Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0026697**
Facility Type	**Non Municipal**	APS ID	**1124242**
Major / Minor	**Major**	Authorization ID	**1506857**

Applicant and Facility Information

Applicant Name	**PA American Water Company**	Facility Name	**Butler Area STP**
Applicant Address	852 Wesley Drive	Facility Address	100 Litman Road
	Mechanicsburg, PA 19402		Butler, PA 16001-3256
Applicant Contact	James Runzer	Facility Contact	Mason Miller
Applicant Phone	(717) 550-1540	Facility Phone	(724) 961-4851
Client ID	87712	Site ID	262833
Ch 94 Load Status	Not Overloaded	Municipality	Butler Township
Connection Status	No Limitations	County	Butler
Date Application Received	February 14, 2023	EPA Waived?	No
Date Application Accepted	February 28, 2023	If No, Reason	Major Sewage Facility

Purpose of Application: Renewal/Transfer of an NPDES Permit for an existing discharge of municipal sewage.

Summary of Review

This is a privately owned treatment works treating municipal sewage received from the City of Butler, Butler Township, Center Township, East Butler Borough, Summit Township, Connoquenessing Township, Oakland Township, and Penn Township, Butler County.

A transfer application was submitted during the technical review for the permit renewal to change the permittee from Butler Area Sewer Authority to PA American Water Company due to change in ownership. The transfer date was 10/29/2024. This will change the facility from a publicly owned treatment works to a privately owned treatment works. eDMR Registration documents were submitted and processed.

Discharges consist of a primary outfall (001), a secondary (emergency) outfall (005), and five stormwater outfalls (011, 012, 013, 014, and 018) associated with the facility.

The facility previously had an EPA administered Pretreatment Program and will have a Pennsylvania administered Pretreatment Program in the renewed permit due to changing from a publicly owned to privately owned treatment works.

There are currently 9 violations listed in EFACTS for this client (3/13/2025). All of these open violations are at other facilities across the state.

Sludge use and disposal description and location(s): Sludge is dewatered and hauled to Carbon Limestone Landfill (Ohio) for disposal.

Approve	Deny	Signatures	Date
X		Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager	March 13, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	April 4, 2025

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	10.0
Latitude	40º 50' 21"	Longitude	-79º 55' 13"
Quad Name	Butler	Quad Code	34025
Wastewater Description:	Treated domestic sewage		
Receiving Waters	Connoquenessing Creek	Stream Code	34025
NHD Com ID	126217461	RMI	43.7
Drainage Area	86.07	Yield (cfs/mi^2)	--
Q_{7-10} Flow (cfs)	5.6	Q_{7-10} Basis	See attached Q_{7-10} calculation summary
Elevation (ft)	980	Slope (ft/ft)	0.00193
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use	WWF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Non-Attaining		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	URBAN RUNOFF/STORM SEWERS		
TMDL Status	Pending	Name	

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Background/Ambient Data		Data Source
pH (SU)	7.2	Background stream sample
Temperature (°C)	25	Default temp for a WWF stream
Hardness (mg/L)	202	Sample for 2023 NPDES Permit Renewal
$CBOD_5$ (mg/L)	2	Assumed default value
NH_3-N (mg/L)	0.1	Assumed default value

Nearest Downstream Public Water Supply Intake		PA American Water Company – Ellwood District	
PWS Waters	Connoquenessing Creek	Flow at Intake (cfs)	67
PWS RMI	0.2	Distance from Outfall (mi)	Approx. 43.5 mi

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	10
Latitude	40º 50' 29"	Longitude	-79º 55' 6"
Quad Name	Butler	Quad Code	05043
Wastewater Description:	Alternative (emergency) outfall for the main plant discharge		
Receiving Waters	Butcher Run	Stream Code	35116
NHD Com ID	126223854	RMI	0.066
Drainage Area	---	Yield (cfs/mi^2)	---
Q_{7-10} Flow (cfs)	---	Q_{7-10} Basis	---
Elevation (ft)	---	Slope (ft/ft)	---
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	PA American Water Company – Ellwood District		
PWS Waters	Connoquenessing Creek	Flow at Intake (cfs)	67
PWS RMI	0.2	Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None

Other Comments: Outfall 005 will continue to be identified as an alternative discharge point of fully treated sewage to Butchers Run. During high flow conditions in Connoquenessing Creek, the main outfall (001) may not be able to discharge all incoming wastewater to the plant. Outfall 005 serves as a backup to ensure continuous discharging can occur. The applicant confirmed that no discharge has occurred from this outfall since the plant's upgrade/expansion was completed in 1981. The distance from the discharge to the mouth of Butcher Run is approx. 350 feet. If the discharge is only activated during high streamflow events the wastewater would barely be in this tributary before it reached Connoquenessing Creek. Under a hypothetical, low flow condition the effluent would only be in Butcher Run for 6 minutes. The inability to determine what a rain event condition flow would be, makes the modeling of this discharge impracticable. Given this information, the Department has decided to impose the 001 discharge limitations.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	011	Design Flow (MGD)	N/A
Latitude	40º 50' 30"	Longitude	-79º 55' 07"
Outfall No.	012	Design Flow (MGD)	N/A
Latitude	40º 50' 29"	Longitude	-79º 55' 06"
Outfall No.	013	Design Flow (MGD)	N/A
Latitude	40º 50' 28"	Longitude	-79º 55' 00"
Outfall No.	014	Design Flow (MGD)	N/A
Latitude	40º 50' 29"	Longitude	-79º 54' 50"
Outfall No.	018	Design Flow (MGD)	N/A
Latitude	40º 50' 30"	Longitude	-79º 55' 49"

Quad Name: Butler — Quad Code: 05043

Wastewater Description: Stormwater outfalls from the treatment plant site

Receiving Waters	Butcher Run	Stream Code	35116
NHD Com ID	126223854	RMI	---
Drainage Area	---	Yield (cfs/mi^2)	---
Q_{7-10} Flow (cfs)	---	Q_{7-10} Basis	---
Elevation (ft)	---	Slope (ft/ft)	---
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None

Assessment Status: Attaining Use(s)

Cause(s) of Impairment:

Source(s) of Impairment:

TMDL Status: — Name:

Changes Since Last Permit Issuance: N/A

Treatment Facility Summary				
Treatment Facility Name: Butler Area Sewer Authority				
WQM Permit No.	**Issuance Date**			
1074404	1/7/77 and amended 6/25/17			
1009404	1/19/10 and amended 5/18/10			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Trickling Filter with Settling	Gas Chlorine	10
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
10	12,750	Not Overloaded		

Changes Since Last Permit Issuance:

WQM #1074404: Aerated Grit Chamber, Primary Sedimentation, Trickling filters, Aeration Tanks, Reactor Clarifiers, Recarbonation and Chlorination.

