

Application Type Renewal  
Facility Type Municipal  
Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0053473  
APS ID 1023244  
Authorization ID 1327019

**Applicant and Facility Information**

Applicant Name	<u>Thornbury Township Delaware County</u>	Facility Name	<u>Thornbury Township STP &amp; Sewer System</u>
Applicant Address	<u>6 Township Drive</u> <u>Cheyney, PA 19319-1008</u>	Facility Address	<u>490 Thornton Road</u> <u>Cheyney, PA 19319</u>
Applicant Contact	<u>Jeffrey Seagraves</u>	Facility Contact	<u>Jeffrey Seagraves</u>
Applicant Phone	<u>(610) 399-8383</u>	Facility Phone	<u>(610) 399-8383</u>
Client ID	<u>63169</u>	Site ID	<u>499641</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Thornbury Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Delaware</u>
Date Application Received	<u>August 31, 2020</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>N/A</u>	If No, Reason	<u></u>
Purpose of Application	<u>Renew permit</u>		

**Summary of Review**

This permit application is for the renewal of a NPDES permit for the Thornbury Township Sewage Treatment Plant. The plant consists of a bar screen/comminutor, equalization tank, three aeration tanks, three final clarifiers, chlorination tank, de-chlorination unit, post-aeration tank, and a sludge holding tank. The discharge is generally in compliance with existing limits and is expected to be in compliance in future.

All parameters, sampling type and sampling frequency are the same as the previous permit issued in 2015. Influent monitoring of BOD5, CBOD5, and TSS were added in the last permit and are retained in this permit. Portions of the Chester Creek are listed as impaired due to municipal point sources. A Total Maximum Daily Load (TMDL) for Chester Creek has not been developed; however, the Environmental Protection Agency (EPA) is considering developing a TMDL for this creek.

Act 14 Notifications:  
Thornbury Township  
Delaware County

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		Harmonie Hawley, PhD, PE / Environmental Engineering Specialist /s/	September 18, 2020
X		Pravin C. Patel, P.E. / Environmental Engineer Manager /s/	09/18/2020

**Summary of Review**

Major Special Conditions:

- No Stormwater
- Necessary Property Rights
- Proper Sludge Disposal
- Chlorine Optimization
- Responsible Operator
- Operations and Maintenance plan
- DRBC requirements
- No Hauled-In Wastes
- Solids Management
- Seasonal Effluent Limits for Fecal Coliform

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.18</u>
Latitude	<u>39° 55' 43.30"</u>	Longitude	<u>-75° 31' 22.58"</u>
Quad Name	<u>West Chester</u>	Quad Code	<u>1941</u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Chester Creek (TSF, MF)</u>	Stream Code	<u>00520</u>
NHD Com ID	<u>25621342</u>	RMI	<u>14.8</u>
Drainage Area	<u>21.1</u>	Yield (cfs/mi <sup>2</sup> )	<u>0.225</u>
Q <sub>7-10</sub> Flow (cfs)	<u>4.74</u>	Q <sub>7-10</sub> Basis	<u>PA Stream Stats</u>
Elevation (ft)	<u>249</u>	Slope (ft/ft)	<u>0.003</u>
Watershed No.	<u>3-G</u>	Chapter 93 Class.	<u>TSF, MF</u>
Existing Use	<u>Recreational/ Aquatic Life</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>None</u>	Exceptions to Criteria	<u>None</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Cause Unknown, Flow Regime Modification, Siltation</u>		
Source(s) of Impairment	<u>Urban Runoff/Storm Sewers</u>		
TMDL Status	<u>None</u>	Name	<u>None</u>
Background/Ambient Data		Data Source	
pH (SU)	<u>7</u>	TRG WQM (391-2000-007 default data)	
Temperature (°F)	<u>68 (20 °C)</u>	TRG WQM (391-2000-007 default data)	
Hardness (mg/L)	<u>100</u>	Toxics Analysis Spreadsheet default	
Other:	<u>N/A</u>	None	
Nearest Downstream Public Water Supply Intake	<u>Aqua PA Main Stem Crum Creek</u>		
PWS Waters	<u>Chester Creek</u>	Flow at Intake (cfs)	<u>30.9</u>
PWS RMI	<u>7.1</u>	Distance from Outfall (mi)	<u>7.7</u>

Changes Since Last Permit Issuance: None

Other Comments: None

Treatment Facility Summary				
<b>Treatment Facility Name:</b> Thornbury Township STP				
<b>WQM Permit No.</b>		<b>Issuance Date</b>		
2302405		07/29/2003		
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Gas Chlorine	0.18
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.18	360	Not Overloaded	N/A	N/A

Changes Since Last Permit Issuance: None

Other Comments: Biosolids are hauled off-site and no waste is hauled on-site.

Compliance History

DMR Data for Outfall 001 (from August 1, 2019 to July 31, 2020)

Parameter	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19
Flow (MGD) Average Monthly	0.1111	0.1230	0.1298	0.1388	0.1371	0.123	0.1233	0.1333	0.1167	0.115	0.1051	0.1029
Flow (MGD) Daily Maximum	0.1678	0.1434	0.1642	0.1895	0.1678	0.144	0.1950	0.1487	0.170	0.1563	0.01477	0.1191
pH (S.U.) Minimum	6.7	6.2	6.3	6.0	6.5	6.4	6.3	6.6	6.7	6.7	6.3	6.4
pH (S.U.) Maximum	7.9	7.9	7.8	7.4	7.4	7.1	7.7	7.8	7.7	7.5	7.4	7.6
DO (mg/L) Minimum	6.3	6.6	6.1	6.2	6.9	7.0	7.2	7.3	7.5	6.1	6.3	6.0
TRC (mg/L) Average Monthly	0.28	0.3	0.4	0.4	0.4	0.4	0.35	0.27	0.27	0.27	0.25	0.21
TRC (mg/L) Instantaneous Maximum	0.6	1.1	1.0	1.1	1.0	1.1	0.92	0.62	1.10	0.81	0.99	0.68
CBOD5 (lbs/day) Average Monthly	4	5	7	11	10	8	12	11	8	4	< 2	4
CBOD5 (lbs/day) Influent Average Monthly	185	176	280	200	243	271	354	405	385	326	183	183
CBOD5 (lbs/day) Weekly Average	5	5	8	12	14	11	13	13	15	6	3	5
CBOD5 (mg/L) Average Monthly	5	5	7	9	9	8	12	10	9	5	< 3	4
CBOD5 (mg/L) Influent Average Monthly	207	173	261	162	224	269	356	351	404	377	243	205
CBOD5 (mg/L) Weekly Average	5	5	8	10	12	10	13	11	14	6	4	5
BOD5 (lbs/day) Influent Average Monthly	206	209	270	183	104	655	177	541	377	623	107	326
BOD5 (mg/L) Influent Average Monthly	224	175	251	149	100	544	191	488	484	729	127	362

**NPDES Permit Fact Sheet  
Thornbury Township STP & Sewer System**

**NPDES Permit No. PA0053473**

TSS (lbs/day) Average Monthly	3	7	15	20	23	0.997	19	18	15	5	< 2	5
TSS (lbs/day) Influent Average Monthly	201	301	301	276	433	259	525	488	565	562	200	373
TSS (lbs/day) Weekly Average	7	11	21	28	36	1.111	26	22	32	10	3	6
TSS (mg/L) Average Monthly	4	7	14	16	20	9.70	19	15	15	6	< 2	6
TSS (mg/L) Influent Average Monthly	224	298	283	224	398	259	527	421	590	657	253	412
TSS (mg/L) Weekly Average	8	12	21	23	33	10.80	25	19	30	11	3	8
Total Dissolved Solids (mg/L) Average Monthly		657.0			576			622			682	
Fecal Coliform (No./100 ml) Geometric Mean	< 3	10	< 1	2	6	< 2	7	3	3	5	< 6	< 2
Fecal Coliform (No./100 ml) Instantaneous Maximum	71	88	2	6	18	8	28	21	24	12	40	5
Total Nitrogen (mg/L) Average Monthly	< 52.3	< 56.1	< 51.5	< 48.3	< 48.0	< 44.3	< 49.3	40.26	41.6	< 43.7	< 47.3	< 48.3
Ammonia (lbs/day) Average Monthly	< 0.2	< 0.3	1.0	< 0.2	< 1.0	< 0.030	< 2.1	1.0	1.0	< 0.1	< 0.3	< 0.4
Ammonia (mg/L) Average Monthly	< 0.2	< 0.4	1.0	< 0.2	< 0.9	< 0.3	< 2.07	0.48	0.38	< 0.14	< 0.43	< 0.5
Total Phosphorus (lbs/day) Average Monthly	0.7	0.5	1.0	1.5	< 1.3	1.5	1.2	0.9	1.1	0.8	0.7	0.8
Total Phosphorus (mg/L) Average Monthly	0.8	0.5	1.1	1.2	< 1.2	1.4	1.3	0.8	1.2	0.9	1.0	0.9
Total Copper (mg/L) Average Monthly		0.018			0.019			0.015			0.015	

**Compliance History**

In the last 2 years there was one (1) non-compliance for fecal coliform and two (2) non-compliances for TP. There are no open violations for the facility.

**Development of Effluent Limitations**

<b>Outfall No.</b> <u>001</u>	<b>Design Flow (MGD)</b> <u>0.18</u>
<b>Latitude</b> <u>39° 55' 43.30"</u>	<b>Longitude</b> <u>-75° 31' 22.58"</u>
<b>Wastewater Description:</b> <u>Sewage Effluent</u>	

**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 <sub>5</sub>	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 Technology-Based Limitations are the same as, or greater than, the current permit or model results. The lower limit of the aforementioned limits were chosen for this permit. A WQM model was run and is shown as Attachment A. The results were CBOD<sub>5</sub> (25 mg/l monthly average), NH<sub>3</sub>-N (4 mg/l monthly average and 8 mg/l maximum), and DO (5 mg/l minimum). TRC was evaluated using the DEP TRC spreadsheet (Attachment B) and the effluent limitations were found to be the same or less stringent than the current permit (0.5 mg/l monthly average and 1.6 mg/l instantaneous maximum). Total Nitrogen monitoring was added to the last permit renewal (2015) and is retained in this permit. The Total Phosphorous limit of 2 mg/l will continue in this permit as the most stringent limit. The TRC limits from the previous permit were retained in this permit.

**Water Quality-Based Limitations**

A "Reasonable Potential Analysis" (Attachment C) determined the following parameters were candidates for limitations: Total Dissolved Solids, Chloride, Sulfate, Total Copper, Total Lead, and Total Zinc.

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

Parameter	Limit (mg/l)	SBC	Model
Chloride	Report	1/quarter	Toxics Management Spreadsheet
Sulfate	Report	1/quarter	Toxics Management Spreadsheet
Total Copper	Report	1/quarter	Toxics Management Spreadsheet

Comments: TDS and other parameters were also compared to DRBC docket D-2003-4-CP. It is noted in the 2015 Fact Sheet that TDS was added to the permit as recommended by the DRBC. TDS monitoring is retained in this permit renewal. Chloride and sulfate will not be added to this permit due to the low levels of the parameters found in the effluent.

**Best Professional Judgment (BPJ) Limitations**

Comments: None

**Anti-Backsliding**

None



Attachment A



Attachment B



Attachment C

**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: Effective Date through Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> 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	Recorded
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
TRC	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
CBOD5	38	60	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	45	68	XXX	30	45	60	1/week	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	Report 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	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000*	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia Nov 1 - Apr 30	18.0	XXX	XXX	12.0	XXX	24	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	6.0	XXX	XXX	4.0	XXX	8	1/week	24-Hr Composite
Total Phosphorus	3.0	XXX	XXX	2.0	XXX	4	1/week	24-Hr Composite
Total Copper	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: \*During winter season from October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested.

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment A)
<input checked="" type="checkbox"/>	PENTOXSD for Windows Model (see Attachment C)
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment B)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment )
<input checked="" type="checkbox"/>	Toxics Screening Analysis Spreadsheet (see Attachment C)
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: SOP for "Establishing Effluent Limitations for Individual Sewage Permits" (Final November 9, 2012; Revised January 6, 2020; Version 1.7) SOP for New and Reissuance Sewage Individual NPDES Permit Applications (Final November 9, 2012; Revised January 6, 2020; Version 1.9)
<input type="checkbox"/>	Other: