pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0083429**
Facility Type	**Municipal**	APS ID	**21256**
Major / Minor	**Minor**	Authorization ID	**1301173**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**West Cocalico Township Authority**	Facility Name	**West Cocalico Township Authority WWTP**
Applicant Address	156 B West Main Street, PO Box 95 Reinholds, PA 17569-0095	Facility Address	Creamery Road West Cocalico, PA 17569
Applicant Contact	Carolyn Hildebrand	Facility Contact	Brian Norris
Applicant Phone	(717) 336-6265	Facility Phone	(717) 336-6265
Client ID	24878	Site ID	449372
Ch 94 Load Status	Not overloaded	Municipality	West Cocalico Township
Connection Status	No Limitations	County	Lancaster
Date Application Received	December 24, 2019	EPA Waived?	Yes
Date Application Accepted	January 16, 2020	If No, Reason	

Purpose of Application: NPDES Renewal.

Summary of Review

West Cocalico Township Authority has applied to the Department of Environmental Protection (DEP) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on June 9, 2015, and became effective on July 1, 2015. The permit authorized discharge of treated sewage from the existing facility located in West Cocalico Township, Lancaster County into Little Cocalico Creek. The existing permit expiration date was June 30, 2020, and the permit has been administratively extended since that time.

Per the previous fact sheet, there are two municipalities which contribute domestic wastewater to this WWTP. 95.4% of flow comes from West Cocalico Township, and 4.6% of flow comes from East Cocalico Township. There are no industrial or commercial wastewater contributors and no hauled-in wastes.

Changes in this renewal: E. Coli monitoring was added to the permit. Total Copper, Total Zinc and Total Lead monitoring were added to the permit.

Sludge use and disposal description and location(s): Other WWTP

Supplemental information for this facility is provided at the end of this fact sheet.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*,

Approve	Deny	Signatures	Date
X		Benjamin R. Lockwood Benjamin R. Lockwood / Environmental Engineering Specialist	December 10, 2021
X		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	December 14, 2021
X		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	December 14, 2021

Summary of Review
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)	.15
Latitude	40º 15' 46"	Longitude	76º 7' 15"
Quad Name	Sinking Spring	Quad Code	1637
Wastewater Description:	Sewage Effluent		
Receiving Waters	Little Cocalico Creek (TSF, MF)	Stream Code	7719
NHD Com ID	57461187	RMI	2.88
Drainage Area	7.35 mi^2	Yield (cfs/mi^2)	0.12
Q_{7-10} Flow (cfs)	0.88	Q_{7-10} Basis	USGS Gage #01576500
Elevation (ft)	432	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	TSF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Ephrata Area Joint Water Authority		
PWS Waters	Cocalico Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	11

Changes Since Last Permit Issuance: A drainage area of 7.35 mi^2 and a Q_{7-10} flow of 0.88 cubic feet per second (cfs) were determined by establishing a correlation to the yield of USGS Gage Station #01576500 on the Conestoga River. The Q_{7-10} and drainage area at the gage are 38.6 cfs and 324 mi^2, respectively. These values are taken from the USGS document "Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania". The Q_{7-10} runoff rate at the gage station was calculated as follows:

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

The drainage area at the discharge point, taken from USGS PA StreamStats = 7.35 mi^2

The Q_{7-10} at the discharge point = 7.35 mi^2 x 0.12 cfs/mi^2 = 0.88 cfs

Treatment Facility Summary				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.15
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.15	275	Existing Organic Overload	Sludge Holding	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The WWTP process consists of two trains, with each train having: 1 Bar Screen, 3 Equalization Tanks, 10 Aeration Tanks, 4 Clarifiers. The two trains then merge into 1 Chlorine Contact Tank with Sodium Hypochlorite disinfection, 1 De-Chlorination/Post Settling Tank, 8 Sludge Holding Tanks, and Outfall 001 to Little Cocalico Creek.

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	3/30/2017: A routine inspection was conducted. All treatment units were online. The effluent was mostly clear with some suspended solids. No issues were noted. 1/9/2020: A routine inspection was conducted. Field samples were collected during the inspection. The effluent had a slight brown tint with coarse suspended solids. A 0.0 mg/l TRC result was collected from the chlorine contact tank. The operator indicated that there had been a crack within the sodium hypochlorite line which had been repaired. 8/11/2020: An administrative inspection was conducted. The facility was operating normally, and all treatment units were online and operable. There had not been any emergency conditions, and there were no outstanding issues or needs.

