pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028088**
Facility Type	**Municipal**	APS ID	**36586**
Major / Minor	**Minor**	Authorization ID	**1319500**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Brown Township Municipal Authority**	Facility Name	**Brown Township STP**
Applicant Address	7748 State Route 655	Facility Address	68 West Tony Street
	Reedsville, PA 17084-9148		Reedsville, PA 17084
Applicant Contact	Chester Selfridge	Facility Contact	Christian Hassinger
Applicant Phone	(717) 667-2531	Facility Phone	(717) 667-2531
Client ID	85906	Site ID	251517
Ch 94 Load Status	Not Overloaded	Municipality	Brown Township
Connection Status	No Limitations	County	Mifflin
Date Application Received	July 7, 2020	EPA Waived?	No
Date Application Accepted	July 21, 2020	If No, Reason	, DEP Discretion
Purpose of Application	.		

Summary of Review

Brown Township Municipal Authority (BTMA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was last reissued on February 11, 2016 and became effective on March 1, 2016. The permit expired on February 28, 2021.

Based on the review, it is recommended that the permit be drafted.

Sludge use and disposal description and location(s): Sludge is treated onsite via an aerobic digestor prior to land application under PAG083553.

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	November 14, 2021
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	November 15, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.6
Latitude	40° 39’ 44”	Longitude	77° 35’ 49”
Quad Name	Burnham	Quad Code	1325
Wastewater Description:	Treated Sewage		
Receiving Waters	Kishacoquillas Creek	Stream Code	12429
NHD Com ID	66204163	RMI	6.93
Drainage Area	68.5 mi^2	Yield (cfs/mi^2)	0.226
Q_{7-10} Flow (cfs)	15.5	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	577	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	TSF, MF
Existing Use	None	Existing Use Qualifier	None
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Newport Borough Water System		
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	12.71	Distance from Outfall (mi)	40.78

Drainage Area
The discharge is to Kishacoquillas Creek at RM 6.93. A drainage area upstream of the point of discharge is estimated to be 68.5 sq.mi according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q7-10 of 15.5 cfs at the point of discharge.

Kishacoquillas Creek
Under 25 Pa Code §93.9n, Kishacoquillas Creek from Mill Road Bridge to Mouth has a designated protected water use of Trout Stocking and Migratory Fishes. Kishacoquillas Creek is a tributary of Juniata River which has a designated protected water use of Warm Water and Migratory Fishes. No special protection water is impacted by this discharge. DEP’s latest integrated water quality report finalized in 2020 indicates that Kishacoquillas Creek near the discharge point is not impaired; yet it is listed in Category 2 which represents any waters with attainment status of the remaining uses may be unknown because data are insufficient to categorize the water. The downstream is impaired for pathogens for recreational uses.

Public Water Supply
The fact sheet developed for this last permit renewal indicates that the nearest downstream PWS is Newport Borough Water System in Newport Borough, Perry County at RMI 12.71, about 40.78 miles downstream of the discharge. Given the distance, the discharge is not expected to impact the water supply.

Treatment Facility Summary

Treatment Facility Name: Brown Township STP

WQM Permit No.	Issuance Date	
4473401	05/01/2020	
4473401 12-1	07/11/2012	Amended for conversion of two extended aeration trains to modified-bardenpho treatment trains
4473401 05-1	03/14/2006	Amended for addition of new biosolids digestion, thickening, and holding tanks Replacement of Comminutor with mechanical screen Organic re-rating of the aeration tanks
4401401	04/24/2001	Experimental Permit
4495401	05/16/1995	Queen Street sanitary sewer extension
4489404	02/03/1988	Construction and Operation of one new final settling tank, 3 return sludge pumps, and 4 raw sewage pumps
4485401	07/17/1985	Construction and operation of sanitary sewers to serve 3 residential lots
4474401	10/17/1977	
4473401	09/14/1973	Construction of pumping station
565S53	12/20/1965	

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Extended Aeration	Gas Chlorine	0.6

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.69	1537	Not Overloaded		

BTMA currently owns and operates a municipal wastewater treatment facility located at 68 West Tony Street, Reedsville, PA 17084, serving the areas of Brown Township (50%) and Armagh Township (50%). All sewer systems are 100% separated. With an annual average design flow of 0.6 MGD and hydraulic design capacity of 0.69 MGD, the facility utilizes an extended aeration activated sludge treatment process consisting of a bar screen, aeration tanks (2), clarifier, chlorine contact tanks (2), and outfall structure.

Sludge is treated onsite via an aerobic digestor prior to land application under PAG083553. The facility utilizes delpac for phosphorus removal, chlorine gas for chlorination, and caustic soda for pH control. According to the application, there are no commercial/industrial users connected to the sewer system.

Compliance History

Summary of DMRs: A summary of past 12-month DMR data is presented on the next page.

Summary of Inspections: 01/08/2020: Michael Benham, former DEP Water Quality Specialist, conducted a routine inspection and indicated that all treatment units were online except for the two older rectangular clarifiers and another larger holding tank at the time of inspection. No issues were found at the time of inspection.

12/12/2018: Michael Benham conducted a routine inspection. No issues were found at the time of inspection.

Other Comments: A number of effluent violations were reported since the last permit reissuance. These violations were identified below.

Date	PARAMETER	Results	Limits	Units	SBC
06/01/2018	Fecal Coliform	1610	1000	CFU/100 ml	Instantaneous Maximum
09/01/2018	Fecal Coliform	229	200	CFU/100 ml	Geometric Mean
06/01/2020	Fecal Coliform	< 249	200	CFU/100 ml	Geometric Mean
06/01/2020	Fecal Coliform	1914.4	1000	CFU/100 ml	Instantaneous Maximum
07/01/2020	Fecal Coliform	2452.4	1000	CFU/100 ml	Instantaneous Maximum
10/01/2020	Total Phosphorus	1611	1461	lbs	Total Annual
08/01/2021	Fecal Coliform	< 241	200	CFU/100 ml	Geometric Mean
08/01/2021	Fecal Coliform	8664	1000	CFU/100 ml	Instantaneous Maximum
09/01/2021	Fecal Coliform	3255	1000	CFU/100 ml	Instantaneous Maximum

DEP's database revealed that there is no open violation associated with the permittee or facility.

Effluent Data

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	0.700	0.366	0.355	0.334	0.375	0.406	0.520	0.412	0.402	0.465	0.364	0.313
Flow (MGD) Daily Maximum	1.994	1.038	0.474	0.392	0.468	0.608	1.272	1.173	0.575	1.636	0.761	0.602
pH (S.U.) Minimum	6.9	6.9	6.7	6.7	6.6	6.6	6.5	6.5	6.7	6.6	6.7	6.7
pH (S.U.) Maximum	7.2	7.2	7.1	6.9	6.9	6.9	6.8	6.8	7.1	7.2	7.2	6.9
DO (mg/L) Minimum	6.4	6.4	6.5	6.5	6.8	6.8	6.8	7.4	7.0	6.8	6.6	6.5
TRC (mg/L) Average Monthly	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.2	0.2
TRC (mg/L) Instantaneous Maximum	0.7	0.9	0.9	0.8	1.0	1.0	1.0	0.8	0.8	0.5	0.4	0.5
CBOD5 (lbs/day) Average Monthly	< 21	< 15	< 10	< 13	< 11	21	< 17	< 17	15	< 15	< 10	< 15
CBOD5 (lbs/day) Weekly Average	52	42	13	18	14	30	< 24	28	21	25	17	22
CBOD5 (mg/L) Average Monthly	< 4	< 6	< 3	< 4	< 3	6	< 4	< 5	5	< 5	< 4	< 6
CBOD5 (mg/L) Weekly Average	8	16	4	6	5	10	6	10	5	6	6	9
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	257	616	565	378	860	462	307	590	523	411	508	404
BOD5 (mg/L) Raw Sewage Influent Average Monthly	76	228	188	130	273	135	76	191	151	148	191	169
TSS (lbs/day) Average Monthly	< 35	14	13	< 12	22	< 11	25	16	22	14	22	11
TSS (lbs/day) Raw Sewage Influent Average Monthly	450	628	625	497	558	463	398	597	442	297	508	369
TSS (lbs/day) Weekly Average	118	23	19	19	31	15	42	18	34	26	56	15
TSS (mg/L) Average Monthly	< 6	5	5	< 4	7	< 3	6	5	6	4	8	4

