pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0050458**
Facility Type	**Non-Municipal**	APS ID	**1088206**
Major / Minor	**Minor**	Authorization ID	**1439214**

Applicant and Facility Information

Applicant Name	**Aqua PA Wastewater Inc.**	Facility Name	**Culbertson Run WWTP**
Applicant Address	762 W Lancaster Avenue	Facility Address	250 Little Washington Road
	Bryn Mawr, PA 19010-3402		Downingtown, PA 19335
Applicant Contact	Todd Duerr	Facility Contact	Kyle Roberts
Applicant Phone	(610) 645-1122	Facility Phone	(610) 520-6384
Client ID	62614	Site ID	261784
Ch 94 Load Status	Not Overloaded	Municipality	East Brandywine Township
Connection Status	No Limitations	County	Chester
Date Application Received	March 28, 2023	EPA Waived?	No
Date Application Accepted		If No, Reason	Christina River Basin TMDL

Purpose of Application .

Summary of Review

The permittee requests approval for the renewal of a National Pollutant Discharge Elimination System (NPDES) Individual Permit application to discharge 0.053 mgd of treated sewage from Culbertson Run wastewater treatment plant (WWTP) to Culbertson Run, (a tributary to East Branch Brandywine Creek) which is designated as High Quality – Trout Stock Fishes (HQ-TSF) stream under Chapter 93 in watershed 3-H (Christina River Basin).

The treatment plant consists of a comminutor, an influent flow meter, two flow equalization tanks, a flow distribution box, five parallel Modified Ludzak Ettinger treatment trains, each has an anoxic/oxic tank and a clarifier. The treatment trains are followed by two plate settlers, two rapid sand filters, two UV disinfection systems, an aerated sludge holding tank, two effluent pump stations. No upgrades are proposed at this time.

The only municipality the plant is serving is East Brandywine Township.

Disposal includes discharge to the stream (0.053 mgd), on-site seepage beds (0.062 mgd, under Permit No. 1596401), and off-site at Hideaway Farm disposal beds (0.0396 mgd, issued to East Brandywine Township Municipal Authority under Permit No. 1504407). There is no change in discharge flow or characteristics, and no change in stream designation since the previous permit renewal.

Polyaluminum Chloride (coagulant-phosphorus reduction) and Sodium Carbonate (alkalinity/pH adjustment) are the wastewater treatment chemicals listed in the application.

No industrial users are connected to this sewer system.

eDMR review shows the discharge is in compliance with the existing permit limitations.

Approve	Deny	Signatures	Date
X		*Sara Abraham* Sara Reji Abraham, E.I.T. / Project Manager	June 15, 2023
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	06/16/2023

Summary of Review

According to the 2022 inspection report, the collection system experiences infiltration and /or inflow that causes or could cause O&M problems or interferes with treatment. Report also mentions occurrence of one event of Sanitary/ Sewer Overflow. No comments received from Operations Section. The existing Operation and Maintenance condition is carried over to the draft permit.

The Christina River Basin Total Maximum Daily Load (TMDL) for Nutrients and Dissolved Oxygen for Low-Flow Conditions, was issued by the Environmental Protections Agency (EPA) on January 19, 2001 and subsequently revised in October 2002 and April 2006. Furthermore, DEP prepared, and EPA acknowledged an Alternative Reduction Scenario for the Christina River Basin for Low Flow TMDL dated June 27, 2012 to reassign some of the allocations within the dischargers by keeping the total load to the basin the same. Culbertson Run WWTP is part of the Alternative Reduction Scenario TMDL (Summary Table 14), for parameters: $CBOD_5$, NH_3N, Dissolved Oxygen, Total Nitrogen, and Total Phosphorus.

The Christina River Basin also has an approved TMDL for Nutrient and Low Dissolved Oxygen Under High-Flow Conditions (dated September 2006) for Fecal Coliform, *enterococci*, and TSS, and High-Flow TMDL for Bacteria and Sediment (dated September 2006) for nutrients and CBOD5. The limits for Total Suspended Solids (20 mg/l) and Fecal Coliform (200 No./100ml) will continue in this permit renewal and it is consistent with the High Flow TMDL for Bacteria and Sediment. The high flow TMDL allocations were not adjusted at the time when low flow TMDL under an “Alternative Reduction Scenario” was developed. The Christina River Low-Flow TMDL is the driver for the Christina River High-Flow TDML especially for nutrients; therefore, it is assumed that compliance with the low flow TMDL, satisfies the compliance of the high flow TMDL. Therefore, existing TMDL allocations for all parameters are carried over in the draft permit. No seasonal limits were applied to the nutrient WLAs, therefor this permit is more stringent than the assumptions of the TMDL WLAs.

Influent monitoring for CBOD5, TSS and BOD5 are recommended for the draft permit to check compliance with the 85% removal requirement and Chapter 94 requirement. These are consistent with the requirements of similar discharges in the area.

Sludge use and disposal description and location(s): sludge is hauled away to other WWTPs.

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.