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

Compliance History

DMR Data for Outfall 001 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
Flow (MGD) Average Monthly	0.13297	0.09151	0.08042	0.07920	0.07150	0.08630	0.11770	0.09900	0.09310	0.11010	0.07730	0.06880
Flow (MGD) Daily Maximum	0.40310	0.13960	0.1336	0.10480	0.09370	0.16120	0.37430	0.1920	0.16690	0.38400	0.11320	0.09460
pH (S.U.) Minimum	7.15	7.10	7.10	7.09	7.10	6.73	6.86	6.91	6.92	6.98	7.00	6.91
pH (S.U.) Maximum	7.51	7.41	7.35	7.34	7.45	7.31	7.44	7.37	7.28	7.23	7.26	7.30
DO (mg/L) Minimum	5.6	5.9	5.6	6.0	5.8	5.8	5.8	5.9	5.9	5.9	6.0	6.0
TRC (mg/L) Average Monthly	0.230	0.235	0.257	0.242	0.245	0.286	0.264	0.271	0.273	0.255	0.262	0.255
TRC (mg/L) Instantaneous Maximum	0.33	0.33	0.32	0.30	0.35	0.37	0.33	0.36	0.36	0.34	0.33	0.35
CBOD5 (lbs/day) Average Monthly	< 1.76	< 1.6	< 1.51	< 1.61	1.59	2.28	3.51	< 1.88	< 2.09	< 2.04	< 1.63	< 1.26
CBOD5 (lbs/day) Weekly Average	< 2.2	2.1	< 2.2	2.4	2.0	3	6.5	2.8	3.3	2.8	2	1.5
CBOD5 (mg/L) Average Monthly	< 2	< 2.02	< 2	< 2.5	2.9	3	3.42	< 2.6	< 2.83	< 2.42	< 2.63	< 2.18
CBOD5 (mg/L) Weekly Average	< 2	2.1	< 2	3.2	3.6	3.9	5.7	4.1	4.8	3.4	3.4	2.5
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	165.3	167.5	187.5	154.8	123.4	137.5	192.7	172.3	176.3	256.1	163.7	124.2
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	218.5	207.1	200.6	245.0	182.6	208.1	350.5	209.3	239.9	407.8	255.3	160.5
BOD5 (mg/L) Raw Sewage Influent Average Monthly	186.3	220.8	260.8	237.4	224	189.3	187.2	249.3	244.8	308.4	263.5	213.5
TSS (lbs/day) Average Monthly	3.41	< 1.94	< 2.45	< 1.44	< 1.39	3.33	< 3.71	< 2.12	1.61	< 1.55	2.24	< 1.72
TSS (lbs/day) Raw Sewage Influent Average Monthly	163.3	152.2	155.6	108.5	74.3	96.7	132.6	132.5	168.3	222.7	155.6	126.3