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
TSS (mg/L) Raw Sewage Influent Average Monthly	131	231	212	171	181	137	100	188	125	105	190	152
TSS (mg/L) Weekly Average	19	9	8	6	9	5	12	6	9	6	19	6
Fecal Coliform (CFU/100 ml) Geometric Mean	< 42	< 241	19	< 50	< 12	93	< 154	< 26	< 59	88	43	< 193
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	3255	8664	63	457	20	231	1401	74	1466	134	209	1439
Nitrate-Nitrite (mg/L) Average Monthly	< 1.3	< 1.2	< 1.2	< 1.2	< 1.25	< 1.21	< 1.27	< 1.31	< 1.24	< 1.33	< 1.49	< 1.74
Nitrate-Nitrite (lbs) Total Monthly	< 239	< 109	< 113	< 100	< 121	< 122	< 181	< 119	< 125	< 118	< 129	< 146
Total Nitrogen (mg/L) Average Monthly	< 4.27	< 9.33	< 5.69	< 6.45	< 5.24	< 3.09	< 2.65	< 2.76	< 8.72	< 7.24	< 2.51	< 2.84
Total Nitrogen (lbs) Effluent Net Total Monthly	< 727	< 818	< 548	< 533	< 495	< 312	< 354	< 240	< 852	< 689	< 218	< 239
Total Nitrogen (lbs) Total Monthly	< 727	< 818	< 548	< 533	< 495	< 312	< 354	< 240	< 852	< 689	< 218	< 239
Ammonia (lbs/day) Average Monthly	< 7.0	18.0	11.0	11.0	8.0	4	< 3	< 3	21	< 8	< 0.3	< 0.3
Ammonia (mg/L) Average Monthly	< 1.55	6.26	3.51	3.94	2.71	1.33	< 0.83	< 0.88	6.42	< 2.36	< 0.1	< 0.21
Ammonia (lbs) Total Monthly	< 221	544	335	325	255	135	< 108	< 72	640	< 249	< 9	< 10
TKN (mg/L) Average Monthly	< 2.79	8.13	4.49	5.24	3.98	1.88	< 1.38	< 1.45	7.48	5.73	< 1.0	1.11
TKN (lbs) Total Monthly	< 436	710	435	433	374	190	< 176	< 122	727	553	< 87	93
Total Phosphorus (mg/L) Average Monthly	1.11	2.06	1.22	1.75	1.95	1.42	0.83	0.65	0.46	0.67	1.22	2.38
Total Phosphorus (lbs) Effluent Net Total Monthly	247	181	116	146	188	142	111	62	48	64	104	197
Total Phosphorus (lbs) Total Monthly	247	181	116	146	188	142	111	62	48	64	104	197
Total Copper (lbs/day) Average Monthly	< 0.2	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.3	< 0.03	< 0.1	0.1	0.04	0.05

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
Total Copper (lbs/day) Daily Maximum	0.8	< 0.03	< 0.04	< 0.03	< 0.03	< 0.04	1	< 0.04	0.3	0.6	0.06	0.08
Total Copper (ug/L) Average Monthly	< 0.04	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.04	< 0.01	< 0.03	0.04	0.02	0.02
Total Copper (ug/L) Maximum	0.13	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.15	< 0.01	0.08	0.13	0.02	0.03
Total Lead (lbs/day) Average Monthly	< 0.04	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.04	< 0.03	< 0.04	< 0.03	< 0.03	< 0.02
Total Lead (lbs/day) Daily Maximum	< 0.06	< 0.03	< 0.04	< 0.03	< 0.03	< 0.04	< 0.08	< 0.04	< 0.03	< 0.05	< 0.03	< 0.03
Total Lead (ug/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Lead (ug/L) Maximum	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Existing Effluent Limits and Monitoring Requirements

The tables below summarize effluent limits and monitoring requirements specified in the latest permit.

