pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0030228**
Facility Type	**Non-Municipal**	APS ID	**1058507**
Major / Minor	**Minor**	Authorization ID	**1387968**

Applicant and Facility Information

Applicant Name	**East Brandywine Township Municipal Authority**	Facility Name	**Keats Glen STP**
Applicant Address	1214 Horseshoe Pike	Facility Address	100 Bond Drive
	Downingtown, PA 19335-1132		Downingtown, PA 19335-1330
Applicant Contact	Jan Bednarchik	Facility Contact	Jan Bednarchik
Applicant Phone	(610) 269-8230	Facility Phone	(610) 942-3000
Client ID	226713	Site ID	446025
Ch 94 Load Status	Not Overloaded	Municipality	East Brandywine Township
Connection Status		County	Chester
Date Application Received	February 26, 2022	EPA Waived?	No
Date Application Accepted		If No, Reason	TMDL
Purpose of Application	Permit Renewal		

Summary of Review

The applicant requests renewal of an NPDES permit to discharge sewage from Keats Glen STP to an Unnamed Tributary to Beaver Creek. The STP is located at the Delaware County Community College northwest of Downingtown, along Route 322.

The facility is a PureStream Package plant consists of anoxic zone, aeration tank, clarifier, post aeration tank and a sludge holding tank. The wastewater treatment chemicals listed in the application are 12.5% sodium hypochlorite (disinfection), PAC (phosphorus control) and Sodium Bisulfite (dichlorination). Sludge is hauled away to DELCORA WWTP.

No upgrades are proposed for the next five years. No industrial users are connected to the sewer system.

Based on the review of eDMRs, the discharge is in compliance with existing effluent limitations most of the times. According to Operations Section the facility is operating very well.

The effluent limits for this draft permit are mainly a continuation of the existing permit limits that were originally developed by the Department. The Christina River Basin TMDL for nutrients and dissolved oxygen for low-flow conditions, issued by the Environmental Protection Agency (EPA) in January 2001, and revised in October 2002, April 2006, and March 2012, includes this discharge. In the TMDL document, Summary Table 14 lists the wasteload allocations. These allocations were based on a flow of 0.0225 mgd.

Revisions to the Christina River Basin TMDL for nutrients and dissolved oxygen for low-flow conditions were made in a letter to EPA dated June 27, 2012 and confirmed by EPA on August 29, 2012. In the TMDL document, Table 14, the limits were updated to mirror the actual permitted discharge for the facility of 0.0181 mgd.

Approve	Deny	Signatures	Date
X		*Sara Abraham* Sara Reji Abraham, E.I.T. / Project Manager	April 11, 2022
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	04/12/2022

Summary of Review

Listed in Table 14: TMDL summary for Brandywine Creek East Branch - (Alternate Reduction Scenario) as below:

Keats Glen STP PA0030228	CBOD5	NH3-N	TN	TP	DO
mg/l	8.7	1.2	25	3.7	6.2
lb/day	1.314	0.188	3.773	0.563	0.939

At the previous permit renewal, the mass limits were calculated for CBOD5, NH3-N and TN using the original concentration limits and actual permitted flow of 0.0181 mgd and as below. Ultimately the most stringent limits were used for these parameters in the permit.

Keats Glen STP PA0030228	CBOD5	NH3-N	TN	TP*	DO**
mg/l	7.0	1.0	25	2.0	6.2
lb/day	1.06	0.15	3.77	0.3	

* Phosphorus limit set in the past permits of 2 mg/l is continued for this draft permit. This phosphorus limit is based on Chapter 96, Section 96.5, which says that phosphorus discharges from point sources shall be limited to an average monthly concentration of 2 mg/l.

**The existing DO limit is changed in the draft permit to be consistent with the TMDL.

This discharge is also listed under High-low (Table 2.2) TMDL for Bacteria and Sediment and the WLAs are as below:

TSS = 20 mg/l, Fecal Coliform = 200 cfu/100ml

Listed in TMDLs for Nutrient and low Dissolved Oxygen under High-Flow conditions (Table 2-2) under Brandywine Creek East Branch as below:

Keats Glen STP PA0030228	CBOD5	NH3-N		TP
mg/l	7	1		3
kg/day	0.6	0.09		0.26

The recommended NPDES permit limits meet or exceed the WLA requirements of the High Flow TMDL for Nutrients, Low Dissolved Oxygen, Bacteria and sediment.

