pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0046388**
Facility Type	**Municipal**	APS ID	**570435**
Major / Minor	**Major**	Authorization ID	**1205789**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Butler Township**	Facility Name	**St. Johns STP**
Applicant Address	415 West Butler Drive	Facility Address	761 Saint Johns Road
	Drums, PA 18222		Drums, PA 18222
Applicant Contact	Maryanne Petrilla	Facility Contact	William Denunzio
Applicant Phone	(570) 788-3547	Facility Phone	(570) 788-3547
Client ID	65353	Site ID	450311
Ch 94 Load Status	Not Overloaded	Municipality	Butler Township
Connection Status	No Limitations	County	Luzerne
Date Application Received	October 31, 2017	EPA Waived?	No
Date Application Accepted	October 31, 2017	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: Renewal of NPDES permit to discharge treated sewage.

Summary of Review

The applicant is requesting renewal of an NPDES permit to discharge 2.2 MGD of treated sewage to Nescopeck Creek, a TSF/MF designated receiving stream in state water plan basin 05-D (Nescopeck Creek). As per the Department's current existing use list, the receiving stream does not have an existing use classification that is more protective than its designated use.

A Total Maximum Daily Load (TMDL) for the Black Creek, Little Nescopeck Creek and an unnamed tributary to Little Nescopeck Creek watershed was finalized on May 2, 2005. The TMDL addresses the three primary metals associated with acid mine drainage (Iron, Manganese and Aluminum) and pH. Treated sewage is not considered a major contributor of the primary metals to the affected streams, however, quarterly monitoring and reporting requirements are included in this permit renewal for Total Iron. Monthly monitoring and reporting requirements are included in the permit for Total Manganese and Total Aluminum as a result of water quality modeling (see below). Total Manganese and Total Aluminum were monitored quarterly in the previously issued permit.

The pH, Fecal Coliform, TSS and $CBOD_5$ limits are technology-based limits carried over from the previous permit. WQM 7.0 modeling didn't recommend more stringent limitations for Ammonia-Nitrogen, $CBOD_5$ or Dissolved Oxygen (see WQM Modeling attachments).

For modeling inputs, RMI values were obtained using the "PA Historic Streams" feature of eMap PA as well as the "measure" tool. Drainage areas were delineated using USGS's StreamStats Interactive Map and elevations were obtained using the elevation profile feature of StreamStats (see Watershed Information attachment). The LFY (0.084 cfs/mi^2) and $Q_{7\text{-}10}$ (4.8 cfs) were calculated from delineation results of the USGS StreamStats interactive map on the receiving stream at the discharge location.

Approve	Deny	Signatures	Date
X		*Brian Burden* Brian Burden, E.I.T. / Project Manager	October 14, 2021
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Environmental Engineer Manager	10-29-21

Summary of Review

The TRC Calculation spreadsheet didn't recommend more stringent limitations for Total Residual Chlorine (TRC). Daily monitoring/reporting for ultraviolet light transmittance is continued from the previously issued permit.

2/week influent monitoring for BOD_5 and TSS is continued in this permit renewal. As per DEP guidance, 1/month E. Coli monitoring/reporting is added to the permit.

DEP's Toxics Management Spreadsheet recommends the limitations and monitoring requirements in the table below. Limitations will come into effect four years after the permit effective date. **Note:** Limitations and monitoring requirements were recommended for several parameters not detected in the effluent during the Pollutant Group sampling results submitted with the application. Those parameters are identified below and the permittee may choose to re-sample for them during the draft permit public notice period at the Department's target QLs found in the current application instructions document.

				Limitations (µg/L)		
Pollutants	**Max Application Concentration (µg/L)**	**Governing WQBEL (µg/L)**	**WQBEL Basis**	**Average Monthly**	**Daily Maximum**	**IMAX**
Total Aluminum	161	1,102	AFC	Report	Report	Report
Total Copper	23.2	20.6	AFC	20.6	32.1	51.4
Total Manganese	359	2,397	THH	Report	Report	Report
Total Zinc	86.8	176	AFC	Report	Report	Report
1,3-Dichloropropylene**	< 2	2.57	CRL	2.57	4.01	6.43
Benzo(a)Anthracene*	< 2.86	0.01	CRL	0.010	0.015	0.024
Benzo(a)Pyrene*	< 2.86	0.001	CRL	0.001	0.001	0.002
3,4-Benzofluoranthene*	< 2.9	0.095	CRL	0.01	0.015	0.024
Benzo(k)Fluoranthene*	< 2.9	0.095	CRL	0.095	0.15	0.24
Chrysene*	< 2.9	1.14	CRL	1.14	1.78	2.86
Dibenzo(a,h)Anthracene*	< 2.9	0.001	CRL	0.001	0.001	0.002
3,3-Dichlorobenzidine**	< 9.7	0.48	CRL	0.48	0.74	1.19
Hexachlorobutadiene**	< 2.86	0.095	CRL	0.095	0.15	0.24
Indeno(1,2,3-cd)Pyrene*	< 2.9	0.01	CRL	0.01	0.015	0.024
Phenanthrene*	< 2.9	2.4	CFC	2.4	3.74	5.99

* Pollutant was not detected in the sampling results using the laboratory's highest QL of the three submitted sampling results. One additional non-detect sample at the Department's target QLs is required to remove this pollutant from the final permit.

** Pollutant was not detected in the sampling results using the laboratory's highest QL of the three submitted sampling results. Three additional non-detect samples at the Department's target QLs are required to remove this pollutant from the final permit.

The previously issued permit included quarterly monitoring requirements for Total Copper and Total Zinc based on water quality modeling of pollutant group sampling results submitted with the previous application. Using the latest pollutant group sampling results, Total Copper now has effluent limitations and is to be monitored 1/week. The monitoring frequency for Total Zinc is updated to 1/month.

The Part C.III.C condition regarding Toxics Reduction Evaluations (TREs) is added to the permit and applies to each of the toxic pollutants above where limitations are to be established that the permittee cannot currently meet. The permittee will have the option to accept the implementation of the limitations or to perform site-specific studies to verify or refine the WQBELs.

Summary of Review

To remain consistent with 40 CFR 122.47, milestones are added to Part C.III.D requiring the permittee to develop a schedule/plan for meeting the final WQBELs for all new water-quality based effluent limitations in the permit.

Several parameters listed in Part C.IV are subject to WQBELs that are necessary to comply with state water quality standards, but may be less than QLs, as defined in 25 Pa. Code § 252.1, that are generally achievable by conventional analytical technology. The permittee shall analyze the parameters using methods that will achieve the QLs listed in Part C.V. For the purpose of compliance, a statistical value reported on the DMR that is less than the QLs (i.e., "non-detect") will be considered to be in compliance.

The previously issued permit included quarterly monitoring/reporting requirements for Total Iron and Total Lead as a result of water quality modeling of the pollutant group sampling results submitted with the previous application. Water quality modeling for Total Iron and Total Lead pollutant group sampling results submitted with the most recent application indicate those pollutants don't require monitoring because reasonable potential to exceed water quality criteria was not determined and the discharge concentrations were less than threshold for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used.

To quantify nutrient reduction needs, maximum nutrient loads (cap loads) for each major watershed tributary to the Chesapeake Bay were established. This included allocation of cap loads for Total Nitrogen (TN) and Total Phosphorus (TP) in Pennsylvania for the Potomac and Susquehanna watersheds. Pennsylvania's overall cap loads for TN and TP were further divided into cap loads for point and non-point sources. The method used to allocate the point source portion of the load was developed after DEP conducted an extensive stakeholder process with sewage treatment plants in 2006. The workgroup recommendation made the allocations based on the design annual average daily flow, and concentrations of 6 mg/L TN and 0.8 mg/L TP. Based on this methodology, the allocations for TN and TP for this facility are 40,182 lbs/yr and 5,351 lbs/yr, respectively. The St. Johns WWTP is considered a Phase 3 facility in the Department's *Phase 3 Watershed Implementation Plan Wastewater Supplement (revised 9/13/2021)*.