WQM #1074404 – Amendment No. 1: Replace the two, existing plate and frame sludge presses and the lime, ferric chloride and polymer feed equipment with new polymer feed equipment, two, rotary filter sludge presses, post-lime feed equipment and new motor control centers.

WQM #1009404 – Amendment No. 1: The following project was constructed to alleviate sewer system overflows and limit the peak flows to the wastewater treatment plant to 28 MGD. A description of the collection system changes follows.

Deshon Pump Station (previously permitted by WQM #1009404)

- (3) 2,700 gpm @ 91 ft. TDH, VFD, auto control, submersible centrifugal pumps (one pump on standby)
- (2) precast concrete equalization tanks – 136 ft diameter & 29 ft high with 6 MG of total storage capacity
- The stored flow will be returned to the pump station

Monroe Street

- (3) 2,150 gpm @ 91 ft. TDH, VFD, auto control, submersible centrifugal pumps (one pump on standby)
- 692 LF of 18-inch PVC force main to the Monroe tanks & 627 LF of 18 & 24-inch gravity sewer back to the pump station. The 24-inch line will be replacing an existing 12-inch line to provide additional flow capacity for the EQ drain line discharge.
- The existing 12-inch and 16-inch force mains will pump wastewater to the Connoquenessing pump station location.
- (2) precast concrete equalization tanks – 87 ft in diameter & 24 ft high with 2 MG of total storage capacity (these tanks will be located on the opposite side of Connoquenessing Creek)

Central Storage (old Allegheny Axle site)

- (3) precast concrete equalization tanks – 154 ft in diameter & 35 ft. high with 14.1 MG of total storage volume
- EQ tank wash – in-line centrifugal pump rated at 300 gpm @ 120 ft TDH - variable speed, manual operation
- The stored flow will be returned to the existing sewer system via gravity.

The sizing of all the storage facilities was based on a 2-year, 24-hour storm event.

All the EQ tanks will also have an emergency overflow to protect the storage facilities. An open channel flow meter, tied into the SCADA system, will record the date, time, duration and volume of any overflow. These overflow points (SSO's) will not be permitted by the Department.

Ballpark Pump Station (Colosimo property)

- (3) 5,100 gpm @ 93 ft. TDH, VFD, auto control, submersible centrifugal pumps (one pump on standby)
- 2,140 LF of 30-inch force main to the Central Storage site
- 132 LF of an existing RCP gravity sewer will be enlarged to a 48-inch diameter pipe.
- Previous wet weather overflows from the Ballpark and General Tire areas will be captured by the new Ballpark overflow diversion structure and pumped to the Central Storage site.

Connoquenessing Pump Station

- (3) 6,600 gpm @ 98 ft. TDH, VFD, auto control, submersible centrifugal pumps (one pump on standby)
- 2,387 LF of 30-inch force main to the Central Storage site

The 30-inch force mains from the Ballpark and Connoquenessing pump stations will be combined into a 36-inch force main at the Central Storage site.

The application indicates an emergency overflow is proposed for the Deshon, Monroe and Ballpark flow diversion pump stations. These overflows are designed to protect the pump station facilities as well as be a preventative measure from sewage backups. Activation of any of these overflows will have to be done manually by the authority's personnel. If this occurs, the SCADA system will measure the same pertinent information as described for the storage system overflow events. Again, the Department cannot condone/permit these discharge points.

The Monroe pump station's force main flows will be directed to the Connoquenessing pump station. The Deshon pump station flows will go directly to the BASA STP.

Flow monitors will be installed on the force mains downstream of the Ballpark and Connoquenessing pump station locations. Another flow monitor will be installed on the Connoquenessing interceptor downstream of Sullivan Run. The monitors will be connected into the SCADA system to balance wastewater flowrates going to the STP from these pump stations and the other areas of the collection system. After the storage facilities are built, standard operating procedures, to limit peak flows, will be developed based on flow response information for various size wet weather events.

Compliance History	
Summary of DMRs:	There have been six effluent violations over the last five years. Four violations for fecal coliform, one for total residual chlorine, and one for total suspended solids.
Summary of Inspections:	The last site inspection was conducted on 8/8/2023. The inspection report did not note any violations.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly	4.615	5.843	4.617	4.53	7.024	13.217	8.721	5.532	9.52	5.564	4.858	4.3
Flow (MGD) Weekly Average	5.487	8.42	8.606	5.093	9.541	18.506	10.506	7.949	11.911	7.688	6.397	4.337
pH (S.U.) Instantaneous Minimum	7.1	7.1	7.1	7.0	6.2	6.7	6.8	6.7	6.8	7.0	7.0	7.1
pH (S.U.) Instantaneous Maximum	7.4	7.5	7.4	7.3	7.2	7.5	7.0	7.1	7.3	7.2	7.3	7.4
DO (mg/L) Instantaneous Minimum	6.4	7.1	6.5	7.8	6.2	6.2	6.1	7.3	6.3	7.1	7.4	7.7
TRC (mg/L) Average Monthly	0.27	0.26	0.27	0.24	0.23	0.29	0.26	0.24	0.27	0.22	0.27	0.27
TRC (mg/L) Instantaneous Maximum	0.375	0.42	0.51	0.34	0.3	0.405	0.37	0.37	0.435	0.275	0.38	0.34
CBOD5 (lbs/day) Average Monthly	< 115	< 146	< 116	< 113	< 176	< 366	< 222	< 140	< 248	< 154	< 122	< 108
CBOD5 (lbs/day) Weekly Average	< 137	< 211	< 215	< 127	< 239	< 496	< 263	< 206	< 320	< 254	< 160	< 109
CBOD5 (mg/L) Average Monthly	< 3	< 3	< 3	< 3.0	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
CBOD5 (mg/L) Weekly Average	< 3	< 3	< 3	< 3.0	< 3	< 4	< 3	< 3	< 3	< 4	< 3	< 3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	6540	5853	5648	5486	6480	7567	6416	6068	7001	6676	6198	7360
BOD5 (mg/L) Raw Sewage Influent Average Monthly	172	134	148	146	114	77	88	138	97	147	156	202
TSS (lbs/day) Average Monthly	< 190	< 190	< 159	< 151	< 224	1850	< 280	< 165	< 390	< 173	< 154	< 129

