pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0217751**
Facility Type	**Industrial**	APS ID	**1101734**
Major / Minor	**Minor**	Authorization ID	**1463302**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Sewickley Borough Water Authority**	Facility Name	**Sewickley Borough Water System**
Applicant Address	900 Ohio River Boulevard	Facility Address	900 Ohio River Boulevard
	Sewickley, PA 15143-2024		Sewickley, PA 15143-2024
Applicant Contact	Mark Brooks	Facility Contact	Mark Brooks
Applicant Phone	(412) 741-9180	Facility Phone	(412) 741-9180
Client ID	36040	Site ID	261132
SIC Code	4941	Municipality	Sewickley Borough
SIC Description	Trans. & Utilities - Water Supply	County	Allegheny
Date Application Received	November 29, 2023	EPA Waived?	Yes
Date Application Accepted	November 30, 2023	If No, Reason	

Purpose of Application: Renewal NPDES permit coverage

Summary of Review

The Department received an NPDES permit renewal application from Sewickley Borough Water Authority on November 29, 2023 for coverage of the Sewickley Borough Water System Water Treatment Plant. The site is a public water supply facility with an SIC code of 4941.

The Borough of Sewickley Water Authority owns and operates a water filtration plant located in Glen-Osborne borough which serves the Borough of Sewickley and surrounding communities. The water supply is obtained from the two ground water wells used alternatively, as well as a ground water crib below the Ohio Riverbed. Raw water is treated with 60% of the flow through two ion exchange filters (1 &2) which operate simultaneously, and 40% of the flow through two greensand filters (3&4) which operate alternately. The Permittee plans to replace the existing greensand filters with Zeolite ion exchange media sometime during the next five years, for the purpose of water softening. Disinfection, pH adjustment, corrosion control and fluoridation are provided, and finish water is supplied to the public water supply system.

Process wastewater is generated form the filter backwash process from ion exchange filters and greensand filters. Ion exchange filter operated simultaneously. Every 10 hours of operation one filter backwashes and regenerates in an alternating setup. Greensand filters operate alternately. When the active filter is online, the inactive filter is being backwashed. The filters are backwashed every 30 hours utilizing an air scrub. The wastewater generated from the backwash processes flows into the facility's wastewater treatment system consisting of two (2) sedimentation basins. Solids generated by the backwashing processes are settled and separated in the basins. The settling basins discharge treated wastewater supernatant to the Ohio River, designated in 25 PA Code Chapter 93 as a Warm Water Fishery, at Outfall 001. Solids separated in the treatment clarifiers are pumped to the Borough of Sewickley Wastewater Treatment Plant for treatment, processing and disposal.

Approve	Deny	Signatures	Date
X		Adam Olesnanik, P.E. / Environmental Engineer	January 4, 2024
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	January 12, 2024

Summary of Review

Two internal monitoring points were added to the NPDES permit, two permit cycles ago for the points where the backwash from the filters go to the settling basins. These internal monitoring points were included in the previous permits because of high Total Dissolved Solids concentrations in the discharge and to monitor the contributions from each backwashing process to Outfall 001. IMP 101 is the backwash from the ion exchange filters and IMP 201 is from the greensand filters. After reviewing the discharge data and the influent date from the two IMPs, TDS is still being reported at elevated concentrations; therefore, monitoring for TDS and its major constituents will remain in the permit, as well as monitoring at the two IMPs.

The site was last inspected on November 20, 2019, no violations were noted. The Permittee has no open violations.

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.171
Latitude	40º 31' 54"	Longitude	-80º 10' 34"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	IW Process Effluent without ELG		
Receiving Waters	Ohio River (WWF)	Stream Code	32317
NHD Com ID	134396150	RMI	969.22
Drainage Area	19500	Yield (cfs/mi^2)	0.243
Q_{7-10} Flow (cfs)	4,730	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	963	Slope (ft/ft)	0.0001
Watershed No.	20-G	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	DIOXIN, PATHOGENS, POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	Ohio River
Nearest Downstream Public Water Supply Intake	Moon Township Municipal Authority		
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	968.72	Distance from Outfall (mi)	0.5

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.171
Latitude 40º 31' 54.00" **Longitude** -80º 10' 34.00"
Wastewater Description: IW Process Effluent without ELG

Technology-Based Limitations

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which is imposed under Best Professional Judgement under 40 CFR § 125.3. The effluent limitations from this document are displayed below in Table 1.

Table 1: BPT Limits for WTP Sludge and Filter Backwash Wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow (MGD)	Monitor	----
pH (S.U.)	Not less than 6.0 nor greater than 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 2 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 2 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 2 below

Table 2: Regulatory Effluent Standards and Monitoring Requirements for Outfall 001

Parameter	Monthly Average	Daily Maximum	Units
Flow	Monitor and Report		MGD
Total Residual Chlorine (TRC)	0.5	1.6	mg/L
pH	Not less than 6.0 nor greater than 9.0		S.U.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet (“TMS”) to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The

spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

ORSANCO Considerations

The Ohio River Valley Water Sanitation Commission (ORSANCO)—an interstate commission established by interstate compact—established water quality standards (Pollution Control Standards) that apply to surface waters of the Commonwealth, specifically to the Ohio River, which is the receiving water for Sewickley Borough Water System WTP. ORSANCO standards were considered as part of the reasonable potential analysis to the extent that ORSANCO's standards provide more stringent water quality criteria than Pennsylvania's regulations in Chapter 93.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion is considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 3. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment B of this Fact Sheet. The Toxics Management Spread Sheet did not recommend any WQBELs for toxics.