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

Sludge use and disposal description and location(s): Sludge is hauled away to DELCORA WWTP.

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.

Summary of Review

Act 14 Notifications:

East Brandywine Township - January 26, 2022
Chester County Health Department - February 22, 2022

Permit Conditions:

A. No Stormwater
B. Acquire Necessary Property Rights
C. Proper Sludge Disposal
D. Chlorine Optimization
E. Operator Notification
F. Fecal Coliform Reporting
G. Solids Management

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.0181
Latitude	40º 1' 8.30"	Longitude	-75º 47' 2.68"
Quad Name		Quad Code	
Wastewater Description:	Treated Sewage Effluent		
Receiving Waters	Unnamed Tributary to Beaver Creek (CWF, MF)	Stream Code	00301
NHD Com ID	26105678	RMI	2.1
Watershed No.	3-H	Chapter 93 Class.	CWF, MF
Assessment Status	Attaining Use(s)		
TMDL Status	Final	Name	Christina River Basin

Treatment Facility Summary

Treatment Facility Name: Keats Glen STP

WQM Permit No.	Issuance Date
1500413	06/06/2000

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.0181

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0225	48.8	Not Overloaded	Holding Tank	Other WWTP

Compliance History

DMR Data for Outfall 001 (from March 1, 2021 to February 28, 2022)

Parameter	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21
Flow (MGD) Average Monthly	0.00764	0.0076	0.008	0.0077	0.0061	0.0058	0.0059	0.00528	0.0064	0.0063	0.0083	0.0084
Flow (MGD) Daily Maximum	0.01151	0.0123	0.012	0.012	0.010	0.0114	0.0086	0.00792	0.0163	0.012	0.0133	0.0173
pH (S.U.) Instantaneous Minimum	6.5	6.3	6.3	6.0	6.6	6.6	6.6	6.6	6.7	6.2	6.5	6.8
pH (S.U.) Instantaneous Maximum	7.8	7.1	7.4	7.5	7.1	7.0	7.4	7.4	7.5	7.1	7.7	7.1
DO (mg/L) Minimum	9.3	9.7	9.0	7.4	7.4	7.0	7.1	7.6	7.1	7.5	7.8	6.6
TRC (mg/L) Average Monthly	0.2	0.4	0.3	0.3	0.01	0.2	< 0.01	0.2	0.3	0.2	0.2	0.2
TRC (mg/L) Instantaneous Maximum	0.9	0.9	0.9	0.8	0.3	0.4	0.7	0.4	0.9	0.5	0.7	0.8
CBOD5 (lbs/day) Average Monthly	0.60	0.40	0.30	0.20	0.10	0.10	0.10	0.10	0.20	0.30	0.60	0.50
CBOD5 (lbs/day) Weekly Average	0.6	0.6	0.30	0.3	0.1	0.2	0.2	0.1	0.30	0.30	0.7	0.50
CBOD5 (mg/L) Average Monthly	8	6	5	4	3.0	3.0	3.0	2.0	5.0	6.0	10	7
CBOD5 (mg/L) Weekly Average	8.1	7	5.3	4	3.1	4.6	4	2.5	6	6.1	10	9
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	22	21	16	11	5	8	8	6	5	8	14	14
BOD5 (lbs/day) Raw Sewage Influent Weekly Average	23	26	16	14	5	11	17	6	6	8	14	15
BOD5 (mg/L) Raw Sewage Influent Average Monthly	323	282	270	184	113	203	148	135	108	164	205	209