TSS (lbs/day) Raw Sewage Influent Average Monthly	11070	9637	11908	8816	7831	12424	8601	7844	12711	10174	9808	15041
TSS (lbs/day) Weekly Average	< 229	< 342	< 383	< 258	< 299	4915	< 397	244	< 589	< 305	< 236	< 161
TSS (mg/L) Average Monthly	< 5	< 4	< 4	< 4.0	< 4	11	< 4	< 4	< 5	< 4	< 4	< 4
TSS (mg/L) Raw Sewage Influent Average Monthly	291	215	307	235	138	117	119	181	163	223	252	397
TSS (mg/L) Weekly Average	< 5	< 5	< 5	< 7.0	< 4	25	< 4	4	< 6	< 4	< 4	< 4
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 2	< 1	< 1.0	< 2	< 9	< 3	< 2	< 5	< 2	< 2	< 2
Fecal Coliform (No./100 ml) Instantaneous Maximum	4	26	40	3.0	411	1733	291	1120	202	34	13	20
Total Nitrogen (mg/L) Average Monthly	8.94	7.24	14.3	14.3	15.5	8.41	6.58	7.89	7.68	8.88	9.12	11.1
Ammonia (lbs/day) Average Monthly	< 7	< 8	< 7	< 4	< 8	< 28	< 21	< 13	< 29	< 8	< 8	< 4
Ammonia (mg/L) Average Monthly	0.17	< 0.15	< 0.15	< 0.1	< 0.13	< 0.2	< 0.26	< 0.24	< 0.28	< 0.15	< 0.17	< 0.11
Total Phosphorus (lbs/day) Average Monthly	55	55	63	51	60	83	60	46	57	54	49	37
Total Phosphorus (mg/L) Average Monthly	1.42	1.17	1.63	1.37	1.02	0.75	0.83	0.99	0.73	1.17	1.21	1

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 10.0
Latitude 40º 50' 21" **Longitude** -79º 55' 13"
Wastewater Description: Treated domestic sewage

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$	11	Average Monthly	WQM 7.0 Ver. 1.1
NH_3-N (5/1-10/31)	2.0	Average Monthly	WQM 7.0 - (previous modeling)
NH_3-N (11/1-4/30)	5.5	Average Monthly	WQM 7.0 - (previous modeling)
TRC	0.062	Average Monthly	TRC Calc. model
TRC	0.202	IMAX	TRC Calc. model
Phosphorus	2	Average Monthly	Stream Enrichment Risk Analysis (SERA) study on Conn. Ck.
Dissolved Oxygen	5	Inst. Min.	WQM 7.0 – (previous modeling)
Total Copper (ug/l)	21.0	Average Monthly	Toxics Management Spreadsheet Ver. 1.3
Total Copper (ug/l)	32.8	Daily Max	Toxics Management Spreadsheet Ver. 1.3
Total Cyanide (ug/l)	5.45	Average Monthly	Toxics Management Spreadsheet Ver. 1.3
Total Cyanide (ug/l)	8.5	Daily Max	Toxics Management Spreadsheet Ver. 1.3

Comments: Water quality modeling done for the renewal indicated more stringent $CBOD_5$ limits were necessary and are therefore being placed in the proposed renewed permit as a year-round limit as the practice of seasonal $CBOD_5$ limits are no longer being placed in NPDES Permits where new or more stringent WQBELs are calculated. A review of DMRs indicated that this new limit can be easily met.

The TRC_Calc spreadsheet calculated more stringent TRC limits than are currently in the existing permit. The permittee is currently unable to meet the new WQBELs so a compliance schedule will be placed in the draft NPDES Permit. In pre-

draft permit discussions with the permittee, they indicated that they plan to switch from chlorine disinfection to UV disinfection within the permit cycle. Therefore, a compliance schedule was added to Part C of the permit for TRC with the rough timeframe of three years that will allow for the WQM permitting process and construction prior to final TRC limits to become effective as well as the requirement to sample for UV intensity upon completion of the UV disinfection equipment. Final TRC effluent limits will remain in the permit in the event the permittee does not complete construction of the UV disinfection equipment. If UV disinfection equipment is installed, the permittee shall use the No Data Indicator (NODI) code of "GG" on the eDMR and comment that chlorine disinfection is no longer used. Vice versa, the NODI code of "GG" shall be used for UV Intensity on the DMR for any and all periods during the permit cycle it is not used.

The permittee indicated in their completed "Pre-Draft Permit Survey" that they believe they can meet the new proposed WQBELs for total copper and total cyanide now. Therefore, a compliance schedule will not be placed in the proposed renewed permit for these parameters.

The Toxics Management Spreadsheet (TMS) also calculated a WQBEL for Total Dissolved Solids (TDS). The calculated WQBEL for TDS will not be placed in the proposed permit renewal as this is an existing discharge with no proposed change in flow, therefore the TMS already accounts for the discharge via the input of the background stream concentration at the downstream public water supply. Likewise, monitoring for chloride was recommended by the TMS. Sampling done for renewal applications have shown chloride levels to be consistently below PWS criterion, so monitoring for chloride will not be placed in the permit at this time.

The TMS also recommend monitoring for total aluminum, total arsenic, total boron, and total zinc for being determined to be pollutants of concern. Monitoring for these parameters will be placed in the proposed renewed permit at a sampling frequency of 2/month.

Best Professional Judgment (BPJ) Limitations

Comments: Monitoring for total nitrogen and UV intensity was placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Influent monitoring for TSS and BOD5 was placed in the permit in accordance with the Department's SOP entitled "New and Reissuance of Sewage Individual NPDES Permit Applications (SOP No. BCW-PMT-002)."

Quarterly monitoring for PFAS parameters – PFOA, PFOS, PFBS, and HFPO-DA – was added to the renewed permit in accordance with a department directive, under the authority of Chapter 92a.51. A footnote was also for discontinuation of sampling requirements for PFAS parameters after four consecutive non-detect are reported for all parameters at or below the Target QLs. Note annual sampling was chosen because this is a major POTW that does not have any industrial users.

Anti-Backsliding

The WQM 7.0 model calculated less stringent ammonia nitrogen and dissolved oxygen limits than were calculated in a previous NPDES Permit renewal. Since the existing limits can easily be met based on a review of previous DMRs, the existing limits will be retained in the proposed renewed NPDES Permit.

Development of Effluent Limitations

Outfall No.	011	**Design Flow (MGD)**	0
Latitude	40º 50' 30"	**Longitude**	-79º 55' 7"
Outfall No.	012	**Design Flow (MGD)**	0
Latitude	40º 50' 29"	**Longitude**	-79º 55' 6"
Outfall No.	013	**Design Flow (MGD)**	0
Latitude	40º 50' 27"	**Longitude**	-79º 55' 0"
Outfall No.	014	**Design Flow (MGD)**	0
Latitude	40º 50' 28"	**Longitude**	-79º 54' 50"
Outfall No.	018	**Design Flow (MGD)**	0
Latitude	40º 50' 30"	**Longitude**	-79º 55' 49"

Wastewater Description: Stormwater from plant facility

Technology-Based Limitations

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

Comments: None

Water Quality-Based Limitations

Comments: None

Best Professional Judgment (BPJ) Limitations

Comments: Best Management Practices listed in Part C of the Permit condition “Requirements Applicable to Stormwater Outfalls” shall be implemented to the extent practicable and semiannual inspections.

Anti-Backsliding

Comments: N/A

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 87%, 73%, 37%, and 18%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 73%.

Summary of Four Most Recent Test Results

TST Data Analysis

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
1/25/2022	Pass	Pass	Pass	Pass
1/23/2023	Pass	Pass	Pass	Pass
1/31/2024	Pass	Pass	Pass	Pass
1/14/2025	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**

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

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

1. **Determine IWC – Acute (IWCa)**:

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

   [(10 MGD x 1.547) / ((5.6 cfs x 1) + (10 MGD x 1.547))] x 100 = **73%**

   Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

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

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

   [(10 MGD x 1.547) / ((5.6 cfs x 1) + (10 MGD x 1.547))] x 100 = **73%**

3. **Determine Dilution Series**

   Dilution Series = 100%, 87%, 73%, 37%, and 18%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Start of Final Period.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.33	XXX	1.1	1/day	Grab

Compliance Sampling Location: Outfall 001 (after disinfection)

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Start of Final Period through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.062	XXX	0.202	1/day	Grab

Compliance Sampling Location: Outfall 001 (after disinfection)

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Wkly Avg	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	917	1376 Wkly Avg	XXX	11.0	16.5 Wkly Avg	22	1/day	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids	2502	3753 Wkly Avg	XXX	30	45 Wkly Avg	60	1/day	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Ultraviolet light intensity (µw/cm²)	XXX	XXX	Report	Report	XXX	XXX	1/day	Measured
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Outfall 001 , 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	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia-Nitrogen Nov 1 - Apr 30	459	XXX	XXX	5.5	XXX	11	1/day	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	167	XXX	XXX	2.0	XXX	4	1/day	24-Hr Composite
Total Phosphorus	167	XXX	XXX	2.0	XXX	4	1/day	24-Hr Composite
Aluminum, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Arsenic, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Boron, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Copper, Total (ug/L)	1.75	2.73	XXX	21.0	32.8	52.5	1/week	24-Hr Composite
Cyanide, Free (ug/L)	0.45	0.71	XXX	5.45	8.5	13.6	1/week	24-Hr Composite
Zinc, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Compliance Sampling Location: Outfall 001 (after disinfection)

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Butler Area STP** NPDES Permit No.: **PA0026697** Outfall No.: **001**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
10	172	7.1						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		548		374							
	Chloride (PWS)	mg/L		186									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		68.9									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		91.2									
	Total Antimony	µg/L	<	2									
	Total Arsenic	µg/L		2									
	Total Barium	µg/L		40.9									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		290									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	2									
	Hexavalent Chromium	µg/L		0.11									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		25									
	Free Cyanide	µg/L		5.4									
	Total Cyanide	µg/L		22									
	Dissolved Iron	µg/L		0.05									
	Total Iron	µg/L		140									
	Total Lead	µg/L		0.8									
	Total Manganese	µg/L		78.9									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		4.04									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5		5							
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	2									
	Total Zinc	µg/L		33.1									
	Total Molybdenum	µg/L	<	20									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.2									
	Bromoform	µg/L		1.6									

Group 3	Carbon Tetrachloride	µg/L	<	0.2									
	Chlorobenzene	µg/L	<	0.2									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	0.2									
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5									
	Chloroform	µg/L		0.545									
	Dichlorobromomethane	µg/L	<	0.5									
	1,1-Dichloroethane	µg/L	<	0.2									
	1,2-Dichloroethane	µg/L	<	0.2									
	1,1-Dichloroethylene	µg/L	<	0.2									
	1,2-Dichloropropane	µg/L	<	0.2									
	1,3-Dichloropropylene	µg/L	<	0.2									
	1,4-Dioxane	µg/L	<	0.1									
	Ethylbenzene	µg/L	<	0.2									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L		0.3									
	Methylene Chloride	µg/L	<	0.4									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.2									
	Tetrachloroethylene	µg/L	<	0.4									
	Toluene	µg/L	<	0.2									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.2									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.2									
	Vinyl Chloride	µg/L	<	0.2									
Group 4	2-Chlorophenol	µg/L	<	0.2									
	2,4-Dichlorophenol	µg/L	<	0.2									
	2,4-Dimethylphenol	µg/L	<	0.2									
	4,6-Dinitro-o-Cresol	µg/L	<	1									
	2,4-Dinitrophenol	µg/L	<	1									
	2-Nitrophenol	µg/L	<	0.5									
	4-Nitrophenol	µg/L	<	0.5									
	p-Chloro-m-Cresol	µg/L	<	0.1									
	Pentachlorophenol	µg/L	<	0.5									
	Phenol	µg/L	<	0.2									
	2,4,6-Trichlorophenol	µg/L	<	0.2									
Group 5	Acenaphthene	µg/L	<	0.1									
	Acenaphthylene	µg/L	<	0.1									
	Anthracene	µg/L	<	0.1									
	Benzidine	µg/L	<	0.5									
	Benzo(a)Anthracene	µg/L	<	0.1									
	Benzo(a)Pyrene	µg/L	<	0.1									
	3,4-Benzofluoranthene	µg/L	<	0.1									
	Benzo(ghi)Perylene	µg/L	<	0.1									
	Benzo(k)Fluoranthene	µg/L	<	0.1									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.1									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.1									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.1									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.1									
	Butyl Benzyl Phthalate	µg/L	<	1									
	2-Chloronaphthalene	µg/L	<	0.1									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.1									
	Chrysene	µg/L	<	0.1									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.1									
	1,2-Dichlorobenzene	µg/L	<	0.1									
	1,3-Dichlorobenzene	µg/L	<	0.1									
	1,4-Dichlorobenzene	µg/L	<	0.1									
	3,3-Dichlorobenzidine	µg/L	<	0.5									
	Diethyl Phthalate	µg/L	<	1									
	Dimethyl Phthalate	µg/L	<	1									
	Di-n-Butyl Phthalate	µg/L	<	1									
	2,4-Dinitrotoluene	µg/L	<	0.2									

