly	< 0.1	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.2	< 0.1
TRC (mg/L) Instantaneous Maximum	0.4	1.0	0.4	0.32	0.1	0.5	0.5	0.6	0.7	0.9	0.8	0.4
CBOD5 (lbs/day) Average Monthly	< 84	< 110	< 87	< 74	< 76	104	122	135	< 150	163	98	103
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	2954	3317	3097	3728	3423	5209	6466	3904	4059	6659	4398	3953
CBOD5 (lbs/day) Weekly Average	90	132	102	103	89	122	131	154	175	195	125	121
CBOD5 (mg/L) Average Monthly	< 4	< 4	< 4	< 3	< 3	5	6	6	< 7	7	5	5
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	150	132	134	178	153	219	299	170	182	305	213	184
CBOD5 (mg/L) Weekly Average	5	5	< 4	4.6	4	5	6	7	8	9	6	6
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	5071	5005	8017	5606	5138	14022	15563	5458	5220	9693	7279	6079
BOD5 (mg/L) Raw Sewage Influent Average Monthly	258	216	306	277	233	452	698	239	238	405	353	287
TSS (lbs/day) Average Monthly	< 179	346	268	154	< 127	146	198	201	< 270	< 233	< 135	< 183

TSS (lbs/day) Raw Sewage Influent Average Monthly	4301	4194	5758	6072	4240	7630	12281	5018	4902	8881	8223	5260
TSS (lbs/day) Weekly Average	< 242	496	351	203	177	186	229	253	357	299	211	224
TSS (mg/L) Average Monthly	< 9	13	11	7	< 6	6	9	9	< 12	< 10	< 7	< 8
TSS (mg/L) Raw Sewage Influent Average Monthly	210	159	248	290	189	317	571	217	220	407	400	243
TSS (mg/L) Weekly Average	< 11	16	15	9	8	8	10	11	16	12	10	11
Fecal Coliform (CFU/100 ml) Geometric Mean	< 7	< 6	< 5	< 4	< 3	< 3	< 2	< 4	< 5	< 5	< 13	< 14
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	82	91	155	220	33	23	5	151	410	98	410	490
Ammonia (lbs/day) Average Monthly	< 8	< 4	< 5	< 21	< 2	< 2	< 4	< 5	< 9	< 10	< 7	< 6
Ammonia (mg/L) Average Monthly	< 0.4	< 0.2	< 0.2	< 0.88	< 0.1	< 0.1	< 0.2	< 0.2	< 0.4	< 0.4	< 0.3	< 0.3
Total Phosphorus (lbs/day) Average Monthly	75	82	114	63	2.91	71	83	82	82	86	72	85
Total Phosphorus (mg/L) Average Monthly	3.86	3.89	3.82	3.23	68	3.53	3.87	3.77	3.84	3.92	3.47	3.91

DMR Data for Outfall 003 (from October 1, 2019 to September 30, 2020)

Parameter	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19
pH (S.U.) Annual Average										6.45		
CBOD5 (mg/L) Annual Average										54.7		
COD (mg/L) Annual Average										101		
TSS (mg/L) Annual Average										138		

Oil and Grease (mg/L) Annual Average										< 5		
Fecal Coliform (CFU/100 ml) Annual Average										> 20000		
TKN (mg/L) Annual Average										2.86		
Total Phosphorus (mg/L) Annual Average										0.54		
Dissolved Iron (mg/L) Annual Average										0.07		

Compliance History

Effluent Violations for Outfall 002, from: November 1, 2019 To: September 30, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	02/29/20	Min	5.6	S.U.	6.0	S.U.

Other comment: the pH violation as noted above was corrected.

Summary of Inspections:

09/03/2020: RTPT conducted. Inspector received a call that morning in regard to influent raw pump #3 taken out of service. Trickling filter #1 was in the midst of being repaired. Final effluent looked great

06/04/2020: RTPT conducted to see how the facility was operating during a loss of power due to a couple severe storms that passed through the area. An emergency generator was brought on site to pump sewage through the system. Several treatment units were inoperable due to loss of power. No problem with disinfection. There was a discharge of sewage outside the treatment plant. The Department was notified immediately. The final effluent leaving the facility looked overall great.

04/16/2020: RTPT conducted. All units were operational. The one side of the chlorine contact tank was being cleaned out. No problem with getting the chemical for disinfection. No violation noted.

12/19/2019: CEI conducted. No violation noted. Final effluent looked good. Overall, the facility was operating well.

11/20/2019: RTPT conducted. No violation noted. The final effluent was clear. No operational changes were made since last inspection. The township has looked into installing an emergency generator by the headworks building.

8/13/2018: RTPT conducted in response to a rain that morning. No violation noted. The rain resulted in primary clarifier #2 overflow. All 4 influent pumps were running during the rain. The area around the primary clarifier #2 was limed. Operations were back to normal during the inspection.

1/30/2019: CEI conducted. No violation noted. Final effluent looked good. Overall, the facility was operating well.

8/13/2018: CEI conducted in response to excessive amount of rain. As a result of heavy rain, the primary clarifiers were overflowing. The inspector received call that morning regarding the overflow. The area where the clarifiers overflown was limed and all cleaned up. No violation noted.

05/25/2018: CEI conducted. No violation noted. Final effluent looked good. The facility was operating well.

05/11/2017: CEI conducted. No violation noted. Final effluent looked good. The facility was operating well.

03/29/2016: CEI conducted. No violation noted. Final effluent looked good. The facility was operating well.

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes effluent limitations and monitoring requirements specified in the existing final NPDES (amended) permit that was in effect between July 1, 2014 to June 30, 2018.

For Outfall 002:

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	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
CBOD5	1,251	1,876	XXX	25	40	50	1/day	24-Hr Composite
CBOD5 Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
BOD5 Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids	1,501	2,252	XXX	30	45	60	1/day	24-Hr Composite
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1,000 (*)	1/day	Grab
Ammonia-Nitrogen May 1 - Oct 31	751	XXX	XXX	15.0	XXX	30.0	1/day	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	1,000	XXX	XXX	20.0	XXX	40.0	1/day	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

For Outfall 003:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly		Minimum	Annual Average		Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chemical Oxygen Demand	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 6
Latitude 40º 6' 38.00" **Longitude** -75º 24' 30.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
Total Suspended Solids	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)
Fecal Coliform	200 / 100 ml	Geo Mean	DRBC	92a.47(a)(5)
Fecal Coliform	1,000 / 100 ml	IMAX	DRBC	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

WQM 7.0:

WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. 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_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. Since WQM 7.0 assumes immediate and complete mix between the discharge and stream flow, Q_{7-10}, to examine allowable wasteload allocations under appropriate mixing conditions. The model was utilized for this permit renewal by using current Q_{7-10} and historic background water quality levels of the river. The following data were used in the attached computer model of the stream:

- Discharge pH 6.9 (median Jul-Sep, 2020, DMR data)
- Discharge Temperature 20°C (Default per 391-2000-013)
- Discharge Hardness 191 mg/l (Application data)
- Stream pH 7.0 (Default per 391-2000-013)
- Stream Temperature 25°C (Default per 391-2000-013, WWF)
- Stream Hardness 206 mg/l (Application data)

The following nodes were considered in modeling:

Node 1: Trout Run WPCC (PA0026131) Outfall 002 at Schuylkill River (00833)
Elevation: 28.04 ft (USGS National Map viewer, 10/8/2020)
Drainage Area: 1720 mi^2 (StreamStat Version 3.0, 10/28/2020)
River Mile Index: 27.7 (PA DEP eMapPA)
Low Flow Yield: 0.151 cfs/mi^2

Discharge Flow: 6.0 MGD

Node 2: At confluence with Crow Creek (00973) with Schuylkill River (00833)
Elevation: 57.91 ft (USGS National Map viewer, 10/28/2020)
Drainage Area: 1740 mi^2 (StreamStat Version 3.0, 10/28/2020)
River Mile Index: 26.72 (PA DEP eMapPA)
Low Flow Yield: 0.151 cfs/mi^2
Discharge Flow: 0.0 MGD

Ammonia (NH_3-N), Carbonaceous Biochemical Oxygen Demand (CBOD5), & Dissolved Oxygen (DO):
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. 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_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using Q_{7-10} and current background water quality levels of the stream.

NH_3-N:
WQM 7.0 suggested NH_3-N limit of 15.0 mg/l as monthly average and 30.0 mg/l as IMAX limit during summer to protect water quality standards. These values are the same as existing permitted limits. Recent DMR data show that the plant is meeting the permit limits. The average monthly mass loading is calculated to be 750.6 lbs./day. The existing winter season limits of 20.0 mg/l as average monthly and 40.0 mg/l as IMAX limit will be carried over in this renewal. Winter average monthly mass limit was calculated as 1000 lbs./day. Summer average monthly mass loading is rounded down to 750 lbs./day.

$CBOD_5$:
The WQM 7.0 model suggests a monthly average $CBOD_5$ limit of 25 mg/l. The average monthly and average weekly mass loadings were calculated as 1251 lbs/day and 2001.6 lbs/day respectively. These values are rounded down to 1250 lbs/day and 2000 lbs/day, respectively (362-0400-001). It should be noted that weekly average mass loading in existing permit is 1876 lbs./day, which may be due to a miscalculation of the mass loading. It is recommended that the mass loading is corrected and revised to 2000 lbs./day.

Dissolved Oxygen (DO):
The existing permit has a minimum DO of 5.0 mg/l. This limit, which is supported by Pa Code 25 Ch.93.7, will be carried over.

Toxics:
Based on the monitoring data (maximum concentrations) reported on the application, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as “non-detect”, but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the appropriate action for the Pollutants of Concerns based on the following logic:

1. In general, establish limits in the draft permit where the effluent concentration determined in B.1 or B.2 equals or exceeds 50% of the WQBEL (i.e., RP is demonstrated). Use the average monthly, maximum daily and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).

2. For non-conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 25% - 50% of the WQBEL.

3. For conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 10% - 50% of the WQBEL.

NOTE 4 – If the effluent concentration determined in B.1 or B.2 is "non-detect" at or below the target quantitation limit (TQL) for the pollutant as specified in the TMS and permit application, the pollutant may be eliminated as a candidate for WQBELs or monitoring requirements unless 1) a more sensitive analytical method is available for the pollutant under 40 CFR Part 136 where the quantitation limit for the method is less than the applicable water quality criterion and 2) a detection at the more sensitive method may lead to a determination that an effluent limitation is necessary, considering available dilution at design conditions.

NOTE 5 – If the effluent concentration determined in B.1 or B.2 is a detection below the TQL but above or equal to the applicable water quality criterion, WQBELs or monitoring may be established for the pollutant.

4. Application managers may, on a site- and pollutant-specific basis, deviate from these guidelines where there is specific rationale that is documented in the fact sheet.

☑ ***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 Dissolved Solids (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Bromide	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Sulfate (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Total Copper	1.33	1.74	26.6	34.8	66.5	µg/L	26.6	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	246	AFC	Discharge Conc > 10% WQBEL (no RP)
1,4-Dioxane	Report	Report	Report	Report	Report	µg/L	N/A	N/A	Special Monitoring Applies
Benzo(a)Anthracene	0.006	0.009	0.12	0.19	0.3	µg/L	0.12	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.006	0.009	0.12	0.19	0.3	µg/L	0.12	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.006	0.009	0.12	0.19	0.3	µg/L	0.12	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.006	0.009	0.12	0.19	0.3	µg/L	0.12	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.006	0.009	0.12	0.19	0.3	µg/L	0.12	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.006	0.009	0.12	0.19	0.3	µg/L	0.12	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Indeno(1,2,3-cd)Pyrene	0.001	0.002	0.025	0.039	0.062	µg/L	0.025	THH	Discharge Conc ≥ 50% WQBEL (RP)
Phenanthrene	0.29	0.45	5.77	9.0	14.4	µg/L	5.77	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Each of the pollutants are discussed below:

TDS and its constituents:
TMS suggests monitoring for TDS and its constituents if there is PWS concern. The nearest downstream PWS is approximately 3 miles for which this discharge apparently poses no threat. The facility has an approved DRBC docket (D-1992-051 CP-3) issued on September 13, 2018. The Docket requires TDS limit of 1,000 mg/l quarterly. Therefore, a TDS limit of 1,000 mg/l with quarterly monitoring will be placed in the permit.

Total Copper: The application provided three sample results for Total Copper. On PADEP's request, US EPA provided additional 28 sample results from pretreatment effluent data for the reporting period between 2013-2019. All data were plugged into PADEP's TOXCONC to determine AMEC and daily CoV values. TOXCONC calculated an AMEC of 54.843 ug/l and CoV of 0.2576. These values were utilized in TMS. As shown in above table, TMS suggests AML of 26.6 ug/l, MDL of 34.8 ug/l, IMAX of 66.5 ug/l, mass AML of 1.33 lbs./day, and mass MDL of 1.74 lbs./day. Since this is a new parameter, PADEP provided the permittee with a Pre-Draft survey. The permittee returned the pre-draft survey which indicated that the permittee is not aware of the pollutant and haven't conducted any studies regarding the control or treatment of the pollutant. Therefore, PADEP will provide a compliance schedule of four years from permit effective date to collect data and an option to develop a site-specific Water Quality Criterion (WQC) for copper using the Biotic Ligand Model (BLM). Monitoring only requirement will be added during the compliance period. Based on the final study report, the permit may be amended or numeric limitations will be imposed in the permit after the compliance period is over.