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	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	125	185	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	150	225	XXX	30	45	60	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Ammonia-Nitrogen (May 1 - Oct 31)	70.0	XXX	XXX	14.0	XXX	Report	2/week	24-Hr Composite
Ammonia-Nitrogen (Nov 1 - Apr 30)	Report	XXX	XXX	Report	XXX	Report	2/week	24-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Copper (µg/l)	Report	Report Maximum	XXX	Report	Report Maximum	XXX	1/week	24-Hr Composite
Total Lead (µg/l)	Report	Report Maximum	XXX	Report	Report Maximum	XXX	1/week	24-Hr Composite

Parameter [1]	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum [2] Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	10,959	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	1,461	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** .6
Latitude 40º 39' 44" **Longitude** -77º 35' 49"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen
WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's technical guidance no. 391-2000-007 describes the technical methods contained in the model for conducting wasteload allocation analyses and for determining recommended limits for point source discharges. DEP recently updated this model (ver. 1.1) to include new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. A model output indicates that existing limits are still protective of water quality. No changes are therefore recommended.

Total Residual Chlorine
DEP's TRC_CALC spreadsheet was utilized and the output shows the existing BAT limit of 0.5 mg/L (average monthly) for TRC is still appropriate. The IMAX limit of 1.6 mg/L will also continue to be applied as recommended by this spreadsheet.

Toxics
The current permit requires a routine monitoring for Total Copper and Total Lead. Given that there is a long-term dataset, DEP's TOXCONC spreadsheet was utilized to develop an average monthly effluent concentration (AMEC) with a daily discharge coefficient of variation (CV) statistically calculated based on the DMR results. TOXCONC spreadsheet provides AMEC of 0.5660455 ug/L for Total Copper and 0.0196984 ug/L for Total Lead with CV of 3.680088 for Total Copper and 1.7600721 for Total Lead. These values were then entered into DEP's Toxics Management Spreadsheet (TMS) along with one sample result for Total Zinc reported in the application. TMS shows no further monitoring is needed for these pollutants and no permit requirement is needed for Total Zinc. The facility does not treat these heavy metals; therefore, influent concentrations is expected to be similar to effluent concentrations. DEP has determined that the existing monitoring requirement for Total Copper and Total Lead be removed from the permit as no reasonable potential has been determined for these pollutants. This is a minor sewage facility; thus, the application requires a limited number of toxics to be sampled for the renewal.

All modeling efforts will be included in this fact sheet as attachments.

Best Professional Judgment (BPJ) Limitations

A minimum DO limit of 5.0 mg/L is a DO water quality criterion found in 25 Pa. Code § 93.7(a). This limit is included in the existing NPDES permit based BPJ. It is still recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

DEP's SOP no. BCW-PMT-033 recommends a routine monitoring for Total Phosphorus for all sewage facilities over 0.002 MGD. The current permit requires a routine monitoring for Total Phosphorus and Cap Load for the Chesapeake Bay TMDL. The existing requirement will remain unchanged and no further requirement is recommended for the next permit renewal.

Additional Consideration

Flow Monitoring
Flow monitoring remains unchanged and is recommended by the permit guidance and is also required by 25 PA Code §§ 92a.27 and 92a.61.

Influent Monitoring
As a result of negotiation with EPA, influent monitoring of TSS and BOD5 are required for any POTWs; therefore, existing influent monitoring requirements will remain in the draft permit. The sample type has changed from 24-hour composite to 8-hr composite to be consistent with the existing frequency for TSS and CBOD5 in the effluent.

Total Dissolved Solids
Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern in several major watersheds in the Commonwealth. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems. In addition, as a consequence of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data related to sulfate, chloride, and 1,4-dioxane. Furthermore, in an August 2013 letter from Jon Capacasa of the Region III Water Protection Program to DEP, EPA has expressed concern related to bromide and the importance of monitoring all point sources for bromide when it may be present. Based on these concerns and under the authority of § 92a.61, DEP has determined it should implement increased monitoring in certain NPDES permits for these parameters: TDS, sulfate, chloride, bromide, and 1,4-dioxane for those facility meeting these conditions developed by DEP Bureau of Clean Water:

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

- *Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.*

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

The application reported TDS of 218 mg/L with Bromide of <0.2 mg/L. Therefore, the requirement to monitor for TDS, Sulfate, Chloride and Bromide is not recommended for this facility.