	2,6-Dinitrotoluene	µg/L	<	0.2									
	Di-n-Octyl Phthalate	µg/L	<	1									
	1,2-Diphenylhydrazine	µg/L	<	0.1									
	Fluoranthene	µg/L	<	0.1									
	Fluorene	µg/L	<	0.1									
	Hexachlorobenzene	µg/L	<	0.1									
	Hexachlorobutadiene	µg/L	<	0.1									
	Hexachlorocyclopentadiene	µg/L	<	0.5									
	Hexachloroethane	µg/L	<	0.1									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.1									
	Isophorone	µg/L	<	0.2									
	Naphthalene	µg/L	<	0.1									
	Nitrobenzene	µg/L	<	0.1									
	n-Nitrosodimethylamine	µg/L	<	0.1									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.1									
	n-Nitrosodiphenylamine	µg/L	<	0.1									
	Phenanthrene	µg/L	<	0.1									
	Pyrene	µg/L	<	0.1									
	1,2,4-Trichlorobenzene	µg/L	<	0.1									
Group 6	Aldrin	µg/L	<	0.02									
	alpha-BHC	µg/L	<	0.02									
	beta-BHC	µg/L	<	0.02									
	gamma-BHC	µg/L	<	0.02									
	delta BHC	µg/L	<	0.02									
	Chlordane	µg/L	<	0.51									
	4,4-DDT	µg/L	<	0.02									
	4,4-DDE	µg/L	<	0.02									
	4,4-DDD	µg/L	<	0.02									
	Dieldrin	µg/L	<	0.02									
	alpha-Endosulfan	µg/L	<	0.02									
	beta-Endosulfan	µg/L	<	0.02									
	Endosulfan Sulfate	µg/L	<	0.02									
	Endrin	µg/L	<	0.02									
	Endrin Aldehyde	µg/L	<	0.02									
	Heptachlor	µg/L	<	0.02									
	Heptachlor Epoxide	µg/L	<	0.02									
	PCB-1016	µg/L	<	0.02									
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<	0.5									
	2,3,7,8-TCDD	ng/L	<	0.0001									
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Butler Area STP, NPDES Permit No. PA0026697, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Connoquenessing Creek**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	034025	43.73	980	86.07	0.00193		Yes
End of Reach 1	034025	0.2	736	838		8	Yes

Q $_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	43.73	0.04284	5.6									202	7.2		
End of Reach 1	0.2	0.04284	67									100	7		

Q $_{h}$

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	43.73														
End of Reach 1	0.2														

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Toxics Management Spreadsheet
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Model Results

Butler Area STP, NPDES Permit No. PA0026697, Outfall 001

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)
43.73	5.60		5.60	15.47	0.002	0.827	63.44	76.691	0.402	6.626	11.789
0.2	67.00	12.376	54.624								

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)
43.73	33.49		33.49	15.47	0.002	1.199	63.44	52.921	0.644	4.132	44.763
0.2	293.075	12.376	280.70								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 11.789 PMF: 1 Analysis Hardness (mg/l): 179.97 Analysis pH: 7.12

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)	374000	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	1,021	
Total Antimony	0	0		0	1,100	1,100	1,498	
Total Arsenic	0	0		0	340	340	463	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	28,602	
Total Boron	0	0		0	8,100	8,100	11,032	
Total Cadmium	0	0		0	3.564	3.88	5.28	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	921.956	2,918	3,974	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	22.2	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	129	
Total Copper	0	0		0	23.379	24.4	33.2	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	30.0	

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	121.683	173	235	Chem Translator of 0.705 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.24	Chem Translator of 0.85 applied
Total Nickel	0	0		0	769.788	771	1,051	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	5	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	8.838	10.4	14.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	88.5	
Total Zinc	0	0		0	192.794	197	268	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	4.09	
Acrylonitrile	0	0		0	650	650	885	
Benzene	0	0		0	640	640	872	
Bromoform	0	0		0	1,800	1,800	2,452	
Carbon Tetrachloride	0	0		0	2,800	2,800	3,814	
Chlorobenzene	0	0		0	1,200	1,200	1,634	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	24,516	
Chloroform	0	0		0	1,900	1,900	2,588	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	20,430	
1,1-Dichloroethylene	0	0		0	7,500	7,500	10,215	
1,2-Dichloropropane	0	0		0	11,000	11,000	14,982	
1,3-Dichloropropylene	0	0		0	310	310	422	
Ethylbenzene	0	0		0	2,900	2,900	3,950	
Methyl Bromide	0	0		0	550	550	749	
Methyl Chloride	0	0		0	28,000	28,000	38,136	
Methylene Chloride	0	0		0	12,000	12,000	16,344	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,362	
Tetrachloroethylene	0	0		0	700	700	953	
Toluene	0	0		0	1,700	1,700	2,315	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	9,262	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	4,086	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	4,631	
Trichloroethylene	0	0		0	2,300	2,300	3,133	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	763	
2,4-Dichlorophenol	0	0		0	1,700	1,700	2,315	
2,4-Dimethylphenol	0	0		0	660	660	899	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	109	
2,4-Dinitrophenol	0	0		0	660	660	899	
2-Nitrophenol	0	0		0	8,000	8,000	10,896	
4-Nitrophenol	0	0		0	2,300	2,300	3,133	
p-Chloro-m-Cresol	0	0		0	160	160	218	
Pentachlorophenol	0	0		0	9.885	9.89	13.5	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	627	

Acenaphthene	0	0		0	83	83.0	113	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	409	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.68	
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	40,860	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	6,129	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	368	
Butyl Benzyl Phthalate	0	0		0	140	140	191	
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	1,117	
1,3-Dichlorobenzene	0	0		0	350	350	477	
1,4-Dichlorobenzene	0	0		0	730	730	994	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	5,448	
Dimethyl Phthalate	0	0		0	2,500	2,500	3,405	
Di-n-Butyl Phthalate	0	0		0	110	110	150	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	2,179	
2,6-Dinitrotoluene	0	0		0	990	990	1,348	
1,2-Diphenylhydrazine	0	0		0	15	15.0	20.4	
Fluoranthene	0	0		0	200	200	272	
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	13.6	
Hexachlorocyclopentadiene	0	0		0	5	5.0	6.81	
Hexachloroethane	0	0		0	60	60.0	81.7	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	13,620	
Naphthalene	0	0		0	140	140	191	
Nitrobenzene	0	0		0	4,000	4,000	5,448	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	23,154	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	409	
Phenanthrene	0	0		0	5	5.0	6.81	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	177	
Aldrin	0	0		0	3	3.0	4.09	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	1.29	
Chlordane	0	0		0	2.4	2.4	3.27	
4,4-DDT	0	0		0	1.1	1.1	1.5	
4,4-DDE	0	0		0	1.1	1.1	1.5	

4,4-DDD	0	0		0	1.1	1.1	1.5	
Dieldrin	0	0		0	0.24	0.24	0.33	
alpha-Endosulfan	0	0		0	0.22	0.22	0.3	
beta-Endosulfan	0	0		0	0.22	0.22	0.3	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.12	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	0.71	
Heptachlor Epoxide	0	0		0	0.5	0.5	0.68	
Toxaphene	0	0		0	0.73	0.73	0.99	
2,3,7,8-TCDD	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 11.789 PMF: 1 Analysis Hardness (mg/l): 179.97 Analysis pH: 7.12

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)	374000	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	300	
Total Arsenic	0	0		0	150	150	204	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	5,584	
Total Boron	0	0		0	1,600	1,600	2,179	
Total Cadmium	0	0		0	0.370	0.42	0.57	Chem Translator of 0.884 applied
Total Chromium (III)	0	0		0	119.928	139	190	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	14.2	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	25.9	
Total Copper	0	0		0	14.797	15.4	21.0	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	7.08	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	2,043	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.742	6.72	9.16	Chem Translator of 0.705 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.23	Chem Translator of 0.85 applied
Total Nickel	0	0		0	85.500	85.8	117	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	5	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	6.8	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	17.7	
Total Zinc	0	0		0	194.371	197	268	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	4.09	
Acrylonitrile	0	0		0	130	130	177	
Benzene	0	0		0	130	130	177	
Bromoform	0	0		0	370	370	504	
Carbon Tetrachloride	0	0		0	560	560	763	

Chlorobenzene	0	0		0	240	240	327	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	4,767	
Chloroform	0	0		0	390	390	531	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	4,222	
1,1-Dichloroethylene	0	0		0	1,500	1,500	2,043	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,996	
1,3-Dichloropropylene	0	0		0	61	61.0	83.1	
Ethylbenzene	0	0		0	580	580	790	
Methyl Bromide	0	0		0	110	110	150	
Methyl Chloride	0	0		0	5,500	5,500	7,491	
Methylene Chloride	0	0		0	2,400	2,400	3,269	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	286	
Tetrachloroethylene	0	0		0	140	140	191	
Toluene	0	0		0	330	330	449	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,907	
1,1,1-Trichloroethane	0	0		0	610	610	831	
1,1,2-Trichloroethane	0	0		0	680	680	926	
Trichloroethylene	0	0		0	450	450	613	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	150	
2,4-Dichlorophenol	0	0		0	340	340	463	
2,4-Dimethylphenol	0	0		0	130	130	177	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	21.8	
2,4-Dinitrophenol	0	0		0	130	130	177	
2-Nitrophenol	0	0		0	1,600	1,600	2,179	
4-Nitrophenol	0	0		0	470	470	640	
p-Chloro-m-Cresol	0	0		0	500	500	681	
Pentachlorophenol	0	0		0	7.584	7.58	10.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	124	
Acenaphthene	0	0		0	17	17.0	23.2	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	80.4	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.14	
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	8,172	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	1,239	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	73.5	
Butyl Benzyl Phthalate	0	0		0	35	35.0	47.7	
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	218	
1,3-Dichlorobenzene	0	0		0	69	69.0	94.0	
1,4-Dichlorobenzene	0	0		0	150	150	204	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	1,090	
Dimethyl Phthalate	0	0		0	500	500	681	
Di-n-Butyl Phthalate	0	0		0	21	21.0	28.6	
2,4-Dinitrotoluene	0	0		0	320	320	436	
2,6-Dinitrotoluene	0	0		0	200	200	272	
1,2-Diphenylhydrazine	0	0		0	3	3.0	4.09	
Fluoranthene	0	0		0	40	40.0	54.5	
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	2.72	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.36	
Hexachloroethane	0	0		0	12	12.0	16.3	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	2,860	
Naphthalene	0	0		0	43	43.0	58.6	
Nitrobenzene	0	0		0	810	810	1,103	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	4,631	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	80.4	
Phenanthrene	0	0		0	1	1.0	1.36	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	35.4	
Aldrin	0	0		0	0.1	0.1	0.14	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.006	
4,4-DDT	0	0		0	0.001	0.001	0.001	
4,4-DDE	0	0		0	0.001	0.001	0.001	
4,4-DDD	0	0		0	0.001	0.001	0.001	
Dieldrin	0	0		0	0.056	0.056	0.076	
alpha-Endosulfan	0	0		0	0.056	0.056	0.076	
beta-Endosulfan	0	0		0	0.056	0.056	0.076	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.049	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.005	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.005	
Toxaphene	0	0		0	0.0002	0.0002	0.0003	

2,3,7,8-TCDD	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 11.789 THH PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 1

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)	374000	0		0	500,000	500,000	1,045,701	WQC applied at RMI 0.2 with a design stream flow of 67 cfs
Chloride (PWS)	0	0		0	250,000	250,000	1,332,741	WQC applied at RMI 0.2 with a design stream flow of 67 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	1,332,741	WQC applied at RMI 0.2 with a design stream flow of 67 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	7.63	
Total Arsenic	0	0		0	10	10.0	13.6	
Total Barium	0	0		0	2,400	2,400	3,269	
Total Boron	0	0		0	3,100	3,100	4,222	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	5.45	
Dissolved Iron	0	0		0	300	300	409	
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	1,362	
Total Mercury	0	0		0	0.050	0.05	0.068	
Total Nickel	0	0		0	610	610	831	
Total Phenols (Phenolics) (PWS)	5	0		0	5	5.0	5.0	WQC applied at RMI 0.2 with a design stream flow of 67 cfs
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	0.33	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	4.09	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	136	
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	5.7	5.7	7.76	
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	44.9	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	