The permittee was required to conduct annual Whole Effluent Toxicity (WET) testing in the previously issued permit. The latest WET testing results were submitted by the permittee in 2017. It was determined that the 7/31/2017 test for chronic water flea reproduction failed the T-test analysis. Review of water quality modeling results determined that reasonable potential exists for one or more toxic pollutants which have not been limited in the existing NPDES permit. Inclusion of WET limitations is postponed until additional WET data is reviewed after the implementation of the water quality-based limitations in Part A.I.C.

The standard Part C condition, Whole Effluent Toxicity – No Permit Limits, has been added to the permit. WET testing shall be conducted annually during the upcoming permit cycle, at a minimum. The WET Analysis Spreadsheet (see attached) was used to determine that the permittee must generate chronic survival and reproduction data for *Ceriodaphnia dubia*, and chronic survival and growth data for *Pimephales promelas*. The permittee shall perform testing using the following dilution series: 10%, 21%, 41%, 71%, and 100% effluent, with a control, where 41% effluent is the facility-specific Target In-Stream Waste Concentration (TIWC). TMS modeling determined the acute and chronic partial mix factors (PMFs) are 0.925 and 1.0, respectively.

An additional requirement for four quarterly WET tests during the first year of permit coverage is included in the permit because of the missing tests from 2018 – 2021. Part C.IV.B.1 is added to the permit requiring the permittee to submit quarterly WET tests for the first year of renewed permit coverage.

The permit renewal application indicates there are no industrial users discharging to the WWTP and no CSOs in the collection system. Antibacksliding requirements have been met since no limitations were made less stringent.

Monitoring requirements for stormwater outfalls 002, 003 and 004 are continued in this permit for the parameters (TSS and Oil & Grease) specified in Appendix J of the most recently issued PAG-03 stormwater general permit. The standard Part C.VI "Requirements Applicable to Stormwater Outfalls" condition is included in the permit.

Sludge use and disposal description and location(s): The August 2021 DMR supplemental report for sludge/biosolids indicates 2.1603 dry tons of dewatered sludge was disposed of at Wayne Township Landfill via Clinton County Solid Waste. The supplement form also indicates sludge is also disposed of at Keystone Sanitary Landfill, Alliance Landfill and CES Sanitary Landfill.

Summary of Review

There are no projected hydraulic/organic overloads at the STP and DMR review of the past 2 years revealed no concentration limitation exceedances.

The previously issued permit expired on April 30, 2018 and the application for permit renewal was submitted on time. There are no open WPC NPDES violations for the client that would warrant withholding the issuance of the final permit. EPA waiver is not in effect.

StreamStats 1.pdf StreamStats 2.pdf Elevations.pdf Toxics Management Spreadsheet.pdf TRC Calculation.pdf WQM 1.pdf WQM 2.pdf

WQM 3.pdf WQM 4.pdf WQM 5.pdf WQM 6.pdf WET Dilution Series.pdf

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)	2.2
Latitude	41º 1' 28"	Longitude	-76º 0' 30"
Quad Name	Sybertsville	Quad Code	1037
Wastewater Description:	Sewage Effluent		

Receiving Waters	Nescopeck Creek (TSF/MF)	Stream Code	28102
NHD Com ID	65639063	RMI	22.17
Drainage Area	56.6 mi^2	Yield (cfs/mi^2)	0.084
Q_{7-10} Flow (cfs)	4.8	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	947	Slope (ft/ft)	0.0048
Watershed No.	5-D	Chapter 93 Class.	TSF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Not Assessed		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	Danville Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1123
PWS RMI	122.5	Distance from Outfall (mi)	~45

Treatment Facility Summary

Treatment Facility Name: Butler Township – St. Johns STP

WQM Permit No.	Issuance Date
4007401	11/27/2007

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Sequencing Batch Reactor	Ultraviolet	0.61 (2020)

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
2.2	4,037	Not Overloaded	Aerobic Digestion & Centrifuge	Landfill

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2.2
Latitude 41º 1' 28.00" **Longitude** -76º 0' 30.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

Pollutant	Limit (mg/L)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25.0	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40.0	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
	50.0	IMAX	-	-
Total Suspended Solids	30.0	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45.0	Average Weekly	133.102(b)(2)	92a.47(a)(2)
	60.0	IMAX	-	-
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)
	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)
	10,000 / 100 mL	IMAX	-	92a.47(a)(5)

Water Quality-Based Limitations

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

Parameter	Limit (mg/L)	SBC	Model
Dissolved Oxygen	5.0	Instant. Minimum	2013 WQM Model 7.0
Total Residual Chlorine	0.2	Average Monthly	2013 TRC Spreadsheet
	0.3	IMAX	
Ammonia-Nitrogen (5/1 – 10/31)	4.7	Average Monthly	2013 WQM Model 7.0
	9.3	IMAX	
Ammonia-Nitrogen (11/1 – 4/30)	14.0	Average Monthly	
	28.0	IMAX	
Total Copper	0.0206	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.0321	Daily Maximum	
	0.0514	IMAX	
3,3-Dichlorobenzidine	0.00048	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.00074	Daily Maximum	
	0.00119	IMAX	
1,3-Dichloropropylene	0.0025	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.0040	Daily Maximum	
	0.0064	IMAX	
Benzo(a)Anthracene	0.00001	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.00001	Daily Maximum	
	0.00002	IMAX	
Benzo(a)Pyrene	0.000001	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.000001	Daily Maximum	
	0.000002	IMAX	
Benzo(k)Fluoranthene	0.000095	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.00015	Daily Maximum	
	0.00024	IMAX	

3,4-Benzofluoranthene	0.00001	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.00001	Daily Maximum	
	0.00002	IMAX	
Chrysene	0.0011	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.0017	Daily Maximum	
	0.0028	IMAX	
Dibenzo(a,h)Anthracene	0.000001	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.000001	Daily Maximum	
	0.000002	IMAX	
Hexachlorobutadiene	0.000095	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.00015	Daily Maximum	
	0.00024	IMAX	
Indeno(1,2,3-cd)Pyrene	0.00001	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.00001	Daily Maximum	
	0.00002	IMAX	
Phenanthrene	0.0024	Average Monthly	2021 Toxics Management Spreadsheet Version 1.3
	0.0037	Daily Maximum	
	0.0059	IMAX	

Comments: All limitations developed using DEP's 2021 Toxics Management Spreadsheet will come into effect 4 years from the permit effective date.

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 71%, 41%, 21%, 10%, and 0%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 41%.

Summary of Four Most Recent Test Results

TST Data Analysis

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

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	Reproduction	Survival	Growth
11/20/2013	Pass	Pass	Pass	Pass
11/4/2014	Pass	Pass	Pass	Pass
10/27/2015	Pass	Pass	Pass	Pass
11/1/2016	Pass	Pass	Pass	Pass
8/1/2017	Pass	Fail	Pass	Pass

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

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

☒ **YES** ☐ **NO**

Comments: Inclusion of WET limitations is postponed until additional WET data is reviewed after the implementation of the water quality-based limitations in Part A.I.C.

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

Acute Partial Mix Factor (PMFa): **0.925** Chronic Partial Mix Factor (PMFc): **1.0**

1. Determine IWC – Acute (IWCa):

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

[(2.2 MGD x 1.547) / ((4.8 cfs x 0.925) + (2.2 MGD x 1.547))] x 100 = **43.4%**

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:

N/A

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

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

TIWCa = IWCa / 0.3 = **%**

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

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

[(2.2 MGD x 1.547) / ((4.8 cfs x 1.0) + (2.2 MGD x 1.547))] x 100 = **41%**

3. Determine Dilution Series

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

Dilution Series = 100%, 71%, 41%, 21%, and 10%.

WET Limits

Has reasonable potential been determined? ☒ YES ☐ NO

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

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

Inclusion of WET limitations is postponed until additional WET data is reviewed after the implementation of the water quality-based limitations in Part A.I.C.