pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0027294**
Facility Type	**Municipal**	APS ID	**962828**
Major / Minor	**Major**	Authorization ID	**1219466**

Applicant and Facility Information

Applicant Name	**Bristol Borough Water & Sewer Authority**	Facility Name	**Bristol Borough WPC Plant**
Applicant Address	250 Pond Street	Facility Address	8 Maple Beach Road
	Bristol, PA 19007		Bristol, PA 19007
Applicant Contact	James Dillon	Facility Contact	James Dillon
Applicant Phone	(215) 788-3828	Facility Phone	(215) 788-3828
Client ID	87477	Site ID	263095
Ch 94 Load Status	Not Overloaded	Municipality	Bristol Borough
Connection Status	No Limitations	County	Bucks
Date Application Received	February 26, 2018	EPA Waived?	No
Date Application Accepted		If No, Reason	DEP Discretion

Purpose of Application: Permit Renewal.

Summary of Review

The applicant requests renewal of an NPDES permit to discharge 2.7 MGD of treated sewage from the sewage treatment plant into Otter Creek a tributary to the Delaware River Estuary, Zone 2.

The treatment plant consists of grit chamber, bar screen, sedimentation, two stage biological trickling filters, rotating biological contactors and chlorine disinfection. Sludge generated at facility is digested in an anaerobic digester. The sludge is then removed as a liquid and disposed of at DELCORA WWTP.

The treatment plant serves Bristol Township and Bristol Borough.

Effluent limits for conventional parameters will remain the same in this permit renewal. The permit has CBOD5 limit of 17 mg/l based on FSOD allocation of 640 lbs/day for Bristol Borough WPC Plant by DRBC. Mass limits are calculated based on an annual average flow of 2.7 MGD. The recent DRBC Docket No. D-1969-066 CP-4 includes load limit for CBOD5 and % removal (88.5 %) requirement for CBOD5 in place of CBOD20 as in the current permit. The Docket also includes effluent limit of 1000 mg/l for Total Dissolved Solids (TDS) in place of monitor only. Therefore, this permit renewal will include effluent limits for TDS and mass limit for CBOD5 in place of CBOD20. Based on the Discharge Monitoring Reports, the discharge is generally in compliance with all the parameters and is expected to be in compliance in the future.

Influent monitoring requirements for BOD5, CBOD5, and Total Suspended Solids (TSS) will continue for this permit renewal.

Biomonitoring: As per DRBC Toxic waste load allocation program for Delaware River Estuary Zone 2, Final WLA of 5.5 TUc has been allocated to Bristol Borough. The permittee submitted four WET test reports (Acute and Chronic) with renewal application and test show no results toxicity in the effluent. Monitoring requirements for Chronic Toxicity only will be included in this permit renewal based on our SOP.

Approve	Deny	Signatures	Date
		Ketan Thaker / Project Manager	
		Pravin C. Patel, P.E. / Environmental Engineer Manager	

Summary of Review

PCB Minimization Plan: On December 15, 2003, the U.S. EPA Regions 2 and 3 adopted a Total Maximum Daily Load (TMDL) for Polychlorinated Biphenyles (PCB) for Zones 2, 3, 4, and 5 for the tidal Delaware River. The TMDL requires that the facilities identified as discharging PCBs to Delaware River prepare and implement a PCB Waste Minimization and Reduction Program also known as Pollution Minimization Plan (PMP).

This facility has been identified as a Group 2 dischargers with a rank within those facilities which contribute 99 percent cumulative PCB loading to the Delaware River. The WLA for Total PCBs for Bristol Borough is 102.68 ug/day. The total effluent loadings for PCBs from 2003 and 2005 sampling results is 36828 ug/day. DRBC and PADEP need a reasonable amount of PCB effluent data to characterize PCB variability. Such data over a period of up to ten years will be used to develop a level of existing effluent quality (EEQ) for PCBs. Based on discussion with DRBC it was decided that the facilities in the top 99 percent cumulative PCBs loading to Delaware River should be required to collect a minimum of four samples (two dry and two wet weather samples) annually. Bristol Borough has implemented PMP for PCBs and has been submitting annual report as required under the permit.

Pretreatment Program: This facility does not have a pretreatment program as there are no significant industrial facilities contributing industrial waste into the treatment plant. There are four industrial users (Acme Uniforms, Bank of America/Merrill Lynch Data Center, Columbia Lighting and DOW-Union Carbide) which contribute very little amount of sewage and industrial waste into the Bristol Borough sewage treatment plant.