Ethylbenzene	0	0		0	68	68.0	92.6	
Methyl Bromide	0	0		0	100	100.0	136	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	77.6	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	136	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	13,620	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	40.9	
2,4-Dichlorophenol	0	0		0	10	10.0	13.6	
2,4-Dimethylphenol	0	0		0	100	100.0	136	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.72	
2,4-Dinitrophenol	0	0		0	10	10.0	13.6	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	5,448	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	95.3	
Anthracene	0	0		0	300	300	409	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	272	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.14	
2-Chloronaphthalene	0	0		0	800	800	1,090	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	1,362	
1,3-Dichlorobenzene	0	0		0	7	7.0	9.53	
1,4-Dichlorobenzene	0	0		0	300	300	409	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	817	
Dimethyl Phthalate	0	0		0	2,000	2,000	2,724	
Di-n-Butyl Phthalate	0	0		0	20	20.0	27.2	

2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	27.2	
Fluorene	0	0		0	50	50.0	68.1	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	5.45	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	46.3	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	13.6	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	27.2	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.095	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	5.72	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	27.2	
beta-Endosulfan	0	0		0	20	20.0	27.2	
Endosulfan Sulfate	0	0		0	20	20.0	27.2	
Endrin	0	0		0	0.03	0.03	0.041	
Endrin Aldehyde	0	0		0	1	1.0	1.36	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	
2,3,7,8-TCDD	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 44.763 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	374000	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	

Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	5	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	0.19	
Benzene	0	0		0	0.58	0.58	1.84	
Bromoform	0	0		0	7	7.0	22.2	
Carbon Tetrachloride	0	0		0	0.4	0.4	1.27	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	2.53	
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	0.95	0.95	3.01	
1,2-Dichloroethane	0	0		0	9.9	9.9	31.3	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	2.85	
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.85	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	63.3	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.63	
Tetrachloroethylene	0	0		0	10	10.0	31.6	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	

1,1,2-Trichloroethane	0	0		0	0.55	0.55	1.74	
Trichloroethylene	0	0		0	0.6	0.6	1.9	
Vinyl Chloride	0	0		0	0.02	0.02	0.063	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.095	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	4.75	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.0003	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.003	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0003	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.003	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.032	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.095	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	1.01	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	0.38	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0003	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.16	
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	0.16	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.16	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.095	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.0003	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.032	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.32	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.003	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.002	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.016	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	10.4	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	
Aldrin	0	0		0	0.0000008	8.00E-07	0.000003	
alpha-BHC	0	0		0	0.0004	0.0004	0.001	
beta-BHC	0	0		0	0.008	0.008	0.025	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.0009	
4,4-DDT	0	0		0	0.00003	0.00003	0.00009	
4,4-DDE	0	0		0	0.00002	0.00002	0.00006	
4,4-DDD	0	0		0	0.0001	0.0001	0.0003	
Dieldrin	0	0		0	0.000001	0.000001	0.000003	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.00002	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.00009	
Toxaphene	0	0		0	0.0007	0.0007	0.002	
2,3,7,8-TCDD	0	0		0	5E-09	5.00E-09	1.58E-08	

☑ ***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)	87,211	136,064	1,046	1,631	2,614	mg/L	1,046	THH-PWS	Discharge Conc ≥ 50% WQBEL (RP)
Chloride (PWS)	Report	Report	Report	Report	Report	mg/L	1,333	THH-PWS	Discharge Conc > 10% WQBEL (no RP)
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Arsenic	Report	Report	Report	Report	Report	µg/L	13.6	THH	Discharge Conc > 10% WQBEL (no RP)
Total Boron	Report	Report	Report	Report	Report	µg/L	2,179	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	1.75	2.73	21.0	32.8	52.5	µg/L	21.0	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	0.45	0.71	5.45	8.5	13.6	µg/L	5.45	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	197	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***Other Pollutants without Limits or Monitoring***

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

Pollutants	Governing WQBEL	Units	Comments
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	1,333	mg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Barium	3,269	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Cadmium	N/A	N/A	Discharge Conc < TQL
Total Chromium (III)	N/A	N/A	Discharge Conc < TQL
Hexavalent Chromium	14.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	25.9	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	409	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	2,043	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	9.16	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	1,362	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.068	µg/L	Discharge Conc < TQL
Total Nickel	117	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	5.0	µg/L	Discharge Conc < TQL
Total Selenium	6.8	µg/L	Discharge Conc < TQL
Total Silver	10.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.33	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.19	µg/L	Discharge Conc < TQL
Benzene	1.84	µg/L	Discharge Conc < TQL
Bromoform	22.2	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	1.27	µg/L	Discharge Conc < TQL
Chlorobenzene	136	µg/L	Discharge Conc < TQL
Chlorodibromomethane	2.53	µg/L	Discharge Conc < TQL

Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	4,767	µg/L	Discharge Conc < TQL
Chloroform	7.76	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	3.01	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	31.3	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	44.9	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	2.85	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	0.85	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	92.6	µg/L	Discharge Conc < TQL
Methyl Bromide	136	µg/L	Discharge Conc < TQL
Methyl Chloride	7,491	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	63.3	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	0.63	µg/L	Discharge Conc < TQL
Tetrachloroethylene	31.6	µg/L	Discharge Conc < TQL
Toluene	77.6	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	136	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	831	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	1.74	µg/L	Discharge Conc < TQL
Trichloroethylene	1.9	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.063	µg/L	Discharge Conc < TQL
2-Chlorophenol	40.9	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	13.6	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	136	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	2.72	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	13.6	µg/L	Discharge Conc < TQL
2-Nitrophenol	2,179	µg/L	Discharge Conc < TQL
4-Nitrophenol	640	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.095	µg/L	Discharge Conc < TQL
Phenol	5,448	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	4.75	µg/L	Discharge Conc < TQL
Acenaphthene	23.2	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	409	µg/L	Discharge Conc < TQL
Benzidine	0.0003	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.003	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0003	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.003	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.032	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.095	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	272	µg/L	Discharge Conc < TQL