BOD5 (mg/L) Raw Sewage Influent Weekly Average	330	332	279	204	149	285	272	160	123	170	221	253
TSS (lbs/day) Average Monthly	0.4	0.6	< 0.1	0.1	0.6	0.2	0.3	0.3	0.4	1.0	1.8	1.1
TSS (lbs/day) Raw Sewage Influent Average Monthly	9	10	6	5	2	10	11	2	4	4	5	6
TSS (lbs/day) Raw Sewage Influent Weekly Average	13	12	7	6	2	18	28	3	4	4	5	9
TSS (lbs/day) Weekly Average	0.5	0.9	0.2	0.1	0.8	0.4	0.4	0.3	0.7	1.6	2.2	1.7
TSS (mg/L) Average Monthly	6	8	< 3	2	16	5	8	7	10	19	28	17
TSS (mg/L) Raw Sewage Influent Average Monthly	124	141	107	80	53	248	190	55	74	77	68	97
TSS (mg/L) Raw Sewage Influent Weekly Average	190	150	116	88	62	447	440	60	94	84	68	142
TSS (mg/L) Weekly Average	7	11	4	3	23	9	8	7	15	32	37	28
Fecal Coliform (CFU/100 ml) Geometric Mean	38	22	< 3	< 72	32	41	42	52	< 2	< 4	41	81
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	48	30	5	2600	44	54	58	86	3	10	74	170
Total Nitrogen (lbs/day) Average Monthly	1.17	1.07	0.70	< 0.60	0.60	< 0.50	0.90	0.40	0.60	0.90	1.15	0.90
Total Nitrogen (mg/L) Average Monthly	17	15	13	< 10	14	< 11	21	9	13	19	17	13
Total Nitrogen (mg/L) Daily Maximum	18	18	14	11	14	12	21	11	15	21	18	13
Ammonia (lbs/day) Average Monthly	0.007	< 0.01	0.06	< 0.002	< 0.01	< 0.004	< 0.01	< 0.01	< 0.005	< 0.01	0.02	< 0.02
Ammonia (mg/L) Average Monthly	0.1	< 0.1	1.0	< 0.04	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.12	0.3	< 0.26

Total Phosphorus (lbs/day) Average Monthly	0.01	0.01	0.01	0.01	0.01	0.01	< 0.01	0.01	0.02	0.02	0.06	0.04
Total Phosphorus (mg/L) Average Monthly	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.3	0.4	0.4	1.2	0.6

Compliance History

Effluent Violations for Outfall 001, from: April 1, 2021 To: February 28, 2022

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	04/30/21	Avg Mo	28	mg/L	20	mg/L
TSS	05/31/21	Wkly Avg	32	mg/L	30	mg/L
TSS	04/30/21	Wkly Avg	37	mg/L	30	mg/L
Fecal Coliform	11/30/21	IMAX	2600	CFU/100 ml	1000	CFU/100 ml

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0181
Latitude 40º 1' 32.31" **Longitude** -75º 44' 31.98"
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

Parameter	Limit (mg/l)	SBC	Basis
CBOD5(05/01 to 10/31)	7.0	Average Monthly	TMDL/existing
CBOD5(11/01 to 4/30)	14	Average Monthly	Seasonal limitation
TSS	20	Average Monthly	TMDL/existing
Dissolved Oxygen*	6.2	Inst. Minimum	TMDL
NH3-N (5/1 to 10/31)	1.0	Average Monthly	TMDL/existing
NH3-N (11/1 to 4/31)	3.0	Average Monthly	Seasonal limitation
pH	6.0 to 9.0 STD at all times		Ch. 92a
Fecal Coliform	# 200/1000	Geo. Mean / IMax.	Ch.92a / DRBC
TRC	0.4	Average Monthly	existing
Total N	25	Average Monthly	TMDL/existing
Total Phosphorus	2.0	Average Monthly	existing
E-Coli**	Report	Inst. Maximum	SOP

*DO is changed to 6.2 and the data shows the facility can easily meet this limit.

**E-Coli monitoring is included in the draft permit according to the DEP SOP guidance (Chapter 92.a.61). This is a new requirement and is consistent with the requirements of other similar discharges in the area.

Best Professional Judgment (BPJ) Limitations

N/A

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	Weekly Average	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	6.2 Inst Min	XXX	XXX	XXX	1/week	Grab
TRC	XXX	XXX	XXX	0.4	XXX	0.9	1/day	Grab
CBOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
CBOD5 Nov 1 - Apr 30	2.12	3.0	XXX	14	20	28	2/month	24-Hr Composite
CBOD5 May 1 - Oct 31	1.06	1.5	XXX	7.0	10	14	2/month	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
TSS	3.0	4.5	XXX	20	30	40	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	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/year	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)	Required
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Total Nitrogen	3.77	XXX	XXX	25	50 Daily Max	62.5	2/month	24-Hr Composite
Ammonia Nov 1 - Apr 30	0.45	XXX	XXX	3.0	XXX	6	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	0.15	XXX	XXX	1.0	XXX	2	2/month	24-Hr Composite
Total Phosphorus	0.30	XXX	XXX	2.0	XXX	4	2/month	24-Hr Composite