1,4-Dioxane: TMS suggests monitoring for 1,4-Dioxane. This is a pollutant of concern if there is nearby downstream PWS intake. The nearest downstream PWS is approximately 3 miles from Outfall 002. Therefore, it is believed that the discharge for this facility won't affect the PWS intake and a monitoring is not warranted.

Semi-volatiles:
TMS suggested monitoring for all eight semi-volatiles as listed above. However, the QL (5 ug/l) used by the lab is higher than PADEP's TQL (2.5 ug/l) and all three results for each semi-volatiles came as non-detect. Therefore, it is still unclear

if they are actually a pollutant of concern or not. Per the response on pre-draft survey, the permittee agreed to provide four additional test results for each of the semi-volatiles using PADEP's TQL. The sampling will be 24-hr composite, 1 week apart. PADEP received retest results on January 4, 2021 and TMS was again utilized. TMS determined that no limits or monitoring is needed for any of the semi-volatiles.

The update TMS output table is provided below:

☑ ***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 Dissolved Solids (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Bromide	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Sulfate (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Total Copper	1.33	1.74	26.6	34.8	66.5	µg/L	26.6	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	246	AFC	Discharge Conc > 10% WQBEL (no RP)
1,4-Dioxane	Report	Report	Report	Report	Report	µg/L	N/A	N/A	Special Monitoring Applies

Whole Effluent Toxicity Testing (WETT):

The permittee provided four WETT sample results with the application dated March 2017, April 2016, May 2015, and October 2014. The tests in 2014, 2015, and 2016 were conducted by QC laboratories or Eurofins QC, Inc. The Department has determined that WET tests analyzed by QC Laboratories or Eurofins QC prior to February 2017 are unreliable and are considered invalid due to technical issues. As a result, the application didn't include four valid WET tests required to perform a reasonable potential analysis. However, the permittee provided annual WETT results for the year 2018 and 2019 that added to three valid tests. 2020 WET test is scheduled to be conducted on the week of November 30, 2020. 2020 WETT results were received on January 4, 2021. PADEP utilized the WETT Analysis Spreadsheet to determine RP and update the dilution series. The updated TIWCc was calculated to be 15% to evaluate the test results for a stream flow of 259 cfs, discharge flow of 6.0 MGD, and PMFc of 0.199. The WET tests are discussed in detail on pages 16-17 of this report.

Additional Considerations

Fecal Coliform:

The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. Delaware River Basin Commission's (DRBC's) Water Quality Regulations at Section 4.30.4.A requires that during winter season from October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested. Therefore, the summer limit is governed by DEP's regulation while winter limit is governed by DRBC's regulation.

pH:

The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 § 95.2(1)) which are existing limits and will be carried over.

Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly

average limits are calculated to be 1501.2 lbs./day and 2251.8 lbs./day respectively, which are rounded down to 1500 lbs./day and 2250 lbs./day, respectively (362-0400-001).

Total Residual Chlorine (TRC):
The attached computer printout utilizes the equation and calculations as presented in the Department's 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID#391-2000-015) for developing chlorine limitations. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns at the discharge point for Outfall 002. The Instantaneous Maximum (IMAX) limit is 1.6 mg/l. The existing permit has AML limit of 0.5 mg/l and IMAX limit of 1.2 mg/l. The IMAX is a little more stringent and will be carried over due to anti-backsliding policy. DMR data from October 2019 to September 2020 indicates that the plant is discharging below the existing limits. The minimum monitoring frequency is 1/day.

Flow and Influent BOD_5, $CBOD_5$, and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94. To show compliance with percentage removal efficiency of $CBOD_5$, reporting for influent $CBOD_5$ will remain in the permit.

Best Professional Judgement (BPJ):

Total Phosphorus:
Existing monthly monitoring requirement will be carried over in this renewal.

Monitoring Frequency and Sample Types:
Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Total Nitrogen:
PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria.

Anti-Backsliding
The proposed limits are at least as stringent as are in existing permit, unless otherwise stated; therefore, anti-backsliding is not applicable.

Development of Effluent Limitations

Outfall No.	003	**Design Flow (MGD)**	0
Latitude	40º 6' 35.00"	**Longitude**	-75º 24' 24.00"
Wastewater Description:	Stormwater		

Outfall 003 is a stormwater only outfall. Per Phase II stormwater regulations, major POTWs are required to have a permit for the discharge of stormwater. Therefore, stormwater monitoring requirements are included in Part A and Part C of the permit for this outfall. The existing monitoring requirements will be carried over in this renewal.

Whole Effluent Toxicity (WET)

For Outfall , ☐ **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%, 4%, and 2%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 4%.

Summary of Four Most Recent Test Results

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

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
4/4/2017	Pass	Pass	Pass	Pass
11/6/2018	Pass	Pass	Pass	Pass
11/5/2019	Pass	Pass	Pass	Pass
12/08/2020	Pass	Pass	Pass	Pass

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

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

☐ **YES** ☒ **NO**

Comments: None

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

Acute Partial Mix Factor (PMFa): **0.029** Chronic Partial Mix Factor (PMFc): **0.199**

1. Determine IWC – Acute (IWCa):

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

[(6.0 MGD x 1.547) / ((259 cfs x 0.029) + (6.0 MGD x 1.547))] x 100 = **55.27%**

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:

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

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

TIWCa = IWCa / 0.3 = **%**

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

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

[(6.0 MGD x 1.547) / ((259 cfs x 0.199) + (6.0 MGD x 1.547))] x 100 = **15.26%**

3. Determine Dilution Series

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

Dilution Series = 100%, 58%, 15%, 8%, and 4%.