Bis(2-Ethylhexyl)Phthalate	1.01	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	73.5	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.14	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	1,090	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.38	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0003	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	218	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	9.53	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	204	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.16	µg/L	Discharge Conc < TQL
Diethyl Phthalate	817	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	681	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	27.2	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.16	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.16	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.095	µg/L	Discharge Conc < TQL
Fluoranthene	27.2	µg/L	Discharge Conc < TQL
Fluorene	68.1	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0003	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.032	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.36	µg/L	Discharge Conc < TQL
Hexachloroethane	0.32	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.003	µg/L	Discharge Conc < TQL
Isophorone	46.3	µg/L	Discharge Conc < TQL
Naphthalene	58.6	µg/L	Discharge Conc < TQL
Nitrobenzene	13.6	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.002	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.016	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	10.4	µg/L	Discharge Conc < TQL
Phenanthrene	1.36	µg/L	Discharge Conc < TQL
Pyrene	27.2	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.095	µg/L	Discharge Conc < TQL
Aldrin	0.000003	µg/L	Discharge Conc < TQL
alpha-BHC	0.001	µg/L	Discharge Conc < TQL
beta-BHC	0.025	µg/L	Discharge Conc < TQL
gamma-BHC	0.95	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.0009	µg/L	Discharge Conc < TQL
4,4-DDT	0.00009	µg/L	Discharge Conc < TQL
4,4-DDE	0.00006	µg/L	Discharge Conc < TQL
4,4-DDD	0.0003	µg/L	Discharge Conc < TQL
Dieldrin	0.000003	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.076	µg/L	Discharge Conc < TQL

beta-Endosulfan	0.076	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	27.2	µg/L	Discharge Conc < TQL
Endrin	0.041	µg/L	Discharge Conc < TQL
Endrin Aldehyde	1.36	µg/L	Discharge Conc < TQL
Heptachlor	0.00002	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.00009	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
Toxaphene	0.0003	µg/L	Discharge Conc < TQL
2,3,7,8-TCDD	0.00002	ng/L	Discharge Conc < TQL

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
	20C	34025	CONNOQUENESSING CREEK	**43.730**	980.00	86.07	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	0.043	6.60	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.20	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Butler Area STP	PA0026697	10.0000	0.0000	0.0000	0.000	20.00	7.10

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	7.54	0.00	0.00
NH3-N	25.00	0.10	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
	20C	34025	CONNOQUENESSING CREEK	**4.960**	800.00	827.00	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	0.080	66.04	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.20	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Ellport Boro SA	PA0038814	0.7200	0.0000	0.0000	0.000	20.00	7.20

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	7.54	0.00	0.00
NH3-N	25.00	0.10	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
43.730	6.60	0.00	6.60	15.47	0.00088	.849	67.31	79.25	0.39	6.137	21.50	7.13
Q1-10 Flow												
43.730	4.22	0.00	4.22	15.47	0.00088	NA	NA	NA	0.36	6.542	21.07	7.12
Q30-10 Flow												
43.730	8.98	0.00	8.98	15.47	0.00088	NA	NA	NA	0.41	5.796	21.84	7.13

WQM 7.0 Modeling Specifications

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

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
43.730	Butler Area STP	13.69	17.4	13.69	17.4	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
43.730	Butler Area STP	1.58	2.44	1.58	2.44	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)		
43.73	Butler Area STP	11.01	11.01	2.44	2.44	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
43.730	10.000	21.495	7.128
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
67.311	0.849	79.249	0.386
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.32	0.217	1.74	0.785
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.059	2.400	Tsivoglou	5
Reach Travel Time (days)			
6.137			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.614	7.21	1.08	5.67
1.227	6.25	0.66	6.50
1.841	5.42	0.41	7.14
2.455	4.70	0.25	7.54
3.069	4.08	0.16	7.54
3.682	3.54	0.10	7.54
4.296	3.07	0.10	7.54
4.910	2.66	0.10	7.54
5.524	2.31	0.10	7.54
6.137	2.00	0.10	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
43.730	Butler Area STP	PA0026697	10.000	CBOD5	11.01		
				NH3-N	2.44	4.88	
				Dissolved Oxygen			4

	B	C	D	E	F	G
1A						
2	**TRC EVALUATION**			Butler Area Sewer Authority		
3	Input appropriate values in B4:B8 and E4:E7					
4	5.6	= Q stream (cfs)		0.5	= CV Daily	
5	10	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc =	0.134	1.3.2.iii	WLA cfc = 0.124
12	PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc=	0.050	5.1d	LTA_cfc = 0.072
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT =	1.231		
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.062	AFC	
18			INST MAX LIMIT (mg/l) =	0.202		

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)**

BASA Q_{7-10} Calculation Summary

PA American Water Co. water allocation permit minimum release rates for the Boydstown-Oneida and Thorn Run Reservoirs

Month	Flow (cfs)
JAN	3.1
FEB	3.1
MAR	10.4
APR	10.4
MAY	10.4
JUN 1-15	10.4
JUN 16-30	3.3
JUL	3.3
AUG	3.1
SEP	3.1
OCT	3.1
NOV	3.1
DEC	3.1

Drainage Area where the minimum flow release is monitored = 27.73 mi^2

Drainage Area at the BASA discharge point = 86.07 mi^2

Stream yield rate used to estimate the Q_{7-10} flow from unregulated drainage areas = 0.04284 cfsm. The yield rate comes from the Buffalo Creek Gage (USGS #03049000) for the period of 1977-2011. The more recent gage data is a better representation of the present flow conditions)

(86.07 - 27.73) mi^2 x 0.04284 cfsm = 2.5 cfs

(3.1 + 2.5) cfs = 5.6 cfs – summer Q_{7-10} flow

For the purpose of winter modeling, multiply the unregulated Q_{7-10} flow by a factor of 2. This factor is the default multiplier from the Dept.'s wintertime NH_3-N modeling guidance.

3.1 + (2.5 x 2) = 8.1 cfs – winter Q_{7-10} flow

Butler Area STP
Butler City, Butler County
PA0026697 Discharge pH

Outfall 001

Date	pH min	pH max	10^ -pH min	10^ -pH max	& pH max)	-Log (Ave pH)
Jul-22	6.7	7.4	2E-07	3.98E-08	1.2E-07	**6.9**
Aug-22	7.0	7.3	1E-07	5.01E-08	7.51E-08	**7.1**
Sep-22	6.9	7.7	1.26E-07	2E-08	7.29E-08	**7.1**
Jul-23	7.0	7.3	1E-07	5.01E-08	7.51E-08	**7.1**
Aug-23	7.1	7.4	7.94E-08	3.98E-08	5.96E-08	**7.2**
Sep-23	7.1	7.4	7.94E-08	3.98E-08	5.96E-08	**7.2**
Jul-24	7.1	7.4	7.94E-08	3.98E-08	5.96E-08	**7.2**
Aug-24	7.1	7.5	7.94E-08	3.16E-08	5.55E-08	**7.3**
Sep-24	7.1	7.4	7.94E-08	3.98E-08	5.96E-08	**7.2**
					Median:	**7.1**