pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0050105**
Facility Type	**Municipal**	APS ID	**1014013**
Major / Minor	**Minor**	Authorization ID	**1310014**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Lower Frederick Township Montgomery County**	Facility Name	**Lower Frederick Township STP & Sewer System**
Applicant Address	53 Spring Mount Road Schwenksville, PA 19473-1738	Facility Address	137 Spring Mount Road Schwenksville, PA 19473
Applicant Contact	Mark Hudson	Facility Contact	Mark Hudson
Applicant Phone	(610) 287-8857	Facility Phone	(610) 287-8857
Client ID	45262	Site ID	262297
Ch 94 Load Status	Not Overloaded	Municipality	Lower Frederick Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	March 2, 2020	EPA Waived?	Yes
Date Application Accepted	Not Applicable	If No, Reason	

Purpose of Application: Renew NPDES discharge permit

Summary of Review

This permittee requests the renewal of NPDES permit PA0050105 to discharge 500,000 gallons per day (gpd) of treated sewage effluent to the Perkiomen Creek. The Lower Frederick Township Sewage Treatment Plant was upgraded and determined complete by DEP inspection on December 12, 2018. The previous plant was an extended aeration/activated sludge system with chlorine disinfection. That plant was replaced with a Sequencing Batch Reactor (SBR) plant with filtration, post-equalization, and ultraviolet (UV)-disinfection. In addition, the plant capacity was increased from 0.2 to 0.5 million gallons per day (MGD). The aforementioned plant upgrades were shown in the current permit expiring August 30, 2020 and implemented via updated permit limitations (i.e. there was a set of limits effective September 1, 2015 through August 31, 2018; then limits from September 1, 2018 to August 31, 2020 for the upgraded plant).

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.

The facility has a Delaware River Basin Commission (DRBC) Docket (D-1978-041 CP-3) approved September 16, 2015 with an expiration date of August 30, 2021. The docket has a Total Dissolved Solids (TDS) average monthly effluent limit of 1,000

Approve	Deny	Signatures	Date
X		Harmonie Hawley, PhD, PE / Environmental Engineering Specialist /s/	April 24, 2020
X		Pravin C. Patel, P.E. / Environmental Engineer Manager /s/	April 24, 2020

Summary of Review

mg/l, to be sampled quarterly, that went into effect after the plant upgrades were completed. The facility is not located in Special Protection Waters or in a Groundwater Protected Area.

The effluent limits, monitoring frequencies and sampling types from the current permit (for the upgraded plant) were carried over into this permit renewal. The only exception is the change for TDS from “report” to a limit of 1,000 mg/l, the monitoring frequency will remain quarterly, which is consistent with the DRBC docket. In the past year, the TDS concentration ranged from 730-766 mg/l in the effluent.

The design capacity of the upgraded plant is 0.5 MGD; however, the average annual flowrates reported in the application are 0.124 MGD for 2016; 0.141 MGD in 2017; and 0.146 MGD in 2018. The facility uses two (2) wastewater treatment chemicals. Aluminum Chloride Hydroxide Sulfate for phosphorus removal and Atlantic Coast Polymers – ACP-340, adipic and sulfamic acid for settling solids in sludge handling. Sewage sludge and biosolids are disposed by hauling to the Pottstown STP and/or Delcora STP. This facility is for municipal wastewater and does not have industrial or commercial inputs, nor does the facility accept hauled-in wastes.

The facility experienced a sanitary sewer overflow (SSO) during wet weather on July 13, 2019. An estimated 5,000 gallons overflowed from the post-equalization tank during the decant cycle and drained into an underground retention basin; no overflow left the basin. Prior to 2015, the facility had a high flow maintenance plan (HFMP) requirement in the permit, but the HFMP was removed from the permit renewal in 2015 due to no indication of overload to the aerobic treatment unit during extreme wet weather. The HFMP requirement is not included in this permit renewal.

Act 14 notification was sent to Montgomery County on October 22, 2019 and received October 24, 2019. Act 14 notification was sent to Lower Frederick Township on October 22, 2019 and received October 22, 2019.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.5
Latitude	40º 16' 16.91"	Longitude	-75º 27' 32.98"
Quad Name	Perkiomenville	Quad Code	1642
Wastewater Description:	Treated Sewage Effluent		

Receiving Waters	Perkiomen Creek (WWF, MF)	Stream Code	01017
NHD Com ID	25987584	RMI	13.4
Drainage Area	152	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	15.3	Q_{7-10} Basis	PA Stream Stats
Elevation (ft)	134.8	Slope (ft/ft)	0.0008
Watershed No.	3-E	Chapter 93 Class.	WWF, MF
Existing Use	WWF, MF	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	Not Applicable		
Source(s) of Impairment	Not Applicable		
TMDL Status	Not Applicable	Name	

Background/Ambient Data		Data Source
pH (SU)	7	TRG WQM (391-2000-007 default data)
Temperature (°F)	68 (20 °C)	TRG WQM (391-2000-007 default data)

Nearest Downstream Public Water Supply Intake	Not Applicable		
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: Plant was upgraded during the last permit cycle, but that was already accounted for in the last permit by phasing. The DRBC added an effluent limit of 1,000 mg/l for TDS effective after the plant upgrade (2018). The previous NPDES permit had a monitoring requirement for TDS, which was changed to an effluent limit of 1,000 mg/l in this renewed permit.

Other Comments: None

Treatment Facility Summary

Treatment Facility Name: Lower Frederick Township STP

WQM Permit No.	Issuance Date
4600427	2/2/2016

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Sequencing Batch Reactor W/Sol Removal	Ultraviolet	0.5

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.4	1750	Not Overloaded	Not Applicable	Other WWTP

Changes Since Last Permit Issuance: Plant was upgraded during the last permit, but that was already accounted for in the last permit by phasing. The DRBC added an effluent limit of 1,000 mg/l for TDS effective after the plant upgrade (2018). The previous NPDES permit had a monitoring requirement for TDS, which was changed to an effluent limit of 1,000 mg/l in this renewed permit.

Other Comments: The upgraded facility has new headworks with an inclined mechanical screen, washer and screw conveyor, submersible pumps, wet well, and influent meter. The flow then goes to SBRs with floating mixers, floating decanters, fine bubble diffusor racks, and submersible pumps. Phosphorous removal can be conducted in the SBRs. After the SBRs is a common post-equalization tank with the capability for alum dosing. There are cloth media disc filters and UV disinfection after the SBRs. The flow then goes to a combined clear well and cascade aeration chamber.

Compliance History

DMR Data for Outfall 001 (from March 1, 2019 to February 29, 2020)

Parameter	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19
Flow (MGD) Average Monthly	0.136	0.132	0.143	0.125	0.124	0.121	0.139	0.146	0.139	0.151	0.142	0.161
Flow (MGD) Daily Maximum	0.170	0.252	0.193	0.183	0.186	0.194	0.167	0.576	0.203	0.229	0.199	0.281
pH (S.U.) Instantaneous Minimum	7.6	7.6	7.4	7.5	7.5	7.6	7.6	7.4	7.6	7.5	7.4	7.4
pH (S.U.) Instantaneous Maximum	7.9	7.9	7.9	7.8	7.9	7.9	7.9	7.9	7.9	7.9	7.7	7.7
DO (mg/L) Instantaneous Minimum	7.3	7.0	8.1	7.7	7.7	7.5	7.3	7.9	8.1	8.3	8.42	9.3
CBOD5 (lbs/day) Average Monthly	< 2	< 2	< 3	< 4	< 2	< 2.0	< 2	< 3	< 2	< 3	< 2	3
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	196	208	246	180	208	247	181	187	136	247	288	237
CBOD5 (lbs/day) Weekly Average	< 2.5	3	5	10	< 2	< 3.2	< 2.4	4.5	< 2.6	< 3.3	2.6	4
CBOD5 (mg/L) Average Monthly	< 2.0	< 2	< 2	< 4	< 2	< 2.1	< 2.0	< 3	< 2.0	< 2.0	< 2.0	3
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	170	186	201	172	210	204	156	173	115	181	239	172
CBOD5 (mg/L) Weekly Average	< 2.0	2.6	4.0	10.3	< 2.0	2.5	< 2.0	4.5	< 2.0	< 2.0	2.0	3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	417	297	451	357	347	301	168	186	264	221	351	371
BOD5 (mg/L) Raw Sewage Influent Average Monthly	350	242	328	332	308	204	142	149	186	193	268	226
TSS (lbs/day) Average Monthly	< 1	< 2	< 1	< 1	< 1	< 3	3	< 2	< 2	< 3	< 3	6

TSS (lbs/day) Raw Sewage Influent Average Monthly	349	236	280	253	295	377	244	250	236	286	364	360
TSS (lbs/day) Weekly Average	< 1	3	1	< 1	< 1	6	6	4	4	5	6	13
TSS (mg/L) Average Monthly	< 1	< 2	< 1	< 1	< 1	< 2	3	< 2	< 2	< 2	< 3	5
TSS (mg/L) Raw Sewage Influent Average Monthly	272	188	199	214	259	292	209	197	175	189	280	235
TSS (mg/L) Weekly Average	1	3	1	< 1	1	4	5	4	3	3	5	9
Total Dissolved Solids (mg/L) Average Monthly			730			749			E			766
Fecal Coliform (CFU/100 ml) Geometric Mean	< 2	< 2	< 5	< 3	< 2	< 4	< 5	26	< 3	< 7	< 5	2
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 2	< 2	110	7	5	11	48	220	10	31	16	3
UV Intensity (µw/cm²) Daily Minimum	71	73	74	71	69	75	80	61	100	100	100	100
Total Nitrogen (lbs/day) Average Monthly	< 14	< 16	< 10	< 6	< 7	< 5	< 4	< 5	< 7	< 6	6	< 12
Total Nitrogen (mg/L) Average Monthly	< 14	< 15	< 8	< 6	< 7	< 3	< 3	< 5	< 6	< 5.47	6	< 9
Ammonia (lbs/day) Average Monthly	< 0.1	< 0.1	< 0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	0.2
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	0.2
Total Phosphorus (lbs/day) Average Monthly	0.3	0.4	0.3	0.2	0.2	0.4	0.1	0.2	0.6	0.4	0.4	0.5
Total Phosphorus (mg/L) Average Monthly	0.3	0.4	0.3	0.2	0.2	0.3	0.13	0.2	0.5	0.3	0.3	0.4

Compliance History

No Non-compliance was noted. The Daily maximum Flow in July 2019 is over 0.5 MGD; this was discussed in the Summary as a SSO.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.5
Latitude 40º 16' 16.92" **Longitude** -75º 27' 32.99"
Wastewater Description: Treated 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)

Comments: the above limitations were evaluated but more restrictive limits, which were used in previously issued permits for this facility, were retained in this permit renewal. Chlorine is not used in this facility any longer; however daily UV monitoring was retained in this permit renewal which is in accordance with Standard Operating Procedures (SOPs) and Chapter 92a. In addition, the WQM model (Attachment A) was run and the same limits as in the 2015 permit were obtained from the model and are thus retained for this renewal. The $CBOD_5$ limit of 15 mg/l was retained in this renewal and was set in 1990.

Total Nitrogen monitoring was retained in this permit renewal and is consistent with standard procedures and regulations. Total Phosphorus limit from the latter half of the previous permit (post-plant upgrades) was retained in this permit.

A Total Dissolved Solids (TDS) limit of 1,000 mg/l was added to the current DRBC docket for this facility. The TDS limit of monitoring was changed to 1,000 mg/l for this permit for consistency with DRBC.

Influent monitoring for $CBOD_5$ and Total Suspended Solids (TSS) was retained in this permit renewal.

Influent BOD_5 reporting was retained in this permit renewal to be consistent with Chapter 94.

Water Quality-Based Limitations

A “Reasonable Potential Analysis” was not conducted as this is a Minor facility.
Comments: None.

Best Professional Judgment (BPJ) Limitations

Comments: None.

Anti-Backsliding

No permit limits were lowered compared to the existing permit.

Attachment A

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	Daily 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
CBOD5	63	94	XXX	15	22.5	30	1/week	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
TSS	83	125	XXX	20	30	40	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	1000	XXX	XXX	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
UV Intensity (µw/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Ammonia	12.5	XXX	XXX	3.0	XXX	6	1/week	24-Hr Composite
Total Phosphorus	2.1	XXX	XXX	0.5	XXX	1	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: Same parameters, monitoring frequencies, and sample type as previous permit, except for the TDS limit.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **A**)
☐	PENTOXSD for Windows Model (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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 for "Establishing Effluent Limitations for Individual Sewage Permits" (Final November 9, 2012; Revised January 10, 2019; Version 1.6) SOP for New and Reissuance Sewage Individual NPDES Permit Applications (Final November 9, 2012; Revised October 11, 2013; Version 1.8)
☒	Other: Delaware River Basin Commission (DRBC) Docket (D-1978-041 CP-3) approved September 16, 2015