Act 14 Notifications:
East Brandywine Township - March 16, 2023
Chester County Health Department - March 16, 2023

Permit Conditions:

A. No Stormwater
B. Acquire Necessary Property Rights
C. Proper Sludge Disposal
D. Abandon STP when Public Sewers Become Available
E. Chlorine Minimization
F. Small Stream Discharge
G. Fecal Coliform Reporting
H. Operator Notification
I. Maximize Surface Disposal System
J. Operation and Maintenance Plan
K. Solids Management

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.155
Latitude	40º 2' 49.66"	Longitude	-75º 46' 29.65"
Quad Name	Wagontown	Quad Code	1839
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Culbertson Run	Stream Code	00354
NHD Com ID	26105644	RMI	2.3
Drainage Area	1.26 mi^2	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.0779	Q_{7-10} Basis	Pennsylvania StreamStats (previous fact sheet)
Elevation (ft)	564.4	Slope (ft/ft)	2.5
Watershed No.	3-H	Chapter 93 Class.	HQ-TSF, MF
Assessment Status	Impaired		
Cause(s) of Impairment	Other Habitat Alterations, Siltation		
Source(s) of Impairment	Agriculture, Habitat Modification		
TMDL Status	Final	Name	Christina River Basin

Treatment Facility Summary

Treatment Facility Name: Culbertson Run WWTP

WQM Permit No.	Issuance Date
1596401	11/23/2022
1504407	06/30/2022

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia and Phosphorus	Extended Aeration	Ultraviolet	0.145

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.155	323	Not Overloaded		

Compliance History

DMR Data for Outfall 001 (from May 1, 2022 to April 30, 2023)

Parameter	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22
Flow (MGD) Average Monthly	0.0291	0.0315	0.0324	0.0347	0.0294	0.0209	0.0162	0.0115	0.0238	0.0239	0.0305	0.0431
Flow (MGD) Daily Maximum	0.0508	0.0480	0.0430	0.0473	0.0582	0.0397	0.0421	0.0379	0.2233	0.0360	0.0541	0.0860
pH (S.U.) Minimum	6.80	6.73	6.67	6.82	6.93	6.94	6.87	6.86	6.97	6.84	6.92	6.63
pH (S.U.) Maximum	7.27	7.30	7.58	7.76	7.33	7.37	7.32	7.30	7.45	7.12	7.13	7.23
DO (mg/L) Minimum	5.36	5.03	5.15	5.73	5.32	5.44	5.6	5.87	6.03	6.04	5.98	5.86
TRC (mg/L) Average Monthly	0.01	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.04	0.03	0.02
TRC (mg/L) Instantaneous Maximum	0.11	0.08	0.19	0.07	0.12	0.10	0.06	0.17	0.12	0.14	0.08	0.16
CBOD5 (lbs/day) Average Monthly	< 0.73	0.79	< 0.76	0.88	< 0.90	< 0.34	< 0.25	< 0.27	0.54	< 0.39	< 0.56	1.01
CBOD5 (lbs/day) Raw Sewage Influent Average Monthly	164	118	148	154	119	72	87	119	94	187	131	114
CBOD5 (mg/L) Average Monthly	< 2.75	2.85	< 2.60	2.35	< 3.30	< 2.00	< 2.3	< 2.00	3.14	< 2.00	< 2.00	3.00
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	245	160	201	213	193	139	172	199	183	337	208	165
TSS (lbs/day) Average Monthly	0.56	0.93	0.81	1.12	0.69	0.96	0.27	< 0.13	0.61	0.36	0.33	1.21
TSS (lbs/day) Raw Sewage Influent Average Monthly	144	123	151	242	184	88	100	77	44	60	89	178
TSS (mg/L) Average Monthly	2.60	3.40	2.80	3.00	2.55	4.60	1.80	< 0.90	3.80	1.60	0.90	3.6

TSS (mg/L) Raw Sewage Influent Average Monthly	215	166	205	333	310	166.00	197	126	82	107	142	259
Fecal Coliform (No./100 ml) Average Monthly	< 1.00	< 2.00	< 18.00	6.50	< 1.00	11.45	3.46	5	2.83	< 3.00	1.41	2.24
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1.00	4.00	276.00	11.00	< 1.00	131.00	4.0	6	4.00	5.00	2.00	5.00
UV Transmittance (%) Average Monthly	81.9	86.9	83.9	73.5	73.7	84.2	75.6	75.19	70.48	69.67	72.41	78.92
Nitrate-Nitrite (lbs/day) Average Monthly	< 1.54	< 1.75	2.08	< 1.72	< 1.70	< 1.06	1.03	< 0.56	< 0.87	< 0.78	< 1.32	< 2.03
Nitrate-Nitrite (mg/L) Average Monthly	< 6.2	< 6.62	7.13	< 4.59	< 6.70	< 6.03	6.86	< 4.00	< 5.40	< 4.05	< 4.95	< 6.01
Total Nitrogen (lbs/day) Average Monthly	< 2.04	< 2.17	2.54	< 3.14	< 1.91	< 1.21	1.29	< 0.69	< 1.02	< 0.94	< 1.64	< 2.25
Total Nitrogen (mg/L) Average Monthly	< 8.2	< 8.10	8.74	< 8.43	< 7.58	< 6.91	8.55	< 4.91	< 6.35	< 4.88	< 6.13	< 6.65
Ammonia (lbs/day) Average Monthly	< 0.12	< 0.13	< 0.18	1.01	< 0.13	< 0.08	< 0.09	< 0.07	< 0.08	< 0.10	< 0.14	< 0.2
Ammonia (mg/L) Average Monthly	< 0.50	< 0.50	< 0.64	2.74	< 0.51	< 0.50	< 0.60	< 0.50	< 0.50	< 0.50	< 0.50	< 0.5
TKN (lbs/day) Average Monthly	0.50	0.41	0.46	1.42	< 0.21	0.15	0.26	0.13	0.15	0.16	0.32	< 0.2
TKN (mg/L) Average Monthly	2.00	1.48	1.60	3.84	< 0.88	0.89	1.70	0.91	0.95	0.83	1.18	< 0.63
Total Phosphorus (lbs/day) Average Monthly	0.07	0.06	0.05	0.10	0.04	0.04	0.01	0.02	0.03	0.04	0.07	0.1
Total Phosphorus (mg/L) Average Monthly	0.26	0.21	0.19	0.28	0.16	0.23	0.08	0.14	0.17	0.19	0.27	0.36

DMR Data for Outfall 002 (from May 1, 2022 to April 30, 2023)

Parameter	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22
Flow (GPD) Average Monthly	42100	42100	0.0421	42100	42100	42100	41400	42392	42056	42071	40800	42100

pH (S.U.) Instantaneous Minimum	6.80	6.73	6.67	6.82	6.93	6.94	6.87	6.86	6.97	6.84	6.92	6.63
pH (S.U.) Instantaneous Maximum	7.27	7.30	7.58	7.76	7.33	7.37	7.32	7.30	7.45	7.12	7.13	7.23
CBOD5 (mg/L) Average Monthly	3.95	< 2.65	< 2.55	2.65	< 2.90	< 2.00	< 2.60	< 2.00	< 2.00	3.67	< 2.00	< 3.6
TSS (mg/L) Average Monthly	2.20	4.20	2.40	1.60	2.50	4.20	< 1.1	< 1.30	1.20	< 1.30	< 1.50	3.6
Fecal Coliform (No./100 ml) Geometric Mean	< 1.00	< 2.45	2.00	2.00	< 1.41	< 6.56	3	< 1.00	< 1.00	< 1.00	< 2.00	< 1
Total Nitrogen (mg/L) Average Monthly	< 7.99	< 8.52	8.13	< 6.20	< 7.65	< 6.87	8.43	< 5.12	< 6.31	< 4.91	< 6.12	< 6.64

Compliance History

None

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .053
Latitude 40º 2' 51.00" **Longitude** -75º 46' 30.00"
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)

Water Quality-Based Limitations

The following are the effluent limitations determined to be included in the draft permit

Parameter	Limit (mg/l)	SBC	Model/Basis
CBOD5	6.6	Average Monthly	Alternative Reduction Scenario for the Christina River Basin for Low Flow TMDL
NH3-N	2.0	Average Monthly	
Total Nitrogen	15	Average Monthly	
Total Phosphorus	0.66	Average Monthly	
Dissolved Oxygen*	5.0	Average Monthly	Chap.93
Total Residual Chlorine**	0.2	Average Monthly	Existing
Total Suspended Solids	20	Average Monthly	Christina River Basin High-Flow TMDL for Bacteria and Sediment
Fecal Coliform	# 200 /1000	Geo. Mean/1000	
UV light transmittance (%)	Report	Daily Minimum	Existing
Nitrate-Nitrite as N	Report	Average Monthly	Existing
Total Kjeldahl Nitrogen	Report	Average Monthly	Existing
E. Coli**	Report	Imax	SOP
pH	6.0 to 9.0 SU at all the time		Chap.93

*more stringent than the WLA listed under Christina River Basin TMDL Alternative Reduction Scenario
**Chlorine is used for back up disinfection.
******* E. Coli is the only new parameter in the draft permit. All other limits are existing.

Anti-Backsliding

N/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	Average Weekly	Minimum	Average Monthly	Maximum	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	0.2	XXX	0.4	1/day	Grab
CBOD5 Nov 1 - Apr 30	5.86	XXX	XXX	13.2	XXX	26.4	2/month	24-Hr Composite
CBOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
CBOD5 May 1 - Oct 31	2.93	XXX	XXX	6.6	XXX	13.2	2/month	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/month	24-Hr Composite
TSS	5.86	XXX	XXX	20.0	XXX	40	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	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)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
UV Transmittance (%)	XXX	XXX	Report Daily Minimum	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Nitrogen	6.63	XXX	XXX	15.0	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	2.64	XXX	XXX	6.0	XXX	12	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	0.88	XXX	XXX	2.0	XXX	4	2/month	24-Hr Composite
TKN	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	0.29	XXX	XXX	0.66	XXX	1.32	2/month	24-Hr Composite