pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Amendment, Major**	Application No.	**PA0023434 A-1**
Facility Type	**Non-Municipal**	APS ID	**1041598**
Major / Minor	**Minor**	Authorization ID	**1359038**

Applicant and Facility Information

Applicant Name	**PA American Water Co.**	Facility Name	**Koppel Borough WWTP**
Applicant Address	425 Waterworks Road	Facility Address	5001 5th Avenue
	Clarion, PA 16214-2343		Koppel, PA 16136-1129
Applicant Contact	Jed Fiscus	Facility Contact	Jed Fiscus
Applicant Phone	(814) 226-9083	Facility Phone	(814) 226-9083
Client ID	87712	Site ID	257788
Ch 94 Load Status	Not Overloaded	Municipality	Koppel Borough
Connection Status	No Limitations	County	Beaver
Date Application Received	June 9, 2021	EPA Waived?	Yes
Date Application Accepted	August 3, 2021	If No, Reason	
Purpose of Application	Major amendment to the NPDES permit.		

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit amendment application from Gwin Dobson & Foreman Inc. (Consultant) on behalf of Pennsylvania-American Water Company (PAWC/permittee) on June 09, 2021. The amendment application was submitted to replace the gaseous chlorine disinfection system with an Ultra-Violet Irradiation (UV) disinfection system for Keppel Wastewater Treatment Plant (facility). The facility is located in Koppel Borough, Beaver County. The current NPDES permit was issued in February 04, 2020 which will expire in March 31, 2025.

NPDES permit amendment authorizations are not covered by PADEP's PDG per 021-2100-001.

This fact sheet is prepared per the instructions in PADEP's SOP titled "Applications for Amendments and Transfers of NPDES and WQM Permits" (SOP No. BPMPSM-PMT-029, revised November 7, 2013). The SOP recommends a fact sheet is to be prepared to accompany draft NPDES permit and will documents a summary of the proposal and review. Therefore, this review will be limited to the UV disinfection portion of the system and resulting changes made in the permit.

Sludge use and disposal description and location(s): Biosolids are treated in aerated sludge digester and landfilled.

Changes in this permit: UV intensity in $\mu W/cm^2$ is added.

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		Reza H. Chowdhury, E.I.T. / Project Manager	August 10, 2021
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	08/11/2021

Treatment Facility Summary

Treatment Facility Name: Koppel Borough WWTP

WQM Permit No.	Issuance Date
0474418 A-2	03/30/2020
0418403	06/25/2018

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Primary	Septic Tank	Ultraviolet, Gas Chlorine as backup	0.162

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.24	408	Not Overloaded	Aerated digester	landfill

Other Comments:

Treatment Plant Summary and UV Disinfection:

The Koppel Wastewater Treatment Plant is a Sanitaire Intermittent Cycle Extended Aeration System (ICEAS) treatment system constructed in 2004. The plant's influent passes through an inline grinder prior to the two treatment units. Chlorine gas is usually utilized for disinfection of the plant's effluent, fed from a 150 lbs. cylinders. Chlorine is fed at two existing points at the chlorine contact tank. The existing chlorine contact tank, and thus the chlorine gas disinfection process was removed and replaced with UV disinfection system under a WQM permit amendment 0474418 A-2, issued on March 30, 2020. The WQM permit detailed the technical specification of the UV system and its effectiveness.

Two closed reactor type non-contact UV units were installed in parallel, each with one single bank UV reactor. Each channel is rated to disinfect up to 100% of the design peak hourly flow of the unit, or 2.16 MGD. To accommodate future plant expansion, each UV unit is capable of treating a peak flow of 4.32 MGD. Each reactor consists of one bank with seven racks and twelve lamps per rack, resulting 84 lamps for each train and 168 in total. One control panel per UV unit is installed to provide complete control and disinfection capability redundancy.

The UV provides a UV dosage of at least 40 mJ/cm^2 which exceeded the disinfection requirements of the industry standard of 30 mJ/cm^2. UV light intensity in units of $\mu W/cm^2$ will be placed in the permit with same frequency as TRC, 5/week. The consultant, in an email on August 04, 2021, stated that the new UV system was fully tested and was ready for operation on April 23, 2021. A PADEP inspection was held on site on April 30, 2021 in which PADEP approved of going fully operational with the new UV system. On May 03, 2021, the UV system began operation as the primary effluent disinfection at the WWTP and the contractor began decommissioning the chlorine contact tank No. 1. As of the beginning of May, the UV system has been live and fully operational. Operators were monitoring UV light intensity on a daily basis.