TSS (lbs/day) Raw Sewage Influent Daily Maximum	239.6	221.1	213.9	224.5	165.1	177.4	179.0	204.7	281.1	437.4	204.5	153.6
TSS (lbs/day) Weekly Average	6.3	3.8	5.6	3.1	2.3	4.9	9.3	4.1	4.5	3.0	4.5	3.3
TSS (mg/L) Average Monthly	4.25	< 2.8	< 3	< 2.2	< 2.5	4.5	< 3.2	< 3.25	1.75	< 1.8	3.75	< 3
TSS (mg/L) Raw Sewage Influent Average Monthly	182.5	211.4	208.0	166.2	133.5	128.5	142.8	191.8	238.0	271.6	255	217.5
TSS (mg/L) Weekly Average	9	6	5	5	4	7	4	7	4	3	8	6
Fecal Coliform (CFU/100 ml) Geometric Mean	16	40	< 4	9	47	< 8	< 20	23	< 6	56	37	43
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	280	200	50	64	108	23	66	84	52	350	46	60
Nitrate-Nitrite (lbs/day) Average Monthly	8.73	11.15	3.72	10.48	2.14	3.79	34.82	3.62	8.05	11.12	8.34	7.26
Nitrate-Nitrite (mg/L) Average Monthly	7.87	17.5	5.46	14.2	4.03	5.56	14.9	5.31	7.19	9.56	11.8	14
Total Nitrogen (lbs/day) Average Monthly	9.53	11.84	5.38	12.3	5.44	7.18	37.53	8.62	12.44	17.93	12.7	9.97
Total Nitrogen (mg/L) Average Monthly	8.59	18.58	7.9	16.67	10.25	10.52	16.06	12.63	11.11	15.41	17.98	19.22
Ammonia (lbs/day) Average Monthly	< 0.2	< 1.41	1.38	0.72	1.19	1.49	< 1.46	2.95	3.62	3.91	3.15	2.94
Ammonia (mg/L) Average Monthly	< 0.2	< 1.854	1.685	1.156	2.183	2.068	< 1.972	4.578	4.675	4.508	5.083	5.013
TKN (lbs/day) Average Monthly	0.8	0.69	1.66	1.82	3.3	3.38	2.71	4.99	4.39	6.81	4.37	2.71
TKN (mg/L) Average Monthly	0.72	1.08	2.44	2.47	6.22	4.96	1.16	7.32	3.92	5.85	6.18	5.22
Total Phosphorus (lbs/day) Average Monthly	3.67	3.8	2.04	4.47	0.64	2.01	2.78	1.3	1.77	1.72	2.07	1.52
Total Phosphorus (mg/L) Average Monthly	3.31	5.96	3.0	6.05	1.21	2.95	1.19	1.9	1.58	1.48	2.93	2.93

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes the effluent limits and monitoring requirements implemented in the existing NPDES Permit.

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
BOD_5, Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	Grab
TSS, Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
$CBOD_5$	31	50	XXX	25	40	50	1/week	8-Hr Composite
TSS	38	56	XXX	30	45	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Ammonia Nov 1 - Apr 30	24	XXX	XXX	28.5	XXX	57	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	12	XXX	XXX	9.5	XXX	19	1/week	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Nitrate-Nitrite	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	Calculation

Compliance Sampling Location: At discharge from facility

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .15
Latitude 40º 15' 46" **Longitude** 76º 7' 15"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Water Quality-Based Limitations

$CBOD_5$ and NH_3-N

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

WQM 7.0 ver. 1.1b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), ammonia (NH_3-N) and dissolved oxygen (D.O.). DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges. The model was utilized for this permit renewal. The model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, an NH_3-N average monthly limit of 11.03 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The flow data used to run the model was acquired from USGS PA StreamStats and USGS Gage #01576500, and is included as an attachment. The $CBOD_5$ limit is the same as the limit in the existing permit, which will remain. The existing NH_3-N permit limit of 9.5 mg/l is more stringent and will remain in the permit.

Toxics

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.3 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. A stream hardness value of 270 mg/l and pH of 8.4 were used in modeling, taken from WQN Station ID 273. The results from the TMS are shown below:

Parameter	Max. Concentration in Application or DMRs (µg/l)	Most Stringent WQBEL (µg/l)	Screening Recommendation
Total Copper	30	57.2	Establish Limits
Total Lead	<10	22.4	Monitor
Total Zinc	79	476	Monitor

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

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

West Cocalico Township Authority is in the process of construction a new WWTP, with an anticipated final construction completion date of June 1, 2024. The permit for the new WWTP contained Total Copper and Total Lead monitoring requirements, as the toxics analysis was based off data from the existing WWTP. To be consistent with the new WWTP NPDES Permit, monitoring requirements for Total Copper, Total Lead, and Total Zinc will be added to the permit. The need for limits for these parameters will be evaluated during the next permit renewal for the new WWTP using data collected during this permit term. To ensure there is sufficient data, a monitoring frequency of 1/month will be used.

Best Professional Judgement (BPJ) Limitations

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

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

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

This facility is considered a Phase 5 non-significant discharger with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to DEP's latest-revised Phase 3 Supplement, issuance of permits with monitoring and reporting for TN and TP is recommended for any Phase 5 non-significant sewage facilities. Furthermore, DEP's SOP No. BCW-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. Therefore, TN and TP monitoring will be included in the renewed permit, which is consistent with the existing permit.

Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater

than 10,000/100 mL from October through April for fecal coliform. These limits are included in the existing permit, and will remain in the permit.

E. Coli

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of >=0.05 and <1 mgd will include E. Coli monitoring with a frequency of 1/quarter. This parameter has been added to the renewal permit.

Total Residual Chlorine

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

Influent BOD_5 and Total Suspended Solids (TSS) Monitoring

As a result of negotiation with US EPA, influent monitoring of TSS and BOD_5 are required for any publicly owned treatment works (POTWs); therefore, influent sampling of BOD_5 and TSS will be included in the permit. An 8-hr composite sample type will be required to be consistent with the sampling frequency for effluent TSS and $CBOD_5$.

Sampling Frequency & Sample Type

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

Flow Monitoring

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

Anti-Degradation

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303(d) Listed Streams

The discharge is located on a stream segment that has a recreational impairment for pathogens due to an unknown source. The permit contains a limit for fecal coliform.

Class A Wild Trout Fisheries

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

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	31	50	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	38	56	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia Nov 1 - Apr 30	24	XXX	XXX	28.5	XXX	57	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	12	XXX	XXX	9.5	XXX	19	1/week	8-Hr Composite
Total Copper	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/month	8-Hr Composite

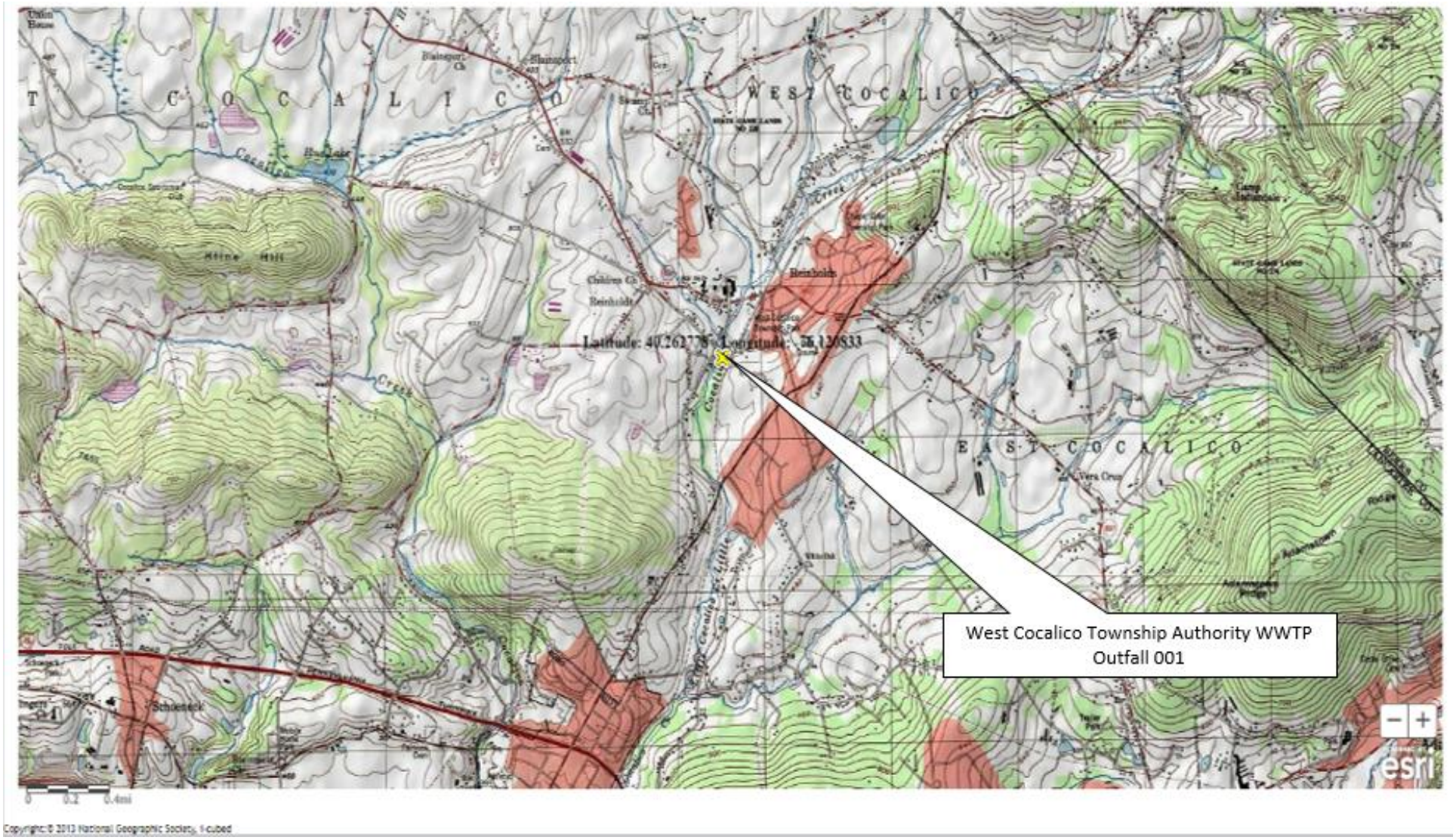
Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Lead	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/month	8-Hr Composite
Total Zinc	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/month	8-Hr Composite
Nitrate-Nitrite	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	Calculation
TKN	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