E. Coli Monitoring
DEP's SOP No. BCW-PMT-033 recommends under 25 Pa Code §92a.61 a routine monitoring for E. Coli in all new and reissued permits. Since the facility has the design flow of 0.60 MGD, a quarterly monitoring will be included in the permit.

Chesapeake Bay Total Maximum Daily Load (TMDL)
DEP's current Supplement to Phase III Watershed Implementation Plan (WIP) lists this facility as a significant Phase 3 facility. The WIP also provides the following table for Marietta Donegal Joint Authority WWTP:

NPDES Permit No.	Phase	Facility	Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TP Cap Load (lbs/yr)
PA0028088	3	Brown Township Municipal Authority	2/11/2016	2/28/2021	10/1/2014	10,959	1,461

The facility is currently meeting their cap loads; accordingly, no interim monitoring requirement is necessary and existing cap loads remain unchanged and will still be in effect at the issuance of the final permit.

Sampling Frequency & Sample Type
Unless specified otherwise in this fact sheet, all sample types and monitoring frequencies will remain unchanged.

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

Anti-Backsliding
Unless specified otherwise in this fact sheet with rationales, 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.

Class A Wild Trout Streams
No Class A Wild Trout Fishery is impacted by this discharge.

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 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	125	185	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	150	225	XXX	30	45	60	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	70.0	XXX	XXX	14.0	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter [1]	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum [2] Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-Hr Composite
Net Total Nitrogen	XXX	10,959	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	XXX	1,461	XXX	XXX	XXX	1/month	Calculation

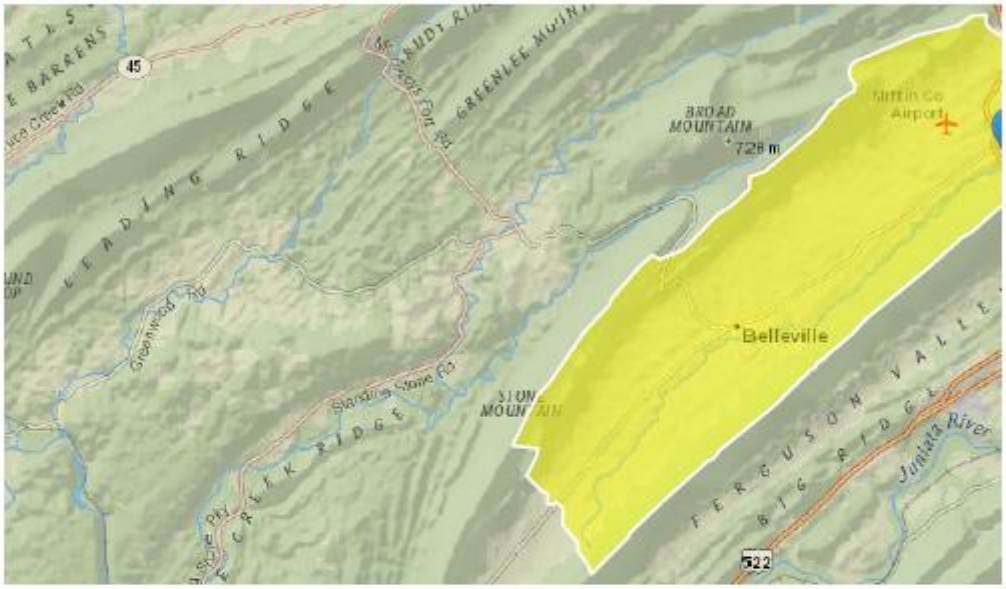
Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments

1. StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20211113150852164000
Clicked Point (Latitude, Longitude): 40.66210, -77.59704
Time: 2021-11-13 10:09:11 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	68.5	square miles
PRECIP	Mean Annual Precipitation	40	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.42	miles per square mile
ROCKDEP	Depth to rock	5.2	feet
CARBON	Percentage of area of carbonate rock	47.87	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	68.5	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	40	inches	35	50.4
STRDEN	Stream Density	1.42	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.2	feet	3.32	5.65
CARBON	Percent Carbonate	47.87	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