Bristol Borough and Bucks County received written notification on January 24, 2018 regarding this application to PADEP

Following are the effluent limits:

PARAMETER	EFFLUENT LIMITS (AV. MO in Mg/l)	BASIS
CBOD5	17	DRBC Docket D-1969-066-CP-4
Ammonia-Nitrogen	35	DRBC Regulation 4.30.5
Total Suspended Solids	30	25 Pa Code 92a.47
Dissolved Oxygen	4.0 Minimum	BPJ
Total Residual Chlorine	0.5	25 Pa Code 92a.47-48
pH (SU)	6.0 to 9.0 SU	25 Pa Code 92a.47, 95.2
Fecal Coliform (#/100 ml)	200 (Geo Mean)	25 Pa Code 92a.47
Total Phosphorus	Report	25 Pa Code 92a.61
Total Nitrogen	Report	25 Pa Code 92a.61
Total Dissolved Solids	1000	DRBC Docket D-1969-066-CP-4
CBOD5 % Removal	88.5 %	DRBC Docket D-1969-066-CP-4
PCBs (Dry Weather) pg/l	Report	DRBC Docket D-1969-066-CP-4
PCBs (Wet Weather) pg/l	Report	DRBC Docket D-1969-066-CP-4
Chronic Toxicity (TUc)	Report	DRBC Docket D-1969-066-CP-4

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	2.7
Latitude	40º 5' 24.45"	Longitude	-74º 51' 26.86"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Delaware River	Stream Code	
NHD Com ID	25474988	RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	2-E	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final	Name	Delaware River Estuary PCB TMDLs

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

Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Treatment Facility Summary				
Treatment Facility Name: Bristol Borough WPC Plant				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Trickling Filter With Settling	Gas Chlorine	2.7
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
5.8	5100	Not Overloaded	Anaerobic Digestion	Landfill

Compliance History

DMR Data for Outfall 001 (from January 1, 2018 to December 31, 2018)

Parameter	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18	JUN-18	MAY-18	APR-18	MAR-18	FEB-18	JAN-18
Flow (MGD) Average Monthly	2.061	2.140	1.592	1.540	1.213	1.301	1.663	1.723	1.744	2.036	1.449	1.122
Flow (MGD) Daily Maximum	2.848	3.272	2.176	2.706	1.376	1.755	1.933	2.324	2.642	2.769	2.154	1.572
pH (S.U.) Minimum	6.58	6.62	6.49	6.34	6.43	6.42	6.65	6.75	6.84	6.91	6.85	7.03
pH (S.U.) Instantaneous Maximum	7.24	7.20	7.18	7.13	7.38	7.78	7.23	7.43	7.17	7.57	7.51	7.51
DO (mg/L) Minimum	8.80	8.16	7.67	5.96	5.06	5.32	6.16	7.09	7.32	8.18	8.99	7.64
TRC (mg/L) Average Monthly	0.30	0.38	0.40	0.40	0.33	0.25	0.29	0.32	0.26	0.33	0.31	0.38
TRC (mg/L) Instantaneous Maximum	0.48	0.57	0.64	0.83	0.72	0.35	0.40	1.05	0.32	0.45	0.37	0.98
CBOD5 (lbs/day) Average Monthly	53	50	36	47	66	55	55	79	112	101	63	89
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	2342	3205	2281	2452	2483	1985	6725	2488	12019	16671	2272	1989
CBOD5 (lbs/day) Weekly Average	62	65	53	65	84	73	67	141	140	121	87	174
CBOD5 (mg/L) Average Monthly	3	3	3	4	6	5	4	6	7	6	5	10
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	131	156	158	177	224	166	451	158	744	929	168	206
CBOD5 (mg/L) Weekly Average	4	4	4	7	8	6	5	11	9	8	7	21
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	2902	3975	2858	3026	3004	2407	2850	3030	16090	20663	2743	2482

BOD5 (mg/L) Raw Sewage Influent Average Monthly	163	193	197	218	270	201	186	193	1001	1148	204	258
CBOD20 (lbs/day) Average Monthly	231	259	131	192	195	168	172	211	254	262	160	203
TSS (lbs/day) Average Monthly	101	61	24	31	45	44	58	156	76	80	85	180
TSS (lbs/day) Raw Sewage Influent Average Monthly	6238	6752	5320	5002	4764	3977	6202	8568	29659	15221	4370	3019
TSS (lbs/day) Weekly Average	186	92	35	47	63	73	77	564	164	103	127	534
TSS (mg/L) Average Monthly	6	3	2	3	4	4	4	11	5	5	7	20
TSS (mg/L) Raw Sewage Influent Average Monthly	356	341	359	351	434	329	401	554	1851	847	310	314
TSS (mg/L) Weekly Average	12	5	3	5	6	7	6	44	11	7	10	65
Total Dissolved Solids (lbs/day) Average Monthly	8065			4398			5151			5456		
Total Dissolved Solids (mg/L) Average Monthly	458			389			373			426		
Fecal Coliform (CFU/100 ml) Geometric Mean	1	2	2	5	7	3	2	6	2	1	1	1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	3	8	27	290	21	19	9	44	12	3	3	25
Nitrate-Nitrite (lbs/day) Average Monthly	249			108			184			186		
Nitrate-Nitrite (mg/L) Average Monthly	13.7			10.2			13.3			14.5		
Ammonia (lbs/day) Average Monthly	2	3	2	15	47	50	4	4	7	13	13	81
Ammonia (mg/L) Average Monthly	0.15	0.15	0.13	1.41	4.53	4.4	0.31	0.28	0.44	0.74	1.12	8.97