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 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
CBOD5	1250	2000	XXX	25.0	40.0 Wkly Avg	50	1/day	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
TSS	1500	2250	XXX	30.0	45.0 Wkly Avg	60	1/day	24-Hr Composite
Total Dissolved Solids	Report Avg Qrtly	XXX	XXX	1000 Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Copper (interim)	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Total Copper (final)	1.33	1.74 Daily Max	XXX	0.0266	0.0348 Daily Max	0.0665	1/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	1000	XXX	XXX	20.0	XXX	40	1/day	24-Hr Composite

Outfall 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia May 1 - Oct 31	750	XXX	XXX	15.0	XXX	30	1/day	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
PCBs (Dry Weather) (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See permit	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See permit	24-Hr Composite
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See permit	24-Hr Composite
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See permit	24-Hr Composite

Compliance Sampling Location: At Outfall 002

Other Comments: None

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 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
CBOD5	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
COD	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
TSS	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
TKN	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Dissolved Iron	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

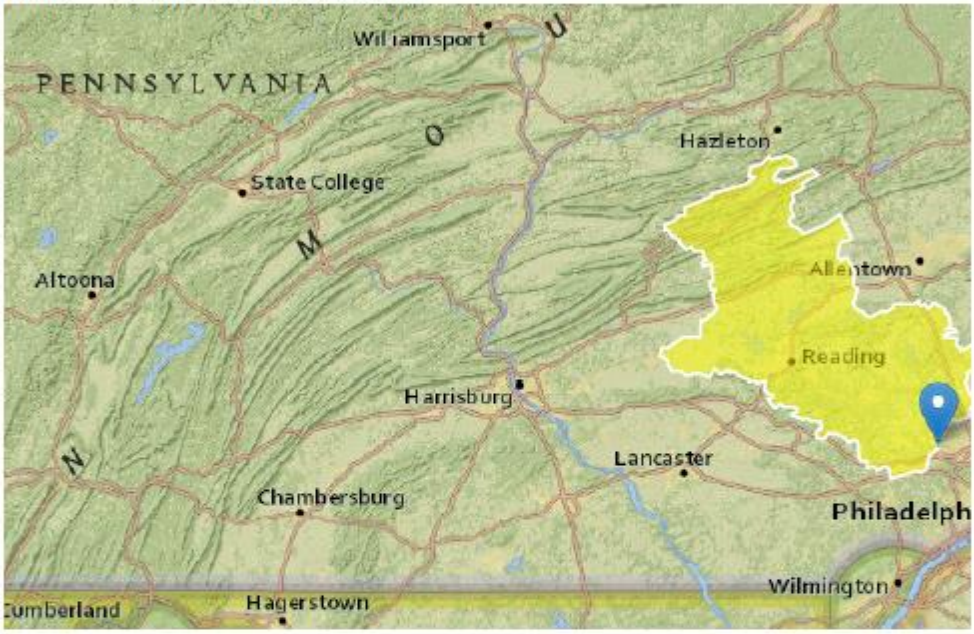
Compliance Sampling Location: At Outfall 002

Other Comments: None

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	TMS (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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:

PA0026131 at Outfall 002

Region ID: PA
Workspace ID: PA20201028181413076000
Clicked Point (Latitude, Longitude): 40.11134, -75.40872
Time: 2020-10-28 14:14:32 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1720	square miles
BSLOPD	Mean basin slope measured in degrees	5.5944	degrees
ROCKDEP	Depth to rock	4.5	feet
URBAN	Percentage of basin with urban development	8.4809	percent
PRECIP	Mean Annual Precipitation	46	inches

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	1.51	miles per square mile
CARBON	Percentage of area of carbonate rock	13.75	percent

Low-Flow Statistics Parameters[47 Percent (816 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1720	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.5944	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	8.4809	percent	0	89

Low-Flow Statistics Parameters[53 Percent (905 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1720	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	46	inches	35	50.4
STRDEN	Stream Density	1.51	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	13.75	percent	0	99

Low-Flow Statistics Disclaimers[47 Percent (816 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report[47 Percent (816 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	417	ft^3/s
30 Day 2 Year Low Flow	514	ft^3/s
7 Day 10 Year Low Flow	259	ft^3/s
30 Day 10 Year Low Flow	311	ft^3/s
90 Day 10 Year Low Flow	415	ft^3/s

Low-Flow Statistics Disclaimers[53 Percent (905 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[53 Percent (905 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	640	ft^3/s
30 Day 2 Year Low Flow	753	ft^3/s
7 Day 10 Year Low Flow	429	ft^3/s
30 Day 10 Year Low Flow	503	ft^3/s
90 Day 10 Year Low Flow	612	ft^3/s

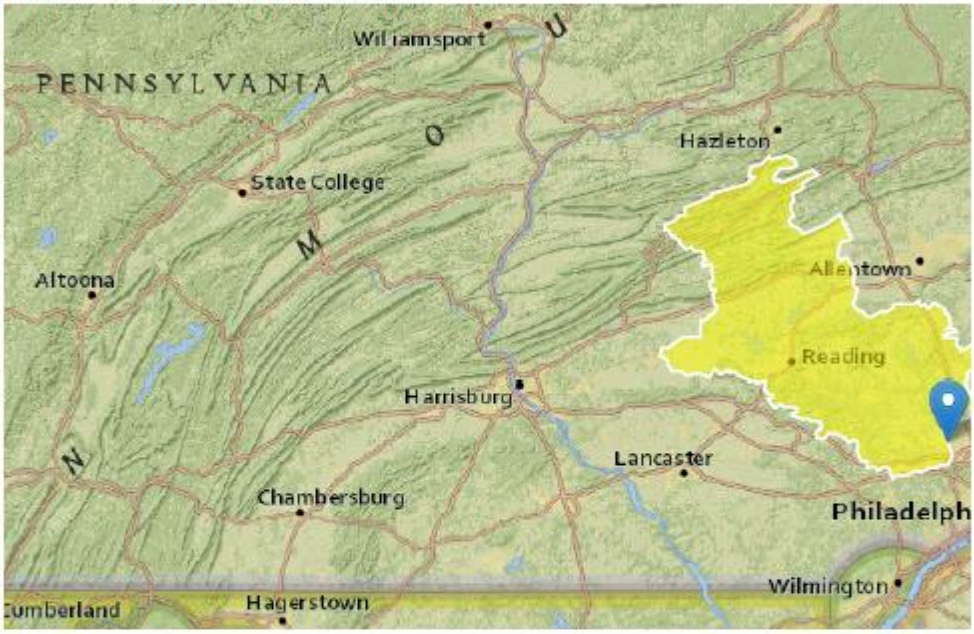
Low-Flow Statistics Flow Report[Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	534	ft^3/s
30 Day 2 Year Low Flow	640	ft^3/s
7 Day 10 Year Low Flow	348	ft^3/s
30 Day 10 Year Low Flow	412	ft^3/s
90 Day 10 Year Low Flow	519	ft^3/s

Low-Flow Statistics Citations

PA0026131 at Node 2

Region ID: PA
Workspace ID: PA20201028181806016000
Clicked Point (Latitude, Longitude): 40.11812, -75.37909
Time: 2020-10-28 14:18:26 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1740	square miles
BSLOPD	Mean basin slope measured in degrees	5.5735	degrees
ROCKDEP	Depth to rock	4.5	feet
URBAN	Percentage of basin with urban development	9.1568	percent
PRECIP	Mean Annual Precipitation	46	inches

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	1.51	miles per square mile
CARBON	Percentage of area of carbonate rock	13.96	percent

Low-Flow Statistics Parameters[48 Percent (833 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1740	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.5735	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	9.1568	percent	0	89

Low-Flow Statistics Parameters[52 Percent (905 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1740	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	46	inches	35	50.4
STRDEN	Stream Density	1.51	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.5	feet	3.32	5.65
CARBON	Percent Carbonate	13.96	percent	0	99

Low-Flow Statistics Disclaimers[48 Percent (833 square miles) Low Flow Region 1]

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

Low-Flow Statistics Flow Report[48 Percent (833 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	425	ft^3/s
30 Day 2 Year Low Flow	524	ft^3/s
7 Day 10 Year Low Flow	265	ft^3/s
30 Day 10 Year Low Flow	318	ft^3/s
90 Day 10 Year Low Flow	425	ft^3/s

Low-Flow Statistics Disclaimers[52 Percent (905 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[52 Percent (905 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	650	ft^3/s
30 Day 2 Year Low Flow	764	ft^3/s
7 Day 10 Year Low Flow	436	ft^3/s
30 Day 10 Year Low Flow	512	ft^3/s
90 Day 10 Year Low Flow	621	ft^3/s

Low-Flow Statistics Flow Report[Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	542	ft^3/s
30 Day 2 Year Low Flow	649	ft^3/s
7 Day 10 Year Low Flow	354	ft^3/s
30 Day 10 Year Low Flow	419	ft^3/s
90 Day 10 Year Low Flow	527	ft^3/s

Low-Flow Statistics Citations

Permit No. PA0026131

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
03F	833	SCHUYLKILL RIVER	27.700	58.04	1720.00	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	0.150	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	20.00	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
Trout Run WPCC	PA0026131	6.0000	0.0000	0.0000	0.000	20.00	6.90

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	15.00	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
03F	833	SCHUYLKILL RIVER	26.720	57.91	1740.00	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	0.150	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	20.00	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
03F	833	SCHUYLKILL 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												
27.700	258.00	0.00	258.00	9.282	0.00003	1.258	316.75	251.74	0.67	0.089	20.00	7.00
Q1-10 Flow												
27.700	165.12	0.00	165.12	9.282	0.00003	NA	NA	NA	0.53	0.113	20.00	6.99
Q30-10 Flow												
27.700	309.60	0.00	309.60	9.282	0.00003	NA	NA	NA	0.74	0.081	20.00	7.00

Monday, November 16, 2020 Version 1.0b Page 1 of 1

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	1.2	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
03F	833	SCHUYLKILL 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
27.700	Trout Run WPCC	9.71	30	9.71	30	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
27.700	Trout Run WPCC	1.92	15	1.92	15	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)		
27.70	Trout Run WPCC	25	25	15	15	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
27.700	6.000	20.000	6.996
Reach Width (ft)	**Reach Depth (ft)**	**Reach WD Ratio**	**Reach Velocity (fps)**
316.750	1.258	251.740	0.671
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.80	0.444	0.52	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.130	0.079	Tsivoglou	5
Reach Travel Time (days)			
0.089			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	2.79	0.52	8.10
0.018	2.78	0.51	8.07
0.027	2.77	0.51	8.04
0.036	2.75	0.51	8.01
0.045	2.74	0.50	7.98
0.054	2.73	0.50	7.95
0.063	2.72	0.50	7.92
0.071	2.71	0.50	7.89
0.080	2.70	0.49	7.86
0.089	2.69	0.49	7.83

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03F	833	SCHUYLKILL 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)
27.700	Trout Run WPCC	PA0026131	6.000	CBOD5	25		
				NH3-N	15	30	
				Dissolved Oxygen			5

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Version 1.0, July 2020

Discharge Information

Instructions | Discharge | Stream

Facility: Trout Run WPCC NPDES Permit No.: PA0026131 Outfall No.: 002

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

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
6	191	6.9						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Stream CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteria Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		532									
	Chloride (PWS)	mg/L		150									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		51									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		50									
	Total Antimony	µg/L		1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		38									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		200									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		1.6									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.3									
	Total Copper	µg/L		54.843189			0.2577						
	Free Available Cyanide	µg/L		3									
	Total Cyanide	µg/L		3									
	Dissolved Iron	µg/L		90									
	Total Iron	µg/L		200									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		22									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		4.8									
	Total Phenols (Phenolics) (PWS)	µg/L		32									
	Total Selenium	µg/L		2									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		51									
	Total Molybdenum	µg/L		10									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	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	<	0.5									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	5									
	Chloroform	µg/L		1.3									
	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	<	100									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	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	<	10									
	2,4-Dichlorophenol	µg/L	<	10									
	2,4-Dimethylphenol	µg/L	<	10									
	4,6-Dinitro-o-Cresol	µg/L	<	10									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	10									
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	10									
	2,4,6-Trichlorophenol	µg/L	<	10									
Group 5	Acenaphthene	µg/L	<	5									
	Acenaphthylene	µg/L	<	5									
	Anthracene	µg/L	<	5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	2.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5									
	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	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									

	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	5									
	Fluoranthene	µg/L	<	5									
	Fluorene	µg/L	<	5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									
	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	0.5									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	2.5									
	Pyrene	µg/L	<	5									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
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											

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.0, July 2020

Stream / Surface Water Information

Trout Run WPCC, NPDES Permit No. PA0026131, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Schuylkill 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	000833	27.7	58.04	1720			Yes
End of Reach 1	000833	26.72	57.91	1740			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	27.7	0.15										206	7		
End of Reach 1	26.72	0.15										206	7		

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	27.7														
End of Reach 1	26.72														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.0, July 2020

Model Results

Trout Run WPCC, NPDES Permit No. PA0026131, Outfall 002

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

☑ ***Hydrodynamics***

Q_{7-10}

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)
27.7	258		258	9.282	0.00003	1.258	316.75	251.74	0.671	0.089	18112.264
26.72	261		261								

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)
27.7	952.24		952.24	9.282	0.00003	2.21	316.75	143.324	1.374	0.044	8190.215
26.72	961.906		961.91								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.029 Analysis Hardness (mg/l): 197.67 Analysis pH: 6.94

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	
Bromide	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	1,350	
Total Antimony	0	0		0	1,100	1,100	1,980	
Total Arsenic	0	0		0	340	340	612	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	37,798	
Total Boron	0	0		0	8,100	8,100	14,579	
Total Cadmium	0	0		0	3.904	4.26	7.68	Chem Translator of 0.915 applied
Total Chromium (III)	0	0		0	995.550	3,150	5,671	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	29.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	171	
Total Copper	0	0		0	25.539	26.6	47.9	Chem Translator of 0.96 applied

Free Available Cyanide	0	0		0	22	22.0	39.6	
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	134.455	194	350	Chem Translator of 0.692 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.96	Chem Translator of 0.85 applied
Total Nickel	0	0		0	833.342	835	1,503	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	10.385	12.2	22.0	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	117	
Total Zinc	0	0		0	208.737	213	384	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	5.4	
Acrylonitrile	0	0		0	650	650	1,170	
Benzene	0	0		0	640	640	1,152	
Bromoform	0	0		0	1,800	1,800	3,240	
Carbon Tetrachloride	0	0		0	2,800	2,800	5,040	
Chlorobenzene	0	0		0	1,200	1,200	2,160	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	32,398	
Chloroform	0	0		0	1,900	1,900	3,420	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	26,999	
1,1-Dichloroethylene	0	0		0	7,500	7,500	13,499	
1,2-Dichloropropane	0	0		0	11,000	11,000	19,799	
1,3-Dichloropropylene	0	0		0	310	310	558	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	2,900	2,900	5,220	
Methyl Bromide	0	0		0	550	550	990	
Methyl Chloride	0	0		0	28,000	28,000	50,397	
Methylene Chloride	0	0		0	12,000	12,000	21,599	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,800	
Tetrachloroethylene	0	0		0	700	700	1,260	
Toluene	0	0		0	1,700	1,700	3,060	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	12,239	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	5,400	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	6,120	
Trichloroethylene	0	0		0	2,300	2,300	4,140	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,008	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,060	
2,4-Dimethylphenol	0	0		0	660	660	1,188	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	144	
2,4-Dinitrophenol	0	0		0	660	660	1,188	
2-Nitrophenol	0	0		0	8,000	8,000	14,399	
4-Nitrophenol	0	0		0	2,300	2,300	4,140	
Pentachlorophenol	0	0		0	8.226	8.23	14.8	
Phenol	0	0		0	N/A	N/A	N/A	

2,4,6-Trichlorophenol	0	0		0	460	460	828	
Acenaphthene	0	0		0	83	83.0	149	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	540	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.9	
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	53,997	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	8,100	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	486	
Butyl Benzyl Phthalate	0	0		0	140	140	252	
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	1,476	
1,3-Dichlorobenzene	0	0		0	350	350	630	
1,4-Dichlorobenzene	0	0		0	730	730	1,314	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	7,200	
Dimethyl Phthalate	0	0		0	2,500	2,500	4,500	
Di-n-Butyl Phthalate	0	0		0	110	110	198	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	2,880	
2,6-Dinitrotoluene	0	0		0	990	990	1,782	
1,2-Diphenylhydrazine	0	0		0	15	15.0	27.0	
Fluoranthene	0	0		0	200	200	360	
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	18.0	
Hexachlorocyclopentadiene	0	0		0	5	5.0	9.0	
Hexachloroethane	0	0		0	60	60.0	108	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	17,999	
Naphthalene	0	0		0	140	140	252	
Nitrobenzene	0	0		0	4,000	4,000	7,200	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	30,598	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	540	
Phenanthrene	0	0		0	5	5.0	9.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	234	

☑ *CFC* CCT (min): 720 PMF: 0.199 Analysis Hardness (mg/l): 203.71 Analysis pH: 6.98

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	
Bromide	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	1,439	
Total Arsenic	0	0		0	150	150	981	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	26,822	
Total Boron	0	0		0	1,600	1,600	10,467	
Total Cadmium	0	0		0	0.403	0.46	3.0	Chem Translator of 0.879 applied
Total Chromium (III)	0	0		0	132.733	154	1,010	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	68.0	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	124	
Total Copper	0	0		0	16.449	17.1	112	Chem Translator of 0.96 applied
Free Available Cyanide	0	0		0	5.2	5.2	34.0	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	43,194	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	5.410	7.87	51.5	Chem Translator of 0.687 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	5.93	Chem Translator of 0.85 applied
Total Nickel	0	0		0	94.946	95.2	623	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	32.6	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	85.0	
Total Zinc	0	0		0	215.881	219	1,432	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	19.6	
Acrylonitrile	0	0		0	130	130	850	
Benzene	0	0		0	130	130	850	
Bromoform	0	0		0	370	370	2,420	
Carbon Tetrachloride	0	0		0	560	560	3,663	
Chlorobenzene	0	0		0	240	240	1,570	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	22,897	
Chloroform	0	0		0	390	390	2,551	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	20,280	
1,1-Dichloroethylene	0	0		0	1,500	1,500	9,813	
1,2-Dichloropropane	0	0		0	2,200	2,200	14,392	
1,3-Dichloropropylene	0	0		0	61	61.0	399	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	580	580	3,794	
Methyl Bromide	0	0		0	110	110	720	
Methyl Chloride	0	0		0	5,500	5,500	35,980	
Methylene Chloride	0	0		0	2,400	2,400	15,701	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,374	

Tetrachloroethylene	0	0		0	140	140	916	
Toluene	0	0		0	330	330	2,159	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	9,159	
1,1,1-Trichloroethane	0	0		0	610	610	3,991	
1,1,2-Trichloroethane	0	0		0	680	680	4,448	
Trichloroethylene	0	0		0	450	450	2,944	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	720	
2,4-Dichlorophenol	0	0		0	340	340	2,224	
2,4-Dimethylphenol	0	0		0	130	130	850	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	105	
2,4-Dinitrophenol	0	0		0	130	130	850	
2-Nitrophenol	0	0		0	1,600	1,600	10,467	
4-Nitrophenol	0	0		0	470	470	3,075	
Pentachlorophenol	0	0		0	6.311	6.31	41.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	595	
Acenaphthene	0	0		0	17	17.0	111	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	386	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.65	
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	39,251	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	5,953	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	353	
Butyl Benzyl Phthalate	0	0		0	35	35.0	229	
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	1,047	
1,3-Dichlorobenzene	0	0		0	69	69.0	451	
1,4-Dichlorobenzene	0	0		0	150	150	981	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	5,234	
Dimethyl Phthalate	0	0		0	500	500	3,271	
Di-n-Butyl Phthalate	0	0		0	21	21.0	137	
2,4-Dinitrotoluene	0	0		0	320	320	2,093	
2,6-Dinitrotoluene	0	0		0	200	200	1,308	
1,2-Diphenylhydrazine	0	0		0	3	3.0	19.6	
Fluoranthene	0	0		0	40	40.0	262	
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	13.1	

Hexachlorocyclopentadiene	0	0		0	1	1.0	6.54	
Hexachloroethane	0	0		0	12	12.0	78.5	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	13,738	
Naphthalene	0	0		0	43	43.0	281	
Nitrobenzene	0	0		0	810	810	5,299	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	22,242	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	386	
Phenanthrene	0	0		0	1	1.0	6.54	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	170	

☑ *THH* CCT (min): 720 PMF: 0.199 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	
Bromide	0	0		0	N/A	N/A	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	36.6	
Total Arsenic	0	0		0	10	10.0	65.4	
Total Barium	0	0		0	2,400	2,400	15,701	
Total Boron	0	0		0	3,100	3,100	20,280	
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 Available Cyanide	0	0		0	140	140	916	
Dissolved Iron	0	0		0	300	300	1,963	
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	6,542	
Total Mercury	0	0		0	0.050	0.05	0.33	
Total Nickel	0	0		0	610	610	3,991	
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	1.57	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	6	6.0	39.3	
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	130	130	850	
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	216	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	530	530	3,467	
Methyl Bromide	0	0		0	47	47.0	307	
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	1,300	1,300	8,504	
1,2-trans-Dichloroethylene	0	0		0	140	140	916	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
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	81	81.0	530	
2,4-Dichlorophenol	0	0		0	77	77.0	504	
2,4-Dimethylphenol	0	0		0	380	380	2,486	
4,6-Dinitro-o-Cresol	0	0		0	13	13.0	85.0	
2,4-Dinitrophenol	0	0		0	69	69.0	451	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	10,400	10,400	68,036	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	670	670	4,383	
Anthracene	0	0		0	8,300	8,300	54,298	
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-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	150	150	981	
2-Chloronaphthalene	0	0		0	1,000	1,000	6,542	
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	420	420	2,748	
1,3-Dichlorobenzene	0	0		0	420	420	2,748	
1,4-Dichlorobenzene	0	0		0	420	420	2,748	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	17,000	17,000	111,212	
Dimethyl Phthalate	0	0		0	270,000	270,000	1,766,311	
Di-n-Butyl Phthalate	0	0		0	2,000	2,000	13,084	
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	130	130	850	
Fluorene	0	0		0	1,100	1,100	7,196	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	40	40.0	262	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.0038	0.004	0.025	
Isophorone	0	0		0	35	35.0	229	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	17	17.0	111	
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	830	830	5,430	
1,2,4-Trichlorobenzene	0	0		0	35	35.0	229	

☑ *CRL* CCT (min): 720 PMF: 0.296 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	
Bromide	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 Available 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	0.051	0.051	1.6	
Benzene	0	0		0	1.2	1.2	37.7	
Bromoform	0	0		0	4.3	4.3	135	
Carbon Tetrachloride	0	0		0	0.23	0.23	7.23	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	12.6	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	179	
Dichlorobromomethane	0	0		0	0.55	0.55	17.3	
1,2-Dichloroethane	0	0		0	0.38	0.38	11.9	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	0.34	0.34	10.7	
1,4-Dioxane	0	0		0	N/A	N/A	N/A	
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	4.6	4.6	145	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	5.34	
Tetrachloroethylene	0	0		0	0.69	0.69	21.7	
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	0.59	0.59	18.5	
Trichloroethylene	0	0		0	2.5	2.5	78.5	
Vinyl Chloride	0	0		0	0.025	0.025	0.79	
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	
Pentachlorophenol	0	0		0	0.270	0.27	8.48	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	44.0	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.003	
Benzo(a)Anthracene	0	0		0	0.0038	0.004	0.12	
Benzo(a)Pyrene	0	0		0	0.0038	0.004	0.12	
3,4-Benzofluoranthene	0	0		0	0.0038	0.004	0.12	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	0.12	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.94	
Bis(2-Ethylhexyl)Phthalate	0	0		0	1.2	1.2	37.7	
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	0.0038	0.004	0.12	
Dibenzo(a,h)Anthrancene	0	0		0	0.0038	0.004	0.12	
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	0.021	0.021	0.66	
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	1.57	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.57	
1,2-Diphenylhydrazine	0	0		0	0.036	0.036	1.13	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00028	0.0003	0.009	
Hexachlorobutadiene	0	0		0	0.44	0.44	13.8	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	1.4	1.4	44.0	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
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	0.00069	0.0007	0.022	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.16	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	104	

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 Dissolved Solids (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Bromide	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Sulfate (PWS)	Report	Report	Report	Report	Report	mg/L	N/A	N/A	Special Monitoring Applies
Total Copper	1.33	1.74	26.6	34.8	66.5	µg/L	26.6	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	246	AFC	Discharge Conc > 10% WQBEL (no RP)
1,4-Dioxane	Report	Report	Report	Report	Report	µg/L	N/A	N/A	Special Monitoring Applies

☑ ***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 Aluminum	865	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	36.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Boron	9,345	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Chromium (III)	1,010	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	N/A	N/A	Discharge Conc < TQL
Total Cobalt	110	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	18.8	µg/L	Discharge Conc < TQL
Free Available Cyanide	25.4	µg/L	Discharge Conc ≤ 25% WQBEL
Dissolved Iron	1,963	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	43,194	µg/L	Discharge Conc ≤ 10% WQBEL

Total Cyanide	N/A	N/A	No WQS
Total Manganese	6,542	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	51.5	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Mercury	0.33	µg/L	Discharge Conc < TQL
Total Silver	14.1	µg/L	Discharge Conc < TQL
Total Thallium	1.57	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.46	µg/L	Discharge Conc < TQL
Acrylonitrile	1.6	µg/L	Discharge Conc < TQL
Benzene	37.7	µg/L	Discharge Conc < TQL
Bromoform	135	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	7.23	µg/L	Discharge Conc < TQL
Chlorobenzene	850	µg/L	Discharge Conc < TQL
Chlorodibromomethane	12.6	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	20,766	µg/L	Discharge Conc < TQL
Dichlorobromomethane	17.3	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	11.9	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	216	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	12,690	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	10.7	µg/L	Discharge Conc < TQL
Ethylbenzene	3,346	µg/L	Discharge Conc < TQL
Methyl Bromide	307	µg/L	Discharge Conc < TQL
Methyl Chloride	32,303	µg/L	Discharge Conc < TQL
Methylene Chloride	145	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	5.34	µg/L	Discharge Conc < TQL
Tetrachloroethylene	21.7	µg/L	Discharge Conc < TQL
Toluene	1,961	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	916	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	3,461	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	18.5	µg/L	Discharge Conc < TQL
Trichloroethylene	78.5	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.79	µg/L	Discharge Conc < TQL
2-Chlorophenol	530	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	504	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	761	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	85.0	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	451	µg/L	Discharge Conc < TQL
2-Nitrophenol	9,229	µg/L	Discharge Conc < TQL
4-Nitrophenol	2,653	µg/L	Discharge Conc < TQL
Pentachlorophenol	8.48	µg/L	Discharge Conc < TQL
Phenol	68,036	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	44.0	µg/L	Discharge Conc < TQL