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

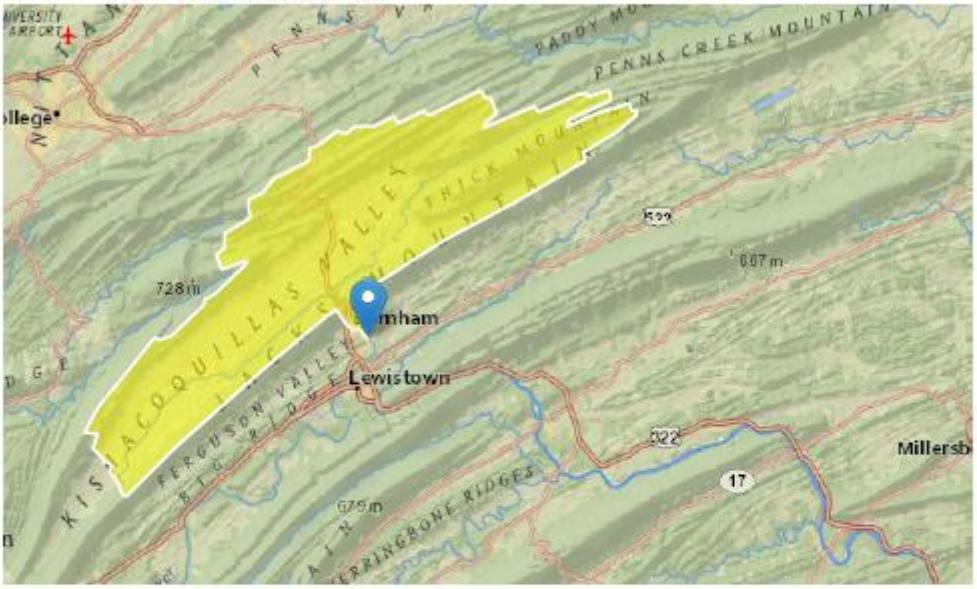
Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	21.8	ft^3/s	38	38
30 Day 2 Year Low Flow	24.6	ft^3/s	33	33
7 Day 10 Year Low Flow	15.5	ft^3/s	51	51
30 Day 10 Year Low Flow	17.1	ft^3/s	46	46
90 Day 10 Year Low Flow	19.8	ft^3/s	36	36

Low-Flow Statistics Citations

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

StreamStats Report

Region ID: PA
Workspace ID: PA20211113162408912000
Clicked Point (Latitude, Longitude): 40.63073, -77.56421
Time: 2021-11-13 11:24:29 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	165	square miles
PRECIP	Mean Annual Precipitation	41	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.43	miles per square mile
ROCKDEP	Depth to rock	4.9	feet
CARBON	Percentage of area of carbonate rock	24.54	percent

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	165	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	1.43	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4.9	feet	3.32	5.65
CARBON	Percent Carbonate	24.54	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

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	43.9	ft^3/s	38	38
30 Day 2 Year Low Flow	51.8	ft^3/s	33	33
7 Day 10 Year Low Flow	29	ft^3/s	51	51
30 Day 10 Year Low Flow	33.7	ft^3/s	46	46
90 Day 10 Year Low Flow	42.3	ft^3/s	36	36

Low-Flow Statistics Citations

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

2. WQM 7.0 ver. 1.1

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12A	12429	KISHACOQUILLAS CREEK	6.934	577.00	68.50	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	15.50	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Brown TWP STP	PA0028088	0.6000	0.6000	0.6000	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	14.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
12A	12429	KISHACOQUILLAS CREEK	3.550	495.00	165.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	29.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
12A	12429	KISHACOQUILLAS 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												
6.934	15.50	0.00	15.50	.9282	0.00459	.79	52.71	66.73	0.39	0.524	20.28	7.00
Q1-10 Flow												
6.934	9.92	0.00	9.92	.9282	0.00459	NA	NA	NA	0.31	0.661	20.43	7.00
Q30-10 Flow												
6.934	21.08	0.00	21.08	.9282	0.00459	NA	NA	NA	0.46	0.445	20.21	7.00