In the event that the new UV systems experience a failure and both of the UV systems are unable to operate, the facility will have the capability to utilize liquid chlorine at the SBR effluent and subsequent dechlorination prior to the plant effluent discharge. PADEP grants the request to keep liquid chlorine as back-up disinfection method in rare emergency situation. The existing average monthly and IMAX limits of 0.5 mg/l and 1.6 mg/l will be kept in the Part A of the permit. The permittee may use appropriate NODI code when chlorine is not utilized.

Compliance History

DMR Data for Outfall 001 (from July 1, 2020 to June 30, 2021)

Parameter	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20
Flow (MGD) Average Monthly	0.095	0.140	0.114	0.152	0.125	0.156	0.190	0.124	0.125	0.132	0.153	0.123
Flow (MGD) Daily Maximum	0.146	0.549	0.299	0.509	0.400	0.425	0.343	0.252	0.447	0.550	0.688	0.193
pH (S.U.) Instantaneous Minimum	7.1	7.0	6.9	6.9	6.9	7.0	7.0	7.1	7.1	7.1	7.0	7.0
pH (S.U.) Instantaneous Maximum	7.2	7.3	7.2	7.1	7.2	7.1	7.3	7.3	7.3	7.3	7.3	7.3
DO (mg/L) Instantaneous Minimum	5.5	5.82	5.2	7.65	8.2	7.5	7.2	6.8	7.12	6.68	6.07	6.81
TRC (mg/L) Average Monthly	GG	0.22	0.28	0.27	0.26	0.23	0.27	0.31	0.24	0.44	0.44	0.20
TRC (mg/L) Instantaneous Maximum	GG	0.40	0.4	0.40	0.45	0.37	0.55	0.52	0.52	0.67	1.99	0.31
CBOD5 (lbs/day) Average Monthly	< 3.0	< 9.3	< 2.6	< 7.7	< 3.8	< 3.8	< 5.0	< 2.6	< 3.4	< 7.0	< 6.0	< 3.2
CBOD5 (lbs/day) Weekly Average	5.2	26.2	< 2.9	26.5	< 5.2	< 5.8	< 7.9	< 3.7	< 7.0	22.0	12.6	< 3.7
CBOD5 (mg/L) Average Monthly	< 3.4	< 5.8	< 3	< 4.9	< 3	< 3.0	< 3.0	< 3.0	< 3.0	< 4.2	< 6.5	< 3.0
CBOD5 (mg/L) Weekly Average	5.0	14.2	< 3.0	12.5	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	7.3	13.4	< 3.0
BOD5 (mg/L) Raw Sewage Influent Average Monthly	< 32	< 29	94	< 38	324	< 372	< 71	180	256	65	46.9	41
TSS (lbs/day) Average Monthly	< 2.9	< 6.0	< 5.4	< 5.6	< 6.8	< 5.8	< 7.5	< 5.0	< 6.3	< 4.9	< 6.5	< 3.5
TSS (lbs/day) Weekly Average	3.9	9.2	11.0	14.8	13.9	9.5	15.7	7.2	18.6	9.1	15.1	3.7
TSS (mg/L) Average Monthly	< 3.4	< 4.3	< 6.5	< 4	< 5.3	< 4.8	< 4.4	< 6	< 4.3	< 3.8	< 6.8	< 3.3
TSS (mg/L) Raw Sewage Influent Average Monthly	25	20	101	37	1260	639	141	407	665	65	68	90

TSS (mg/L) Weekly Average	5.0	5.0	14	7	8	8.0	6.0	10	8.0	6.0	16.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	< 2	15	< 1	< 2	< 2	7	12	6	< 1	< 2	1	1
Fecal Coliform (No./100 ml) Instantaneous Maximum	11	205	1	12	15	86	105	29	1	8	1	1
Total Nitrogen (mg/L) Daily Maximum							2.24					
Ammonia (mg/L) Average Monthly	0.76	0.71	0.23	0.41	0.29	0.24	0.30	0.34	0.26	2.0	3.07	0.20
Total Phosphorus (mg/L) Daily Maximum							0.70					

Compliance History

Effluent Violations for Outfall 001, from: August 1, 2020 To: June 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	08/31/20	IMAX	1.99	mg/L	1.6	mg/L

Other Comments: The permittee submitted a Non-compliance report form to report the TRC IMAX violation on August 21, 2020. The report indicated that a large water main break occurred just above the WWTP, causing chlorinated water to overload the plant influent. The permittee added dechlorination tablets to the plant influent and effluent and brought back to compliance within 20 minutes.

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	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	5/week	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	5/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	5/week	Grab
UV Intensity ($\mu W/cm^2$)	XXX	XXX	Report	XXX	XXX	XXX	5/week	Recorded
CBOD5	50.1	75.1	XXX	25	37.5	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	60.1	90.1	XXX	30	45	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	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	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: At Outfall 001

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model 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:
☐	Other: