pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0045802**
Facility Type	**Non-Municipal**	APS ID	**1026308**
Major / Minor	**Minor**	Authorization ID	**1332324**

Applicant and Facility Information

Applicant Name	**SBK Investments LLC & 2MB Investments Inc. Joint Client**	Facility Name	**Stanton Hills Community STP**
Applicant Address	9820 Irvine Center Drive Suite 200	Facility Address	123 Sugar Pine Lane
	Irvine, CA 92618-4385		New Stanton, PA 15672-9647
Applicant Contact	Emily Brooke	Facility Contact	***same as applicant***
Applicant Phone	(619) 507-3353	Facility Phone	***same as applicant***
Client ID	359323	Site ID	250343
Ch 94 Load Status	Not Overloaded	Municipality	Hempfield Township
Connection Status		County	Westmoreland
Date Application Received	October 18, 2019	EPA Waived?	Yes
Date Application Accepted	November 3, 2020	If No, Reason	

Purpose of Application: NPDES permit renewal for existing discharges of treated sewage.

Summary of Review

NPDES Permit PA0045802 was issued to Mr. Franklin Taddeo on June 24, 2014 for discharges of treated sewage from the Pineview Manor Mobile Home Park Sewage Treatment Plant. The permit took effect on July 1, 2014 and expired on June 30, 2019. By letter dated August 21, 2019, DEP sent a Notice of Violation to Mr. Taddeo stating that he was in violation of the Clean Streams Law for failing to submit a timely permit renewal application and for continuing to discharge without a permit. The letter advised Mr. Taddeo to submit a permit application by October 21, 2019.

Mr. Taddeo requested copies of the permit application forms, which DEP sent to Mr. Taddeo on August 27, 2019. On September 3, 2019, Mr. Taddeo sent a renewal application fee without application documents. DEP returned the $60 renewal fee on September 6, 2019 and again sent Mr. Taddeo copies of the permit application forms. DEP also requested a fee of $500 for a new permit since the previous permit had expired without being administratively extended. Mr. Taddeo submitted a NPDES permit application on October 15, 2019, which was received by DEP on October 18, 2019. The application was missing the General Information Form, the Act 14 Notice, and a topographic map. The missing application documents were received by DEP on November 8, 2019. Due to staffing shortages, DEP did not act on the application at that time.

On October 30, 2020, DEP received an application from Mr. Taddeo to transfer Water Quality Management (WQM) Permit No. 6570410—the WQM permit for the site's sewage treatment plant (STP)—to SBK Investments LLC & 2MB Investments Inc. (joint client). In accordance with the February 2020 change in ownership documented on the October 30, 2020 transfer application, the pending NPDES permit will be issued to the new owners. For continuity, the new permit will maintain the same permit number as the expired permit. However, the facility will be identified as the Stanton Hills Community STP.

The new permit imposes a new annual reporting requirement for *E.Coli*. Also, new water quality-based effluent limits are imposed for Total Residual Chlorine. No schedule is included for the new TRC limits because the permittee is expected to comply. All other permit limits and monitoring requirements are the same as those in the previous (expired) permit.

Approve	Deny	Signatures	Date
X		*Ryan C. Decker* Ryan C. Decker, P.E. / Environmental Engineer	June 14, 2021
X		*James Vanek* James Vanek, P.E. / Environmental Engineer	June 16, 2021

Summary of Review

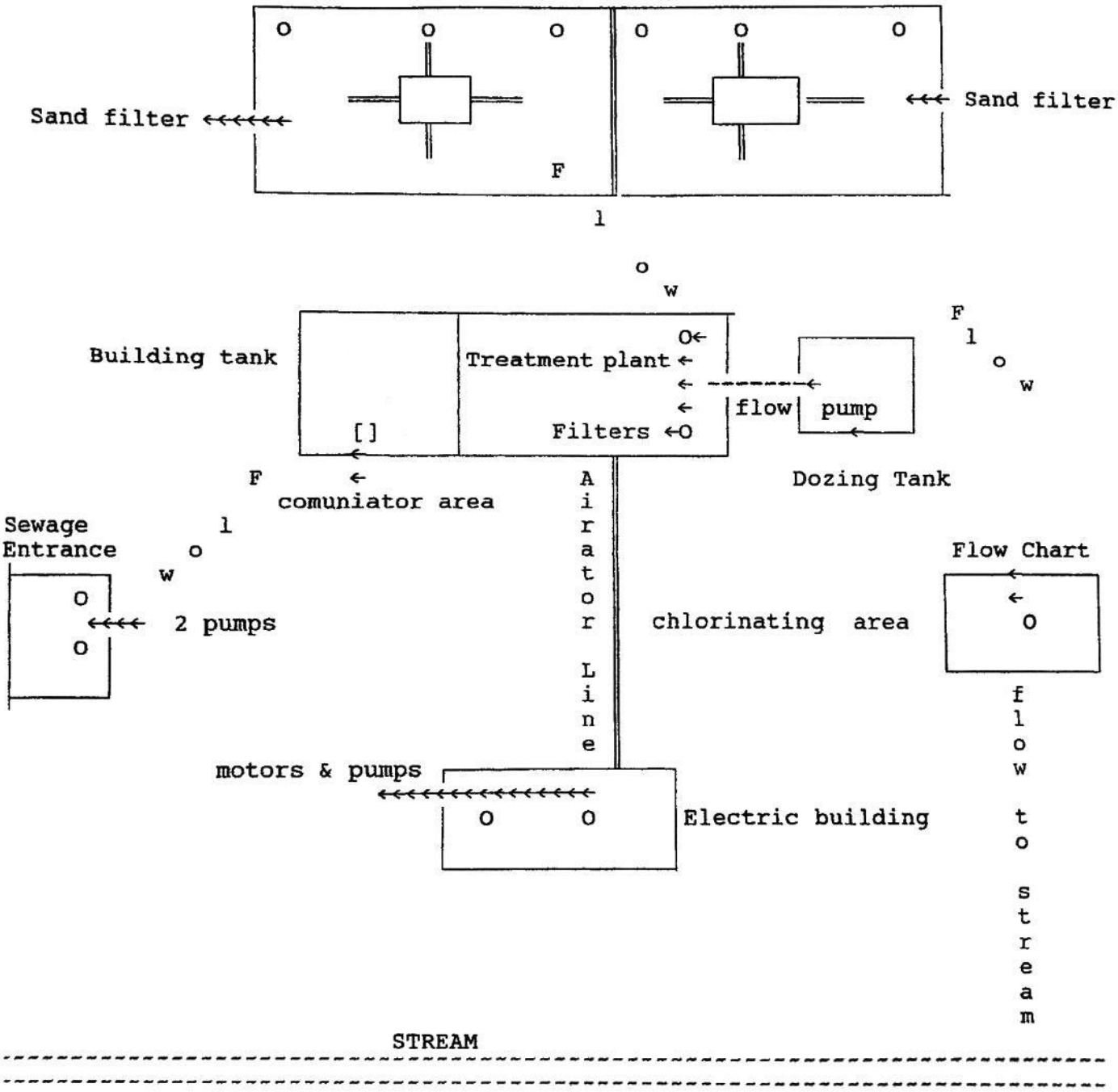
Sludge use and disposal description and location(s): Sludge is pumped and hauled to the Clairton Municipal Authority STP (PA0026824).

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.

Aerial Image of STP and Outfall 001; Image Source and Date: Google Earth Pro, April 2016.

DETAILED FLOWCHART



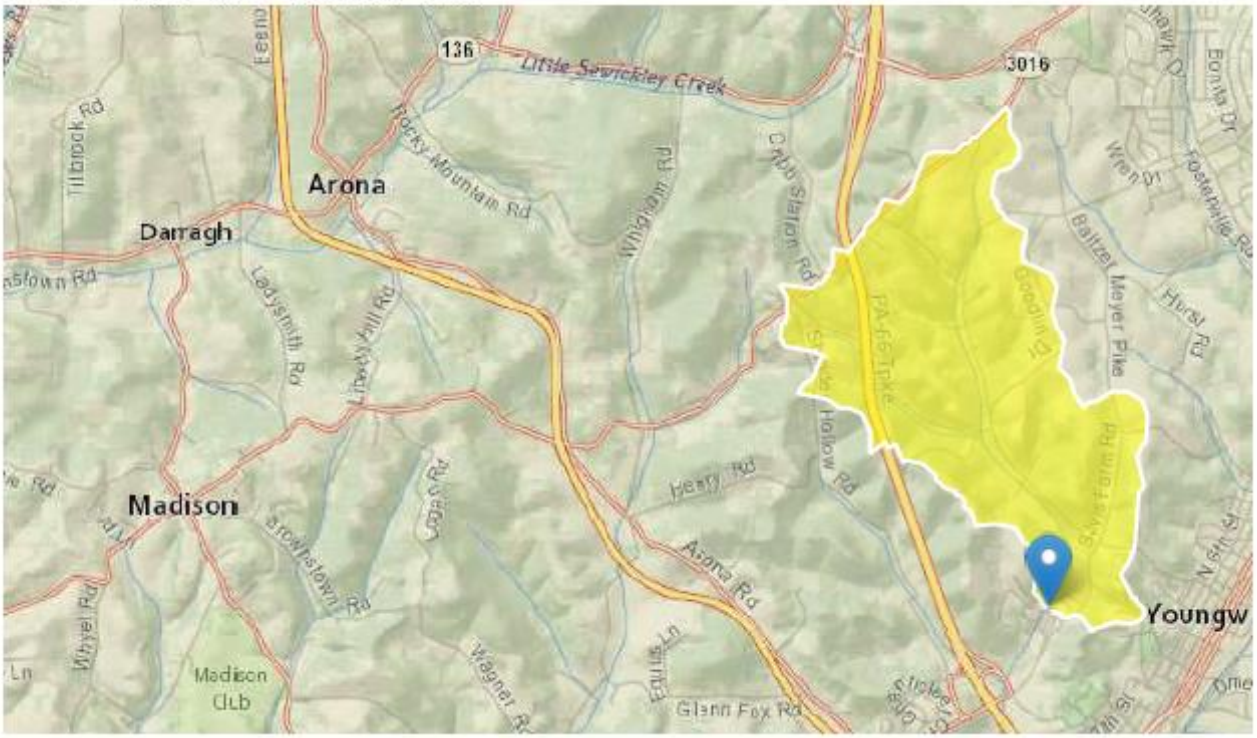
Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.018
Latitude	40° 14' 23.08"	Longitude	-79° 35' 45.11"
Quad Name	Mount Pleasant	Quad Code	1709
Wastewater Description:	Treated sewage effluent		
Receiving Waters	Unnamed tributary to Sewickley Creek (WWF)	Stream Code	37692
NHD Com ID	69912897	RMI	1.45
Drainage Area	2.21	Yield (cfs/mi^2)	0.018
Q_{7-10} Flow (cfs)	0.068	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	982	Slope (ft/ft)	0.0067
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final (March 12, 2009)	Name	Sewickley Creek Watershed TMDL
Nearest Downstream Public Water Supply Intake	Westmoreland County Municipal Authority - McKeesport		
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	510
PWS RMI	1.30	Distance from Outfall (mi)	29.11

Changes Since Last Permit Issuance: None

For Outfall Drainage Area

StreamStats Report

Region ID: PA
Workspace ID: PA20210611135733717000
Clicked Point (Latitude, Longitude): 40.23970, -79.59590
Time: 2021-06-11 09:57:50 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.21	square miles
ELEV	Mean Basin Elevation	1152	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.21	square miles	2.26	1400

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1152	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.067	ft^3/s
30 Day 2 Year Low Flow	0.124	ft^3/s
7 Day 10 Year Low Flow	0.0213	ft^3/s
30 Day 10 Year Low Flow	0.0429	ft^3/s
90 Day 10 Year Low Flow	0.0837	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

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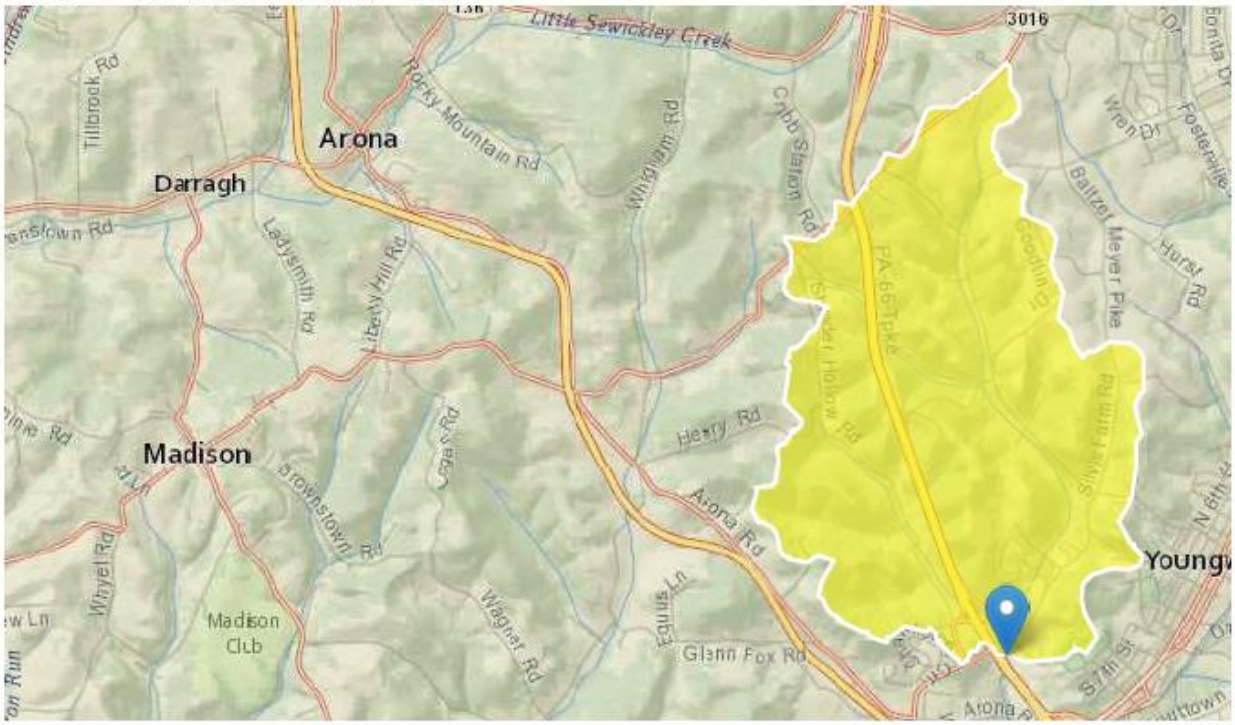
Application Version: 4.5.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

For Low Flow Yield

StreamStats Report

Region ID: PA
Workspace ID: PA20210611143853872000
Clicked Point (Latitude, Longitude): 40.23217, -79.59985
Time: 2021-06-11 10:39:11 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.79	square miles
ELEV	Mean Basin Elevation	1132	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.79	square miles	2.26	1400

https://streamstats.usgs.gov/ss/ 1/2

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1132	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	0.122	ft^3/s	43	43
30 Day 2 Year Low Flow	0.22	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0411	ft^3/s	66	66
30 Day 10 Year Low Flow	0.0792	ft^3/s	54	54
90 Day 10 Year Low Flow	0.15	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

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Application Version: 4.5.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Treatment Facility Summary		
Treatment Facility: Stanton Hills Community Mobile Home Park STP (formerly Pineview Manor MHP STP)		
WQM Permit No.	**Issuance Date**	**Purpose**
6570410	June 23, 1970	Permit issued to John Naser for a 0.020 MGD sewage treatment plant consisting of a comminutor/screening device, an aeration tank, a final clarifier, a polishing pond, and a chlorine contact tank with disinfection facilities.
6570410 A-1	December 3, 1996	Permit issued to Frank and Janet Taddeo for two intermittent sand filters installed in 1980 without a permit. The sand filters replaced the polishing pond. The amendment also permitted a 2000-gallon dosing tank before the sand filters and an 85 gpm submersible pump. The design flow was downgraded to 0.018 MGD according to the reduced loading capacity of the sand filters. There is no record of the permit being transferred from Naser to the Taddeos (see below).
6579429	Application denied December 8, 1980	The Taddeos purchased the mobile home site from John Naser on March 7, 1974—at the time the site was called the Naser Trailer Court. Naser constructed a package extended aeration sewage plant with a polishing pond under WQM Permit 6570410. The package plant was installed near the stream and its effluent had to be pumped up to the polishing pond for final treatment. The stream overflowed its banks several times and flooded the package plant causing equipment damage. Due to flooding and neglect, the plant never met effluent limits since the time the Taddeos purchased the site. The Taddeos and Naser had legal problems resulting from the sale of the site, so Naser refused to transfer WQM Permit 6570410 to the Taddeos. On March 18, 1977, the Department signed a Consent Order and Agreement (CO&A) with the Taddeos which required that the Taddeos abate the pollution problem. The only work the Taddeos did under the CO&A was to construct a raw sewage pump station and move the package plant to higher ground to prevent plant flooding. On December 14, 1979, the Department signed a Consent Decree with the Taddeos to upgrade the treatment plant. Application No. 6579429 was the result of the Consent Decree. Due to unaddressed application deficiencies, the application was denied. The CO&A and Consent Decree apparently recognized the Taddeos ownership of and responsibility for the STP even though there is no record of WQM Permit 6570410 being transferred from Naser to the Taddeos. Treatment plant changes for which the Taddeos sought authorization under the application for WQM Permit 6579429 were apparently authorized in 1996 by WQM Permit 6570410 A-1.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration	Chlorine	0.012

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.018	—	Not Overloaded	Sludge holding tank	Landfill

Changes Since Last Permit Issuance: None

Compliance History

DMR Data for Outfall 001 (from April 1, 2020 to March 31, 2021)

Parameter	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20
Flow (MGD) Average Monthly	0.014	0.011	0.016	0.014	0.014	0.011	0.011	0.008	0.007	0.010	0.012	0.013
pH (S.U.) Minimum	7.29	6.79	6.99	7.21	6.0	7.2	6.5	6.7	6.4	6.9	6.9	6.7
pH (S.U.) Maximum	7.89	7.91	7.99	7.89	8.13	8.00	7.1	7.2	6.9	7.3	7.4	7.3
DO (mg/L) Minimum	6.99	7.01	7.0	6.01	5.3	4.55	5.1	4.7	5.8	5.2	5.5	6.2
TRC (mg/L) Average Monthly	0.12	0.12	0.12	0.11	0.14	0.40	0.38	0.33	0.44	0.22	0.41	0.44
TRC (mg/L) Instantaneous Maximum	0.22	0.83	0.12	0.18	1.00	1.06	0.77	0.61	1.06	0.60	0.87	1.02
CBOD5 (mg/L) Average Monthly	5.98	5.63	8.18	5.7	3.0	3.0	3	3	3	3	E	E
CBOD5 (mg/L) Instantaneous Maximum	7.15	7.48	8.92	6.39	3.0	3.0	3	3	3	3	E	E
TSS (mg/L) Average Monthly	20.8	17.4	19.6	10.8	16.45	4.6	5	6.05	4.7	4.40	E	E
TSS (mg/L) Instantaneous Maximum	22.0	24	22.4	12.0	27.5	4.8	5.2	5.5	5.6	4.40	E	E
Fecal Coliform (CFU/100 ml) Geometric Mean	1250.2	69.6	287.6	6843	19.32	217.21	50	70.71	1770	2	E	E
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2419.6	4839	3978	9678	4611	943.6	50	100	2419.6	4	E	E
Total Nitrogen (mg/L) Daily Maximum				E								
Ammonia (mg/L) Average Monthly	4.42	2.91	4.51	2.63	1.49	0.1	0.678	0.2955	0.1295	0.100	E	E
Ammonia (mg/L) Instantaneous Maximum	4.47	3.289	8.924	3.14	1.977	0.1	1.0	0.4170	0.1330	0.100	E	E
Total Phosphorus (mg/L) Daily Maximum				E								

Compliance History

Effluent Violations for Outfall 001, from: May 1, 2020 To: March 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	07/31/20	Geo Mean	1770	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	12/31/20	Geo Mean	6843	CFU/100 ml	2000	CFU/100 ml
Fecal Coliform	07/31/20	IMAX	2419.6	CFU/100 ml	1000	CFU/100 ml

Summary of Inspections:

Other Comments:

Violation Summary

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE	INSP ID	INSPECTED DATE	INSP TYPE	INSPECTOR	VIOLATION COMMENT
657818	01/10/2013	302 FEE-AOR	Failure to submit Operator Certification system fee and AOR	03/18/2013	2130708	01/10/2013	Administrative/File Review	MOYER, GARY	
669542	05/01/2013	92A.41(5)O&M	Operation and Maintenance violations were present	06/04/2013	2171724	05/01/2013	Compliance Sampling	BOONE, KATELYN	no sludge removed from March 2012 - March 2013, sand filter covered with sludge, bar screen broken off
676686	09/03/2013	302.202	Failure to submit Operator Certification system fee	09/17/2013	2201055	09/03/2013	Administrative/File Review	MOYER, GARY	
676687	09/03/2013	302.1202	Failure to submit Operator Certification Available Operator Report (AOR)	09/17/2013	2201055	09/03/2013	Administrative/File Review	MOYER, GARY	
703186	07/17/2014	302.104(A)	Operator Certification - An unauthorized person made process control decisions at a wastewater facility without proper certification	08/22/2014	2297382	07/17/2014	Compliance Evaluation	BOONE, KATELYN	
703187	07/17/2014	CSL611	CSL - Failure to comply with terms and conditions of a WQM permit	08/22/2014	2297382	07/17/2014	Compliance Evaluation	BOONE, KATELYN	
703188	07/17/2014	92A.41(A)5	NPDES - Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance	08/22/2014	2297382	07/17/2014	Compliance Evaluation	BOONE, KATELYN	

Violation Summary

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE	INSP ID	INSPECTED DATE	INSP TYPE	INSPECTOR	VIOLATION COMMENT
800121	10/26/2017	302.202	Operator Certification - Failure to submit annual system fee	11/06/2017	2652895	10/26/2017	Administrative/File Review	MOYER, GARY	
851114	04/24/2019	92A.41(A)5	NPDES - Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance	04/24/2019	2888021	04/24/2019	Compliance Evaluation	GEARHART, KRISTIN	
865166	10/07/2019	92A.32(B)	NPDES - Failure to submit a timely application for "No Exposure Certification"	10/17/2019	2945673	10/07/2019	Compliance Evaluation	GEARHART, KRISTIN	
894213	09/02/2020	92A.62	NPDES - Failure to pay annual fee	12/15/2020	3080271	09/02/2020	Administrative/File Review	OPILA, TAMI	

There are no open violations for the client.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.018
Latitude 40° 14' 30.00" **Longitude** -79° 35' 45.00"
Wastewater Description: Treated sewage effluent

Technology-Based Effluent Limitations (TBELs)

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that apply to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

Table 1. Regulatory TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Weekly Average (mg/L)	Instant. Max (mg/L)	Basis
CBOD5	25	40	50†	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR § 133.102(a)(4)(i)
Total Suspended Solids	30	45	60†	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR § 133.102(b)(1)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	N/A	1,000	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	N/A	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine	0.5 (or facility-specific)	N/A	1.0 (or facility-specific)	25 Pa. Code § 92a.47(a)(8) & § 92a.48(b)(2)
pH (s.u.)	not less than 6.0 and not greater than 9.0			25 Pa. Code § 92a.47(a)(7) & § 95.2(1), & 40 CFR § 133.102(c)

†Value is calculated as two times the monthly average in accordance with Chapter 2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001].

The $CBOD_5$, TSS, and pH limits are the same as those in EPA's secondary treatment regulation (40 CFR § 133.102).

Flow must be reported pursuant to 25 Pa. Code § 92a.61(d)(1). The average annual design flow of the STP, 0.018 MGD, will be imposed as the average monthly limit for flow per Table 5-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits". Daily maximum flow must be reported also. Also, the minimum dissolved oxygen limit of 4.0 mg/L imposed in the previous permit will be reimposed in the new permit pursuant to 25 Pa. Code § 92a.61(b) (regarding reasonable monitoring requirements).

In accordance with Section I of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033, Version 1.9, March 22, 2021] and under the authority of 25 Pa. Code § 92a.61(b), annual reporting for Total Nitrogen and Total Phosphorus is required for sewage discharges with design flows greater than 2,000 gpd to help evaluate treatment effectiveness and to monitor nutrient loading to the receiving watershed (this reporting was required by the previous permit and will be reimposed in the new permit). Pursuant to that same SOP and under the authority of § 92a.61(b), an annual reporting requirement for *E.coli* will be added to Outfall 001. Also, per that SOP, the average weekly TBELs for CBOD5 and TSS in Table 1 will not be imposed at Outfall 001 because the existing sampling frequencies for those parameters are 2/month (i.e,. less than 1/week). The 2/month monitoring frequencies for CBOD5 and TSS are consistent with DEP's Technical Guidance.

Mass Limits

In accordance with Table 5-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits" and Section IV of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", no mass limits are imposed for this non-municipal STP.

Water Quality-Based Effluent Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the Commonwealth. Therefore, WQBELs are re-evaluated even though there have been no changes to the STP.

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD5"), ammonia-nitrogen, and dissolved oxygen ("DO") for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the DO module, the model simulates the mixing and consumption of DO in the stream due to the degradation of CBOD5 and ammonia-nitrogen, and compares calculated instream DO concentrations to DO water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

Water Quality Modeling with WQM 7.0

Table 2. 001 WQM 7.0 Inputs

Discharge Characteristics	
Parameter	**Value**
River Mile Index	1.45
Discharge Flow (MGD)	0.018
Discharge Temp. (°C) (Summer)	20.0
Discharge Temp. (°C) (Winter)	15.0
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	2.21
Q_{7-10} (cfs)	0.04
Low-flow yield (cfs/mi^2)	0.018
Elevation (ft)	982
Slope	0.0067
Stream Temp. (°C) (Summer)	20.0
Stream Temp. (°C) (Winter)	5.0
Stream pH (s.u.)	7.0

The WQM 7.0 model is run for Outfall 001 to determine whether WQBELs are necessary for $CBOD_5$, ammonia-nitrogen, and/or dissolved oxygen. Input values for the WQM 7.0 model are shown in Table 2.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia-nitrogen concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced dissolved oxygen levels also appear to increase ammonia toxicity and the maximum concentration of dissolved oxygen in water is lower at higher temperatures.

The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period. For the summer period, pursuant to DEP's "Implementation Guidance of Section 93.7 Ammonia Criteria" [Doc. No. 391-2000-013] (Ammonia Guidance) and in the absence of site-specific data, the discharge temperature is assumed to be 20°C and the design stream temperature and pH are assumed to be 25°C and 7.0 s.u., respectively, based on the recommendations for free stone warm water streams in DEP's Ammonia Guidance (Sewickley Creek is designated for warm water fishes). The flow used for modeling is the average design flow (0.018 MGD). Input discharge concentrations are the average monthly limits from the previous permit. The width to depth ratio is assumed to be 10.

The Q_{7-10} flow of Unnamed Tributary (UNT) 37692 to Sewickley Creek is estimated using USGS's StreamStats web application. The drainage area of the tributary at Outfall 001 is under the minimum threshold for the application's regression equations, so a point downstream on the tributary is selected at river mile 0.72 (i.e., far enough downstream that the drainage area exceeds the application's minimum regression calculation threshold of 2.26 sq. mi.). The drainage area and Q_{7-10} flow at that downstream location are 3.79 sq. mi. and 0.0411 cfs. The regression equations have a 66% standard error for Q_{7-10} values, so the Q_{7-10} at RMI 0.72 is adjusted upwards by 66% to accommodate that error. The low flow yield (LFY) is calculated by dividing the Q_{7-10} flow by the drainage area and the Q_{7-10} at the point of discharge can then be calculated by multiplying the UNT's drainage area at Outfall 001 (RMI 1.45) by the LFY. These calculations are shown below.

Q_{7-10} at RMI 3.79 = 0.0411 cfs + (0.0411 cfs × 0.66 [std. error]) ≈ 0.068 cfs

LFY = 0.068 cfs ÷ 3.79 sq. mi. ≈ 0.018 cfs/sq. mi.

Q_{7-10} at RMI 1.45 = 2.21 sq. mi. × 0.018 cfs/sq. mi. ≈ 0.04 cfs

The results of the WQM 7.0 modeling (see attachments) indicate that the existing limits for CBOD5 and ammonia-nitrogen are protective of UNT 37692's aquatic life use. Therefore, the previously imposed limits for ammonia-nitrogen (5.0 mg/L average monthly and 10.0 mg/L instantaneous maximum) and CBOD5 (Table 1 TBELs) will be reimposed in the new permit.

Pursuant to DEP's Ammonia Guidance, since the existing ammonia-nitrogen limits for the summer period are WQBELs, ammonia-nitrogen WQBELs for the winter period are set by multiplying the summer limits by three (15.0 mg/L average monthly and 30.0 mg/L instantaneous maximum). The summer and winter ammonia-nitrogen limits are the same as those in the previous permit.

Table 3. WQBELs for Outfall 001

Parameter	Average Monthly (mg/L)	Instant. Maximum (mg/L)
Ammonia-Nitrogen May 1 – October 31	5.0	10.0
Ammonia-Nitrogen November 1 – April 30	15.0	30.0

Total Maximum Daily Load ("TMDL") for the Sewickley Creek Watershed

The aquatic life uses of Sewickley Creek and tributaries to Sewickley Creek including Jacks Run, Welty Run, Buffalo Run, and their tributaries are impaired by metals (aluminum, iron, and manganese) and pH from acid mine drainage ("AMD"). These streams were variously listed on Pennsylvania's 1996, 1998, 2002, and 2006 lists of impaired waters. On April 8, 2009, U.S. EPA approved a TMDL prepared by DEP addressing the AMD-based impairments in the watershed. The previous NPDES permit was issued after the TMDL was finalized, but there was no discussion of the TMDL in the Fact Sheet for the previous permit.

No waste load allocations were assigned to the Stanton Hills Community STP's discharges by the TMDL. The STP serves a small mobile home community and does not have any industrial users. AMD metals are not expected to be present in significant concentrations in the discharge, so not monitoring requirements are imposed pursuant to the Sewickley Creek Watershed TMDL.

There is no TMDL for Sewickley Creek's pathogen-based recreational use impairment. The facility's use of chlorine for disinfection and the imposition of fecal coliform limits should prevent Outfall 001's discharges from contributing to the pathogen-based impairment. Outfall 001's discharges have occasionally exceeded fecal coliform limits, but the excursions are intermittent.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site-specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit.

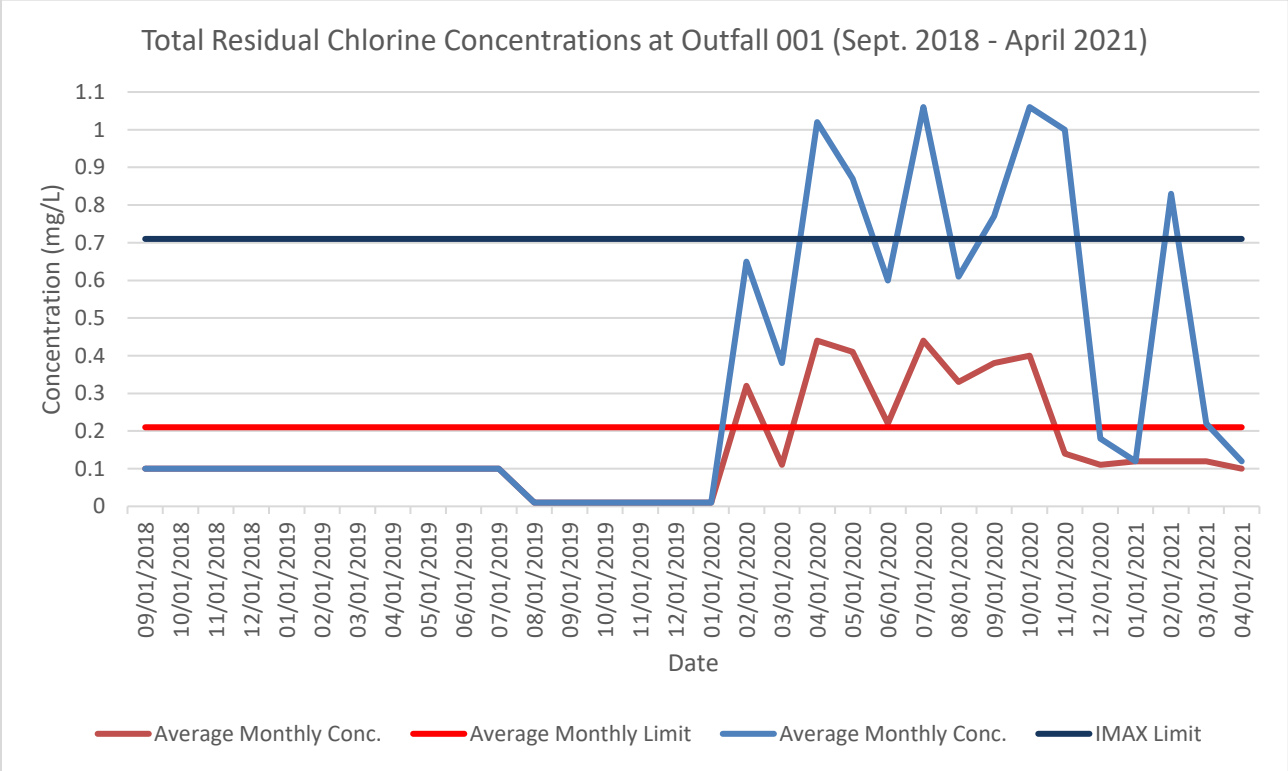
The results of the modeling (see attachments) indicate that more stringent WQBELs are necessary for TRC as summarized in the table below (rounded down to the nearest 0.01 per DEP's Technical Guidance).

Table 4. WQBELs for TRC at Outfall 001

Parameter	Average Monthly (mg/L)	Instant. Maximum (mg/L)
Total Residual Chlorine	0.21	0.71

Water quality criteria for chlorine have not changed. However, pursuant to DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", the stream chlorine demand used for modeling is 0.3 mg/L in the absence of site-specific data (compared to 0.8 mg/L used to develop the previous TRC limits). The Q_{7-10} of UNT 37692 used for modeling (0.068 cfs) is slightly higher than the Q_{7-10} used previously to evaluate TRC WQBELs (0.052 cfs), but the marginal increase in Q_{7-10} flow does not mitigate the change to WQBELs resulting from the lower chlorine demand of the stream.

Discharge Monitoring Report data for TRC indicate that the STP can comply with the new TRC limits. If the new limits had been in effect previously, then there would have been occasional violations of the limits between April and October of 2020.[1] TRC concentrations during that period were atypically elevated but have since returned to levels comparable to those previously reported. Regardless, the system is capable of being operated in a way that achieves compliance with the new TRC WQBELs.



Effluent Limits

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits applicable at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in the table on the following page.

Monitoring frequencies and sample types are established pursuant to DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits" and DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits". Dissolved oxygen, TRC, and pH must be sampled 1/day using grab sampling. CBOD5, TSS, and ammonia-nitrogen must be sampled 2/month using grab sampling. Fecal coliform must be sampled 2/month using grab sampling. *E.Coli* must be sampled 1/year using grab sampling. Total nitrogen and total phosphorus must be sampled 1/year using grab sampling. Flow must be recorded continuously.

[1] These TRC results may have been caused by operational disruptions associated with the COVID-19 pandemic.

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) 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	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	0.018	Report	XXX	XXX	XXX	XXX	2/month	Measured
pH	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.21	XXX	0.71	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	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
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	15.0	XXX	30.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	5.0	XXX	10.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment A)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment B)
☐	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: Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033, Version 1.9, March 22, 2021]
☐	Other:

ATTACHMENT A

WQM 7.0 Modeling Results

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19D	37692	Trib 37692 to Sewickley Creek	1.450	982.00	2.21	0.00670	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.018	0.00	0.00	0.000	0.000	10.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Outfall 001	PA0045802	0.0180	0.0000	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.38	0.00	0.00
NH3-N	5.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19D	37692	Trib 37692 to Sewickley Creek	0.030	940.00	4.15	0.00670	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.018	0.00	0.00	0.000	0.000	10.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19D	37692	Trib 37692 to Sewickley Creek

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
1.450	0.04	0.00	0.04	.0278	0.00670	.411	4.11	10	0.04	2.169	20.00	7.00
Q1-10 Flow												
1.450	0.03	0.00	0.03	.0278	0.00670	NA	NA	NA	0.04	2.479	20.00	7.00
Q30-10 Flow												
1.450	0.05	0.00	0.05	.0278	0.00670	NA	NA	NA	0.04	1.948	20.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37692	Trib 37692 to Sewickley Creek

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.450	Outfall 001	16.76	10	16.76	10	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.450	Outfall 001	1.89	5	1.89	5	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
1.45	Outfall 001	25	25	5	5	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37692	Trib 37692 to Sewickley Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.450	0.018	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
4.112	0.411	10.000	0.040
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
11.47	0.805	2.06	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.576	12.999	Owens	5
Reach Travel Time (days)			
2.169			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.217	9.63	1.77	7.69
0.434	8.09	1.52	7.96
0.651	6.79	1.31	8.15
0.868	5.70	1.12	8.24
1.085	4.79	0.96	8.24
1.302	4.02	0.83	8.24
1.519	3.38	0.71	8.24
1.736	2.84	0.61	8.24
1.952	2.38	0.52	8.24
2.169	2.00	0.45	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37692	Trib 37692 to Sewickley Creek

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
1.450	Outfall 001	PA0045802	0.018	CBOD5	25		
				NH3-N	5	10	
				Dissolved Oxygen			4

ATTACHMENT B

TRC Modeling Results

TRC EVALUATION – Outfall 001

0.04	**= Q stream (cfs)**	**0.5**	**= CV Daily**
0.018	**= Q discharge (MGD)**	**0.5**	**= CV Hourly**
30	**= no. samples**	**1**	**= AFC_Partial Mix Factor**
0.3	**= Chlorine Demand of Stream**	**1**	**= CFC_Partial Mix Factor**
0	**= Chlorine Demand of Discharge**	**15**	**= AFC_Criteria Compliance Time (min)**
0.5	**= BAT/BPJ Value**	**720**	**= CFC_Criteria Compliance Time (min)**
	= % Factor of Safety (FOS)		**=Decay Coefficient (K)**

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	**1.3.2.iii**	WLA afc = 0.477	**1.3.2.iii**	WLA cfc = 0.236
PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc= 0.178	**5.1d**	LTA_cfc = 0.137

Source	Reference	Effluent Limit Calculations		
PENTOXSD TRG	**5.1f**	AML MULT =	1.231	
PENTOXSD TRG	**5.1g**	AVG MON LIMIT (mg/l) =	0.219	AFC
		INST MAX LIMIT (mg/l) =	0.716	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc)) + Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc)) + Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**