Compliance Sampling Location: At discharge from facility

Other Comments: None

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP: BCW-PMT-002, No. BCW-PMT-033
☐	Other:


T C O C A L I C O
WEST COCALICO
EAST COCALICO
Latitude: 40.262778 Longitude: -76.120833
West Cocalico Township Authority WWTP
Outfall 001
esri
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West Cocalico Township Authority PA0267082 RMI = 2.88 Outfall 001

Region ID:	PA
Workspace ID:	PA20211201212352227000
Clicked Point (Latitude, Longitude):	40.26284, -76.12122
Time:	2021-12-01 16:24:12 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	7.35	square miles
BSLOPD	Mean basin slope measured in degrees	6.0738	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	2.9055	percent

Permit No. PA0083429

Low-Flow Statistics Parameters [99.9 Percent (7.34 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.35	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.0738	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	2.9055	percent	0	89

Low-Flow Statistics Flow Report [99.9 Percent (7.34 square miles) Low Flow Region 1]

PII: Prediction Interval-Lower, Piu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.41	ft^3/s	46	46
30 Day 2 Year Low Flow	1.83	ft^3/s	38	38
7 Day 10 Year Low Flow	0.665	ft^3/s	51	51
30 Day 10 Year Low Flow	0.881	ft^3/s	46	46
90 Day 10 Year Low Flow	1.29	ft^3/s	41	41

Low Flow Statistics Citations

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

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

Download

Permit No. PA0083429

West Cocalico Township Authority PA0083429 Downstream Point RMI = 1.27

Region ID:	PA
Workspace ID:	PA20211201213111636000
Clicked Point (Latitude, Longitude):	40.24301, -76.12435
Time:	2021-12-01 16:31:37 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	8.48	square miles
BSLOPD	Mean basin slope measured in degrees	6.7762	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	2.8144	percent

Permit No. PA0083429

Low-Flow Statistics Parameters [99.9 Percent (8.47 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.48	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.7762	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	2.8144	percent	0	89

Low Flow Statistics Flow Report [99.9 Percent (8.47 square miles) Low Flow Region 1]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.53	ft^3/s	46	46
30 Day 2 Year Low Flow	2	ft^3/s	38	38
7 Day 10 Year Low Flow	0.7	ft^3/s	51	51
30 Day 10 Year Low Flow	0.951	ft^3/s	46	46
90 Day 10 Year Low Flow	1.42	ft^3/s	41	41

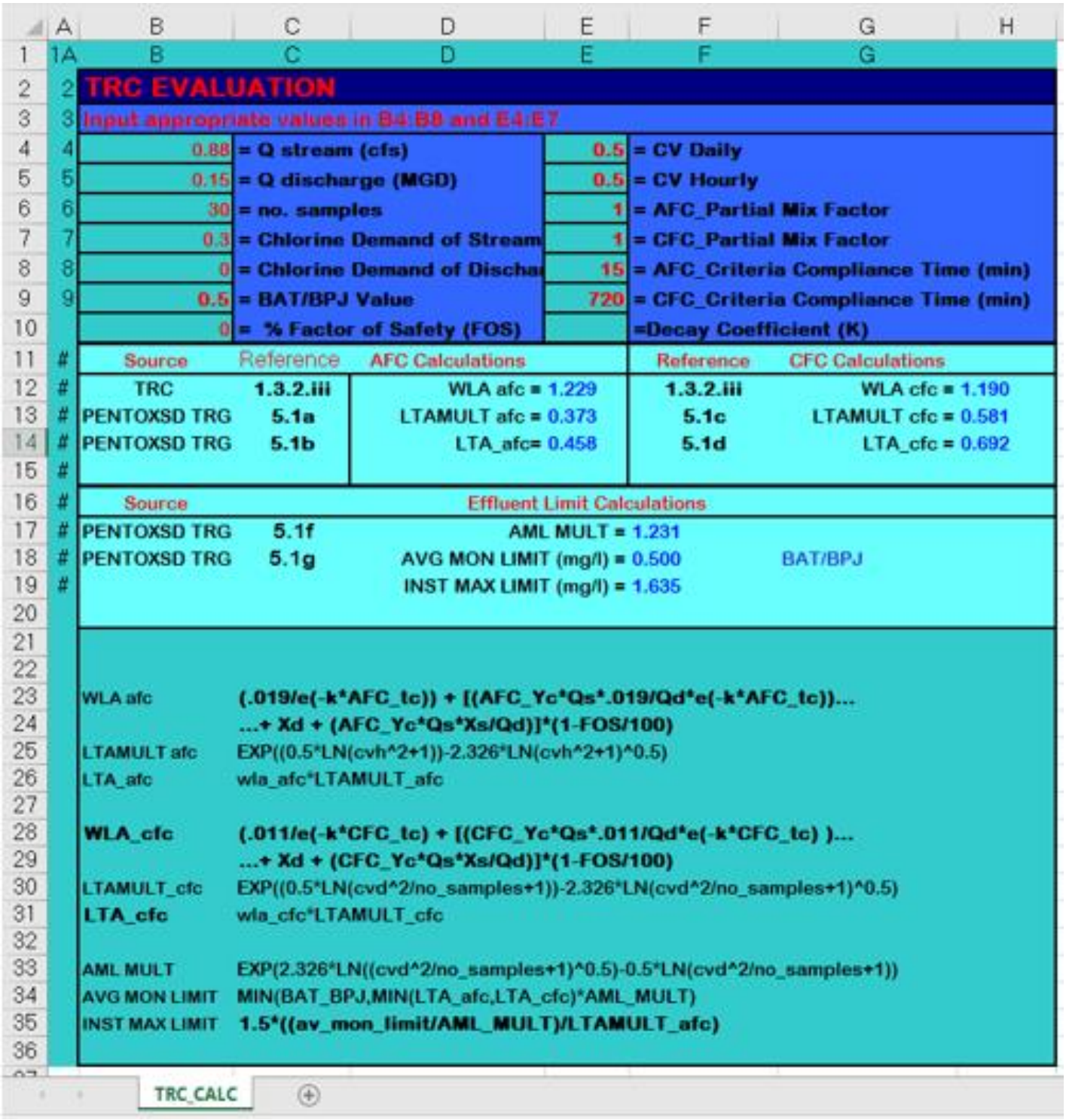
Low-Flow Statistics Citations

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

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

Download

Permit No. PA0083429



1	1A	B	C	D	E	F	G
2	2	**TRC EVALUATION**					
3	3	Input appropriate values in B4:B9 and E4:E7					
4	4	0.88	= Q stream (cfs)		0.5	= CV Daily	
5	5	0.15	= Q discharge (MGD)		0.5	= CV Hourly	
6	6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	8	0	= Chlorine Demand of Discha		15	= AFC_Criteria Compliance Time (min)	
9	9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
10		0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
11	#	Source	Reference	AFC Calculations		Reference	CFC Calculations
12	#	TRC	1.3.2.iii	WLA afc = 1.229		1.3.2.iii	WLA cfc = 1.190
13	#	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
14	#	PENTOXSD TRG	5.1b	LTA_afc= 0.458		5.1d	LTA_cfc = 0.692
15	#						
16	#	Source		Effluent Limit Calculations			
17	#	PENTOXSD TRG	5.1f	AML MULT = 1.231			
18	#	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
19	#			INST MAX LIMIT (mg/l) = 1.635			
20							
21							
22							
23		WLA afc		(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...			
24				...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)			
25		LTAMULT afc		EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)			
26		LTA_afc		wla_afc*LTAMULT_afc			
27							
28		WLA_cfc		(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...			
29				...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)			
30		LTAMULT_cfc		EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)			
31		LTA_cfc		wla_cfc*LTAMULT_cfc			
32							
33		AML MULT		EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))			
34		AVG MON LIMIT		MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)			
35		INST MAX LIMIT		1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)			
36							