Acenaphthylene	N/A	N/A	No WQS
Benzidine	0.003	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.12	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.12	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.12	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.12	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.94	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	37.7	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	311	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	162	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	6,542	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.12	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.12	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	946	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	404	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	842	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.66	µg/L	Discharge Conc < TQL
Diethyl Phthalate	4,615	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	2,884	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	127	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	1.57	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	1.57	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	1.13	µg/L	Discharge Conc < TQL
Pyrene	5,430	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.009	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	11.5	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	5.77	µg/L	Discharge Conc < TQL
Hexachloroethane	44.0	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.025	µg/L	Discharge Conc < TQL
Isophorone	229	µg/L	Discharge Conc < TQL
Naphthalene	162	µg/L	Discharge Conc < TQL
Nitrobenzene	111	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.022	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.16	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	104	µg/L	Discharge Conc < TQL
Phenanthrene	5.77	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	150	µg/L	Discharge Conc < TQL

FIGURE 1: TROUT RUN W.P.C.C.

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	8.920	1.3.2.iii	WLA cfc =	8.689
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	3.324	5.1d	LTA_cfc =	5.051

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.635	

WLA afc	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.04
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Trout Run WPCC

Permit No.: PA0026131

Test Completion Date: 4/4/2017

Replicate No.	Control	TIWC
1	10	10
2	10	9
3	9	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

Test Completion Date: 11/6/2018

Replicate No.	Control	TIWC
1	10	9
2	10	9
3	10	10
4	9	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.500
Std Dev.	0.500	0.577
# Replicates	4	4

T-Test Result	5.3848
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 11/5/2019

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

T-Test Result	7.6643
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 12/8/2020

Replicate No.	Control	TIWC
1	10	10
2	10	9
3	10	10
4	9	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

Permit No. PA0026131

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.04
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Trout Run WPCC

Permit No.: PA0026131

Replicate No.	Test Completion Date: 4/4/2017 Control	TIWC
1	0.376	0.373
2	0.361	0.374
3	0.379	0.396
4	0.366	0.429
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.371	0.393
Std Dev.	0.008	0.026
# Replicates	4	4

T-Test Result	8.5301
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Replicate No.	Test Completion Date: 11/6/2018 Control	TIWC
1	0.507	0.436
2	0.474	0.492
3	0.481	0.513
4	0.452	0.508
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.479	0.487
Std Dev.	0.023	0.035
# Replicates	4	4

T-Test Result	6.5500
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Replicate No.	Test Completion Date: 11/5/2019 Control	TIWC
1	0.358	0.362
2	0.359	0.424
3	0.422	0.448
4	0.415	0.378
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.389	0.403
Std Dev.	0.035	0.040
# Replicates	4	4

T-Test Result	4.6854
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Replicate No.	Test Completion Date: 12/8/2020 Control	TIWC
1	0.43	0.411
2	0.421	0.485
3	0.46	0.43
4	0.439	0.381
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.438	0.427
Std Dev.	0.017	0.044
# Replicates	4	4

T-Test Result	4.3335
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Permit No. PA0026131

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.04
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Trout Run WPCC

Permit No.: PA0026131

Replicate No.	Test Completion Date 4/3/2017 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	0	1
10	1	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	0.000
# Replicates	10	10
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail	PASS	

Replicate No.	Test Completion Date 11/6/2018 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	

Replicate No.	Test Completion Date 11/4/2019 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	

Replicate No.	Test Completion Date 12/8/2020 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	

Permit No. PA0026131

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.04
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Trout Run WPCC

Permit No.: PA0026131

Replicate No.	Test Completion Date: 4/3/2017 Control	TIWC
1	37	33
2	38	38
3	34	36
4	32	33
5	29	32
6	28	37
7	39	33
8	37	32
9	8	30
10	37	36
11		
12		
13		
14		
15		
Mean	31.900	34.000
Std Dev.	9.219	2.582
# Replicates	10	10
T-Test Result	4.3167	
Deg. of Freedom	16	
Critical T Value	0.8647	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/6/2018 Control	TIWC
1	31	29
2	29	37
3	26	32
4	25	32
5	15	33
6	29	24
7	21	30
8	23	24
9	24	23
10	26	39
11		
12		
13		
14		
15		
Mean	24.900	30.300
Std Dev.	4.606	5.458
# Replicates	10	10
T-Test Result	5.6914	
Deg. of Freedom	15	
Critical T Value	0.8662	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 11/4/2019 Control	TIWC
1	27	29
2	30	28
3	31	22
4	21	28
5	24	36
6	32	41
7	16	25
8	30	25
9	26	27
10	26	33
11		
12		
13		
14		
15		
Mean	26.300	29.400
Std Dev.	4.968	5.719
# Replicates	10	10
T-Test Result	4.4822	
Deg. of Freedom	16	
Critical T Value	0.8647	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: 12/8/2020 Control	TIWC
1	34	38
2	32	38
3	32	27
4	27	34
5	34	34
6	42	36
7	33	38
8	35	34
9	20	33
10	34	37
11		
12		
13		
14		
15		
Mean	32.300	34.900
Std Dev.	5.677	3.381
# Replicates	10	10
T-Test Result	6.2084	
Deg. of Freedom	17	
Critical T Value	0.8633	
Pass or Fail	PASS	

WET Summary and Evaluation

Facility Name	Trout Run WPCC
Permit No.	PA0026131
Design Flow (MGD)	6
Q_{7-10} Flow (cfs)	259
PMF_a	0.029
PMF_o	0.199

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/4/17	11/6/18	11/5/19	12/8/20
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/4/17	11/6/18	11/5/19	12/8/20
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/3/17	11/6/18	11/4/19	12/8/20
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	Endpoint	4/3/17	11/6/18	11/4/19	12/8/20
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	Chronic
TIWC	15 % Effluent
Dilution Series	4, 8, 15, 58, 100 % Effluent
Permit Limit	None
Permit Limit Species	