pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Amendment, Major**	Application No.	**PA0244031 A1**
Facility Type	**Municipal**	APS ID	**985830**
Major / Minor	**Minor**	Authorization ID	**1260549**

Applicant and Facility Information

Applicant Name	**Chadds Ford Township Sewer Authority Delaware County**	Facility Name	**Turners Mill STP**
Applicant Address	10 Ring Road PO Box 816	Facility Address	20 Ring Road PO Box 816
	Chadds Ford, PA 19317-0628		Chadds Ford, PA 19317-9101
Applicant Contact	Amanda Serock	Facility Contact	Thomas Leisee
Applicant Phone	(610) 388-8800	Facility Phone	(215) 222-3000
Client ID	62246	Site ID	657713
Ch 94 Load Status	Not Overloaded	Municipality	Chadds Ford Township
Connection Status	No Limitations	County	Delaware
Date Application Received	January 8, 2019	EPA Waived?	No
Date Application Accepted		If No, Reason	Christina River Basin TMDL

Purpose of Application: Increase the average daily flow from 140,000 gpd to 210,000 gpd.

Summary of Review

The applicant has submitted an amendment for NPDES permit to increased sewage discharge from 140,000 GPD to 210,000 GPD to Harvey Run through Outfall 001.

Expansion of the treatment plant is by adding a third treatment train to accommodate an additional 70,000 gallons per day. Existing collection system and pumping stations to remain.

According to DEP's approved (dated December 19, 2017) updated Chadds Ford Township's Sewage Facilities Management (Act 537) Plan; the expansion of the Turner's Mill STP service area will include Riding Chadds Ford STP (PA0055476) service area upon converting Riding Chadds Ford STP to pump station. New force main to be constructed to connect Riding Pumping Station to Estates at Chadds Ford Pumping Station.

The effluent limits are proposed based on existing requirements for both facilities (see p. 6 of this factsheet)

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.

Approve	Deny	Signatures	Date
X		Begay Omuralieva / Environmental Engineering Specialist /s/	May 31, 2019
X		Pravin C. Patel, P.E. / Environmental Engineer Manager /s/	May 31, 2019

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.210
Latitude	39° 52’ 23.00”	Longitude	75° 34’ 52.00”
Quad Name	Wilmington North	Quad Code	2041
Wastewater Description:	Turner's Mill STP		
Receiving Waters	Harvey Run	Stream Code	00028
NHD Com ID	26112424	RMI	0.66
Drainage Area	2.825 sq. mi	Yield (cfs/mi^2)	0.22
Q_{7-10} Flow (cfs)	0.64	Q_{7-10} Basis	
Elevation (ft)	196.000 Ft	Slope (ft/ft)	
Watershed No.	3H	Chapter 93 Class.	
Existing Use	WWF, MF, DO_2 and T	Existing Use Qualifier	
Exceptions to Use	No exceptions	Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Water Flow Variability		
Source(s) of Impairment	Urban Runoff/Storm Sewers, Agriculture		
TMDL Status	Final	Name	Christina River Basin TMDL
Nearest Downstream Public Water Supply Intake	None		
PWS Waters	n/a	Flow at Intake (cfs)	n/a
PWS RMI	n/a	Distance from Outfall (mi)	n/a

Changes Since Last Permit Issuance:

Treatment Facility Summary

Treatment Facility Name: Turners Mill STP

WQM Permit No.	Issuance Date	
2305404	June 6, 2006	**Turners Mill STP**
2305407	June 6, 2006	**For construction and operation of Camp Sunset Hill pump station**

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Ultraviolet	0.21

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.4032	280.22	Not Overloaded	Dewatering	Other WWTP

Changes Since Last Permit Issuance: none

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	0.0679	0.0688	0.0712	0.0765	0.0705	0.0683	0.0670	0.0668	0.0642	0.0651	0.0700	0.0696
Flow (MGD) Daily Maximum	0.0936	0.0855	0.0838	0.1061	0.0912	0.0838	0.0887	0.0788	0.0819	0.0850	0.0898	0.0981
pH (S.U.) Minimum	6.5	6.5	6.7	6.7	6.6	6.8	6.9	6.9	7.0	7.0	7.0	6.8
pH (S.U.) Maximum	8.2	8.5	8.2	8.2	8.1	8.2	8.2	7.7	8.2	8.2	8.1	8.0
DO (mg/L) Minimum	8.1	7.3	6.6	6.0	6.1	6.1	6.2	6.6	6.6	7.2	8.9	9.4
TRC (mg/L) Average Monthly	< 0.1	< 0.01	< 0.1	< 0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CBOD5 (lbs/day) Average Monthly	1.0	1.2	1.2	1.2	1.1	5.0	3.0	2.0	2.2	1.4	1.9	1.7
CBOD5 (lbs/day) Weekly Average	1.0	1.5	1.4	1.5	1.3	2.7	6.2	2.7	2.6	2.1	2.4	2.7
CBOD5 (mg/L) Average Monthly	2.0	2.3	2.0	2.0	2.0	4.0	5.5	3.7	4.0	2.6	3.5	3.0
CBOD5 (mg/L) Weekly Average	2.0	3.0	2.0	2.0	2.0	2.1	10.0	5.0	5.0	3.3	4.0	5.0
TSS (lbs/day) Average Monthly	0.8	0.6	0.7	0.6	0.9	5.0	2.7	3.1	3.0	2.6	2.8	2.3
TSS (lbs/day) Weekly Average	1.1	0.8	0.9	0.7	1.5	2.8	3.1	4.9	3.7	3.5	3.0	3.0
TSS (mg/L) Average Monthly	1.4	1.2	1.2	1.0	1.6	5.0	5.0	5.8	5.5	5.0	5.3	4.0
TSS (mg/L) Weekly Average	2.0	1.4	1.6	1.0	3.0	2.6	5.0	9.0	7.0	5.0	6.0	5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	1	1	1	1	1	1	1	1	3	6	2	3
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	4	1	1	1	2	4	1	4	8	24	6	13

Nitrate-Nitrite (lbs/day) Average Monthly	11.0	11	12.8	10.2	10.5	10.8	11.7	13.6	13.9	10.4	8.9	11.3
Nitrate-Nitrite (mg/L) Average Monthly	19.6	20.4	21.7	16.7	19.4	20.8	21.7	25.5	25.3	19.8	16.4	19.7
Total Nitrogen (lbs/day) Average Monthly	12.0	11.7	13.6	10.8	11.4	11.3	12.2	14.2	14.4	11.4	9.5	13.8
Total Nitrogen (mg/L) Average Monthly	21.6	21.7	23	17.8	21.0	21.8	22.6	26.5	26.3	21.7	17.4	24.4
Ammonia (lbs/day) Average Monthly	0.14	0.22	0.3	0.3	0.27	0.22	0.05	0.14	0.19	0.16	0.08	2.4
Ammonia (mg/L) Average Monthly	0.3	0.4	0.5	0.5	0.5	0.4	0.1	0.3	0.4	0.3	0.1	4.5
TKN (lbs/day) Average Monthly	1.0	0.1	0.1	0.6	0.9	0.5	0.5	0.5	0.5	0.5	0.5	2.5
TKN (mg/L) Average Monthly	2.0	0.7	0.8	1.1	1.6	1.0	0.8	1.0	1.0	1.0	1.0	4.7
Total Phosphorus (lbs/day) Average Monthly	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.5
Total Phosphorus (mg/L) Average Monthly	0.46	0.37	0.49	0.46	0.44	0.52	0.6	0.6	0.61	0.71	0.5	0.97

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .21
Latitude 39º 52' 23.00" **Longitude** -75º 34' 52.00"
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)

Comments: More stringent water quality limits are applied.

Water Quality-Based Limitations

Due to the facility's increased effluent flow from 0.14 MGD to 0.21 MGD the water quality modeling (WQM) was run.

WQM data

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

Parameter	Limit (mg/l)	SBC	Model
CBOD 5	25	Average Monthly	WQM 7.0
NH3-N	6.07	Average Monthly	WQM 7.0
DO	3	Min.	WQM 7.0

Comments: All three parameters are superseded by TMDL WLA (Christina River Basin TMDL, revised in 2012) listed below:

Table 15. TMDL Summary for Brandywine Creek Main Stem

NPDES	FACILITY NAME	FLOW mg/l	$CBOD_5$ mg/l	NH_3-N mg/l	TN mg/l	TP mg/l	DO mg/l	$CBOD_5$ lb/day	NH_3-N lb/day	TN lb/day	TP lb/day	DO lb/day
PA0055476	Riding of Chadds Ford STP	0.08	10	3	30	2	3	6.7	2.0	20.016	1.3	2.000
PA0244031	Turner's Mill STP	0.14	10	1.5	40	1.0	6.0	12.000	1.800	46.704	1.2	7.006

The proposed limits will remain the same while the loadings are adjusted based on increased flow and/or TMDL allocations. They are as follows:

Parameters	Mass Units (lbs/day)		Concentration (mg/l)			Basis
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Instant. Maximum	
CBOD5	17.5	26.0	10.0	15.0	20	BAT/ Existing limits
TSS	17.5	26.0	10.0	15.0	20	

Parameters	Mass Units (lbs/day)		Concentration (mg/l)			Basis
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Instant. Maximum	
NH3-N (11/1 – 4/30)	7.8		4.5		9	BAT/ Existing limits
NH3-N (5/1 – 10/31)	2.6		1.5		3	
TP	1.75		1.0		2	
TN	66.7		38		76	Summarized WLA loading is used for concentration calculation

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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC *	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
CBOD5	17.5	26.0	XXX	10.0	15.0	20	1/week	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
TSS	12.0	18.0	XXX	10.0	15.0	20	1/week	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	50 Geo Mean	XXX	1000	1/week	Grab
UV Intensity (mW/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Nitrate-Nitrite	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Nitrogen	66.7	XXX	XXX	38	XXX	76	1/week	Calculation

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia Nov 1 - Apr 30	7.8	XXX	XXX	4.5	XXX	9	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	2.6	XXX	XXX	1.5	XXX	3	1/week	24-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Phosphorus	1.75	XXX	XXX	1.0	XXX	2	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

* Daily during period when chlorine is used for disinfection or any other purpose in STP.