TRC_CALC

Permit No. PA0083429

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07J	7719	LITTLE COCALICO CREEK	2.880	432.00	7.35	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.88	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
West Cocalico	PA0083429	0.1500	0.1500	0.1500	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0083429

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07J	7719	LITTLE COCALICO CREEK	1.270	396.00	8.48	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	1.02	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0083429

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07J	7719	LITTLE COCALICO 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												
2.880	0.88	0.00	0.88	.2321	0.00423	.519	15.13	29.17	0.14	0.694	21.04	7.00
Q1-10 Flow												
2.880	0.56	0.00	0.56	.2321	0.00423	NA	NA	NA	0.12	0.837	21.46	7.00
Q30-10 Flow												
2.880	1.20	0.00	1.20	.2321	0.00423	NA	NA	NA	0.16	0.603	20.81	7.00

Permit No. PA0083429

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		

Permit No. PA0083429

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07J	7719	LITTLE COCALICO 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
2.880	West Cocalico	14.85	50	14.85	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.880	West Cocalico	1.79	11.03	1.79	11.03	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)		
2.88	West Cocalico	25	25	11.03	11.03	5	5	0	0

Permit No. PA0083429

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07J	7719	LITTLE COCALICO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.880	0.150	21.043	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
15.125	0.519	29.171	0.142
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.80	0.979	2.30	0.759
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.566	5.849	Tsivoglou	5
Reach Travel Time (days)			
0.694			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.069	6.33	2.18	7.02
0.139	5.90	2.07	6.72
0.208	5.49	1.96	6.58
0.278	5.11	1.86	6.54
0.347	4.76	1.77	6.56
0.416	4.43	1.68	6.63
0.486	4.13	1.59	6.72
0.555	3.84	1.51	6.82
0.624	3.58	1.43	6.92
0.694	3.33	1.36	7.03

Permit No. PA0083429

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07J	7719	LITTLE COCALICO CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
2.880	West Cocalico	PA0083429	0.150	CBOD5	25		
				NH3-N	11.03	22.06	
				Dissolved Oxygen			5

Permit No. PA0083429

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: West Cocalico Township Authority NPDES Permit No.: PA0083429 Outfall No.: 001

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.15	270	8.4						

	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc (0 if left blank)	Stream Conc	Daily CV (0.6 if left blank)	Hourly CV	Stream CV (0 if left blank)	Fate Coeff	FOS	Criteria Mod (1 if left blank)	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		30									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	10									
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L		79									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Permit No. PA0083429

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

Permit No. PA0083429

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

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

West Cocalico Township Authority, NPDES Permit No. PA0083429, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Little Cocalico Creek

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	007719	2.88	432	7.35			Yes
End of Reach 1	007719	1.27	396	8.48			Yes

Q_{7-10}

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	2.88	0.1	0.88									100	7		
End of Reach 1	1.27	0.1	1.02												

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	2.88														
End of Reach 1	1.27														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

West Cocalico Township Authority, NPDES Permit No. PA0083429, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 8.082 PMF: 1 Analysis Hardness (mg/l): 135.47 Analysis pH: 7.10

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 Copper	0	0		0	17.890	18.6	89.3	Chem Translator of 0.96 applied
Total Lead	0	0		0	89.735	120	576	Chem Translator of 0.747 applied
Total Zinc	0	0		0	151.557	155	743	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 8.082 PMF: 1 Analysis Hardness (mg/l): 135.47 Analysis pH: 7.10

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 Copper	0	0		0	11.608	12.1	57.9	Chem Translator of 0.96 applied
Total Lead	0	0		0	3.497	4.68	22.4	Chem Translator of 0.747 applied
Total Zinc	0	0		0	152.797	155	743	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 8.082 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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 3.620 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 Copper	0	0		0	N/A	N/A	N/A	

Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	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 Copper	0.072	0.11	57.2	89.3	143	µg/L	57.2	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	22.4	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	476	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