TKN (lbs/day) Average Monthly	25			40			39			117		
TKN (mg/L) Average Monthly	1.35			3.79			2.88			9.11		
Total Phosphorus (lbs/day) Average Monthly	27			29			33			49		
Total Phosphorus (mg/L) Average Monthly	1.5			2.6			2.5			3.85		
Total Copper (mg/L) Average Monthly	0.0065			0.011			0.02			0.027		
Bis(2-Ethyl-hexyl)Phthalate (mg/L) Average Monthly	< 0.0030			< 0.0029			< 0.003			0.0031		
PCBs (Dry Weather) (pg/L) Daily Maximum	1760						4080					
PCBs (Wet Weather) (pg/L) Daily Maximum	1540						9050					
Acute WET - Ceriodaphnia Survival (TUa) Daily Maximum	1						1					
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum	1						1					
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	1						4					
Acute WET - Pimephales Survival (TUa) Daily Maximum	1						1					
Chronic WET - Pimephales Survival (TUc) Daily Maximum	1						1					

Chronic WET - Pimephales Growth (TUc) Daily Maximum	1						1					

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2.7
Latitude 40º 5' 39.00" **Longitude** -74º 51' 47.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
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)


WQPR


DRBC Docket
Bristol Borough WTI

Whole Effluent Toxicity (WET)

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

☐ For the permit renewal application (4 tests).
☒ Semi-annual throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: DRBC recommended separate testing for Acute and Chronic Testing

The dilution series used for the tests was: 100%, 57%, 14%, 7%, and 4%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 14.

Summary of Four Most Recent Test Results

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

NOEC/LC50 Data Analysis

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
3/17/2015	100 %	100 %	>100 %	100 %	100 %	>100 %	Pass
5/17/2016	100 %	100 %	>100 %	100 %	100 %	>100 %	Pass
9/27/2016	100 %	100 %	>100 %	100 %	100 %	>100 %	Pass
3/21/2017	100 %	100 %	>100 %	100 %	100 %	>100 %	Pass
1 /18/2018	100 %	25 %	>100 %	100 %	100 %	>100 %	Pass
12/11/2018	100 %	100 %	>100 %	100 %	100 %	>100 %	Pass

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

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

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

1. Determine IWC – Acute (IWCa):

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

[(2.7 MGD x 1.547) / ((25 cfs x 1) + (2.7 MGD x 1.547))] x 100 = **14.26%**

Is IWCa < 1%? ☐ **YES** ☒ **NO**

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

1 % of Q7-10 at Trenton (2500 cfs) is used

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

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

[(2.7 MGD x 1.547) / ((25 cfs x 1) + (2.7 MGD x 1.547))] x 100 = **14.26%**

3. Determine Dilution Series

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

Dilution Series = 100%, 57%, 14%, 7%, and 4%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)					
	Average Monthly	Weekly Average	Minimum Monthly Average	Average Monthly	Daily Maximum	Instant. Maximum	Minimum (2) Measurement Frequency	Required Sample Type
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	366	549	XXX	17	26 Wkly Avg	34	2/week	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
CBOD5 % Removal (%) Percent Removal	XXX	XXX	88.50	XXX	XXX	XXX	2/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TSS	676	1013	XXX	30	45 Wkly Avg	60	2/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000.0 Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)					
	Average Monthly	Weekly Average	Minimum Monthly Average	Average Monthly	Daily Maximum	Instant. Maximum	Minimum (2) Measurement Frequency	Required Sample Type
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200.0 Geo Mean	XXX	1000.0	2/week	Grab
Ammonia	788	XXX	XXX	35	XXX	70	2/week	24-Hr Composite
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
PCBs (Dry Weather) (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	24-Hr Composite
PCBs (Wet Weather) (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	24-Hr Composite
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit	24-Hr Composite