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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		

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
12A	12429	KISHACOQUILLAS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.934	0.600	20.283	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
52.706	0.790	66.732	0.395
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.30	0.505	0.79	0.715
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.060	12.443	Tsivoglou	5
Reach Travel Time (days)			
0.524			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.052	3.21	0.76	8.20
0.105	3.13	0.73	8.20
0.157	3.04	0.71	8.20
0.210	2.96	0.68	8.20
0.262	2.89	0.66	8.20
0.314	2.81	0.63	8.20
0.367	2.74	0.61	8.20
0.419	2.66	0.59	8.20
0.472	2.59	0.56	8.20
0.524	2.52	0.54	8.20

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
12A	12429	KISHACOQUILLAS 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
6.934	Brown TWP STP	16.18	28	16.18	28	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
6.934	Brown TWP STP	1.86	14	1.86	14	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)		
6.93	Brown TWP STP	25	25	14	14	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
12A	12429	KISHACOQUILLAS 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)
6.934	Brown TWP STP	PA0028088	0.600	CBOD5	25		
				NH3-N	14	28	
				Dissolved Oxygen			5

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3. TRC_CALC Spreadsheet

TRC_CALC

	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	15.5	= Q stream (cfs)		0.5	= CV Daily	
5	0.6	= 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)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 5.346		1.3.2.iii	WLA cfc = 5.204
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 1.992		5.1d	LTA_cfc = 3.026
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) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.635			

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

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4. TOXCONC Spreadsheet

	Facility:	Brown Township STP			
	NPDES #:	PA0028088			
	Outfall No:	001			
	n (Samples/Month):	4			
	Reviewer/Permit Engineer:	Jinsu Kim			
Parameter Name	Total Copper	Total Lead			
Units	µg/L	µg/L			
Detection Limit					
Sample Date	*When entering values below the detection limit, enter "ND" or use the <*				
03/01/2016	0.02	0.01			
04/01/2016	0.02	0.005			
05/01/2016	0.01	0.01			
06/01/2016	0.01	0.01			
07/01/2016	0.01	0.01			
08/01/2016	0.01	0.01			
09/01/2016	0.01	0.01			
10/01/2016	0.01	0.01			
11/01/2016	0.02	0.02			
12/01/2016	0.01	0.01			
01/01/2017	0.01	0.01			
02/01/2017	0.01	0.01			
03/01/2017	0.01	0.01			
04/01/2017	0.02	0.008			
05/01/2017	0.01	0.01			
06/01/2017	0.01	0.01			
07/01/2017	< 0.62	< 0.62			
08/01/2017	< 0.06	< 0.06			
09/01/2017	< 0.01	< 0.02			
10/01/2017	0.03	0.01			
11/01/2017	0.01	0.01			
12/01/2017	< 0.01	< 0.01			
01/01/2018	< 0.01	< 0.01			
02/01/2018	0.01	0.01			
03/01/2018	0.01	< 0.01			
04/01/2018	0.01	0.01			
05/01/2018	0.01	0.01			
06/01/2018	0.01	0.01			
07/01/2018	0.01	0.01			
08/01/2018	3.25	0.34			
09/01/2018	0.01	0.01			
10/01/2018	0.04	0.01			
11/01/2018	0.05	< 0.01			
12/01/2018	< 0.01	< 0.01			
01/01/2019	< 0.01	< 0.01			
02/01/2019	< 0.01	< 0.01			
03/01/2019	0.01	< 0.01			
04/01/2019	< 0.02	< 0.01			
05/01/2019	0.42	< 0.01			
06/01/2019	< 0.28	< 0.01			
07/01/2019	0.34	< 0.01			
08/01/2019	0.29	< 0.01			
09/01/2019	0.32	< 0.01			
10/01/2019	0.02	< 0.01			
11/01/2019	0.02	< 0.01			
12/01/2019	0.04	< 0.01			
01/01/2020	< 0.01	< 0.01			
02/01/2020	0.02	< 0.01			
03/01/2020	0.01	< 0.01			

1

Parameter Name	Total Copper	Total Lead		
Units	µg/L	µg/L		
Detection Limit				
Sample Date	*When entering values below the detection limit, enter "N*			
04/01/2020	0.01	< 0.01		
05/01/2020	0.45	< 0.01		
06/01/2020	0.62	< 0.01		
07/01/2020	0.52	< 0.01		
08/01/2020	0.69	0.01		
09/01/2020	0.03	< 0.01		
10/01/2020	0.03	< 0.01		
11/01/2020	0.02	< 0.01		
12/01/2020	0.13	< 0.01		
01/01/2021	0.08	< 0.01		
02/01/2021	< 0.01	< 0.01		
03/01/2021	0.15	< 0.01		
04/01/2021	< 0.01	< 0.01		
05/01/2021	< 0.01	< 0.01		
06/01/2021	< 0.01	< 0.01		
07/01/2021	< 0.01	< 0.01		
08/01/2021	< 0.01	< 0.01		
09/01/2021	0.13	< 0.01		

			Reviewer/Permit Engineer:	Jinsu Kim
Facility:	Brown Township STP			
NPDES #:	PA0028088			
Outfall No:	001			
n (Samples/Month):	4			

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Total Copper (µg/L)	Delta-Lognormal	3.6880088	0.5660455
Total Lead (µg/L)	Delta-Lognormal	1.7600721	0.0196984

TOXCON Output 11/14/2021

	Facility:	Brown Township STP		
	NPDES #:	PA0028088		
	Outfall No:	001		
	n (Samples/Month):	4		
Parameter Name	Total Copper	Total Lead		
Number of Samples	67	67		
Samples Nondetected	17	40		
LOGNORMAL				
Log MEAN	NA	NA		
Log VAR.				
(LTA) [E(x)]				
Variance [V(x)]				
CV (raw)				
CV (n)				
Monthly Avg. (99%, n-day)				
DELTA-LOGNORMAL				
Delta-Log MEAN	-3.4223609	-4.4828288		
Delta-Log VAR.	2.3884484	0.5016076		
(LTA) [E(x)]	0.0803948	0.0058525		
Variance [V(x)]	0.0879102	0.0001061		
CV (raw)	3.6880088	1.7600721		
Delta-Log VAR. (n)	1.4775312	0.4376324		
A, Table E-2, TSD	3.4003521	0.7744634		
B, Table E-2, TSD	0.0000000	0.0000000		
C, Table E-2, TSD	0.0000000	0.0000000		
Delta-Log MEAN (n)	-3.2554186	-5.2238314		
phi (Φ)	0.9866000	0.9751852		
Z*	2.2100000	1.9600000		
Monthly Avg. (99%, n-day)	0.5660455	0.0196984		
NORMAL				
MEAN	NA	NA		
VAR.				
(LTA) [E(x)]				
Variance [V(x)]				
CV (raw)				
CV (n)				
Monthly Avg. (99%, n-day)				

5. Toxics Management Spreadsheet

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Brown TWP STP NPDES Permit No.: PA0028088 Outfall No.: 001

Evaluation Type: Custom / Additives Wastewater Description: Minor 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
0.69	100	7						

				0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Total Copper	µg/L		0.5880455			3.688						
Total Lead	µg/L		0.0196984			1.7601						
Total Zinc	mg/L		0.0885									

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Brown TWP STP, NPDES Permit No. PA0028088, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Kishaoquillas 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	012429	6.934	577	68.5			Yes
End of Reach 1	012429	3.55	496	165			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	6.934	0.1	15.5									100	7		
End of Reach 1	3.55	0.1	29												

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	6.934														
End of Reach 1	3.55														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Brown TWP STP, NPDES Permit No. PA0028088, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.462 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	13.439	14.0	108	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	629	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	923	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 70.397 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Copper	0	0		0	8.956	9.33	145	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	49.4	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	1,860	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 70.397 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): 27.139 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

Pollutants	Mass Limits AML (lbs/day)	Mass Limits MDL (lbs/day)	Concentration Limits AML	Concentration Limits MDL	Concentration Limits IMAX	Concentration Limits Units	Governing WQBEL	WQBEL Basis	Comments

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Copper	145	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	49.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	592	µg/L	Discharge Conc ≤ 10% WQBEL