Table 3: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	969.22
Discharge Flow (MGD)	1.296
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	19500
Q_{7-10} (cfs)	4,760
Low-flow yield (cfs/mi^2)	0.243
Elevation (ft)	963
Slope	0.0001

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, included in Attachment D, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 4.

Table 4: Current Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/Month	Grab
Chloride	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Bromide	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Sulfate	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Suspended Solids (mg/L)	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine (mg/L)	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum (mg/L)	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron (mg/L)	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese (mg/L)	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	2/Month	Grab

Proposed Effluent Limitations for Outfall 001

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 5.

Table 5: Proposed Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/Month	Grab
Chloride	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Bromide	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Sulfate	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/Month	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	XXX	2/Month	Grab
Total Aluminum	XXX	XXX	XXX	4.0	8.0	XXX	2/Month	Grab
Total Iron	XXX	XXX	XXX	2.0	4.0	XXX	2/Month	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

IMP No. 101 and 201 **Design Flow (MGD)**
Latitude **Longitude**
Wastewater Description: Wastewater influent to the site setting basins

Internal Monitoring Points 101 and 201 are included in the permit to monitor the contributions from the two different backwash wastewaters to Outfall 001. Therefore, these monitoring points will receive monitoring requirements for all of the parameters that Outfall 001 received effluent limitations or monitoring requirements for. The monitoring requirements for IMPs 101 and 201 are displayed below in Table 6.

Table 6: Proposed Effluent Monitoring Requirements for IMP 101 and 201

Parameters	Mass (lb/day)		Concentration				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/Month	Grab
Chloride	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Bromide	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Sulfate	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Residual Chlorine	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Aluminum	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Iron	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Manganese	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	Report	XXX	XXX	Report	2/Month	Grab

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment **B**)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

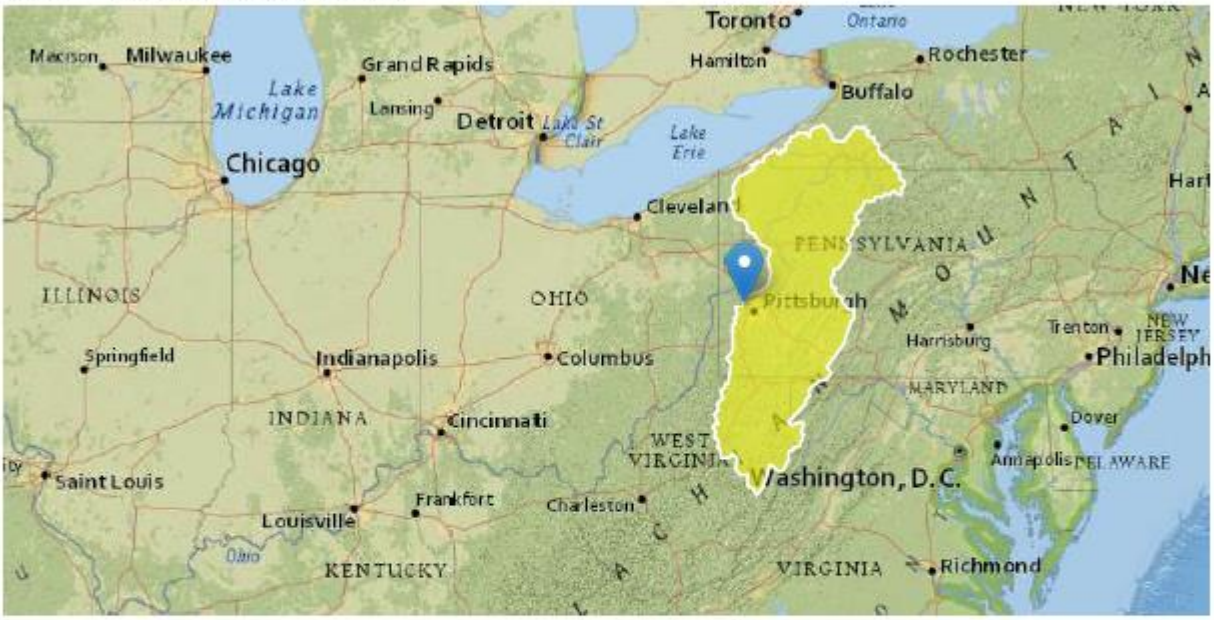
Attachments

Attachment A: StreamStats Drainage Area
Attachment B: Toxics Management Spreadsheet for Outfall 001
Attachment C: TRC Evaluation Model for Outfall 001

Attachment A:
StreamStats Drainage Area

StreamStats Report

Region ID: PA
Workspace ID: PA20231207125020382000
Clicked Point (Latitude, Longitude): 40.52918, -80.17758
Time: 2023-12-07 07:50:53 -0500



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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	19500	square miles
ELEV	Mean Basin Elevation	1673	feet
PRECIP	Mean Annual Precipitation	45	inches

Attachment B:
Toxic Management Spreadsheet for Outfall 001

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Sewickley Borough WTP** NPDES Permit No.: **PA0217751** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **WTP wastewater**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
1.296	586	7.3						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		21700									
	Chloride (PWS)	mg/L		465									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		86.6									
	Fluoride (PWS)	mg/L		0.18									
Group 2	Total Aluminum	µg/L		165									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	2									
	Total Barium	µg/L		144									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		100									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	2									
	Hexavalent Chromium	µg/L	<	5									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		9									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	50									
	Dissolved Iron	µg/L		20									
	Total Iron	µg/L		490									
	Total Lead	µg/L		1.13									
	Total Manganese	µg/L		310									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		5.39									
	Total Phenols (Phenolics) (PWS)	µg/L		5									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	2									
	Total Zinc	µg/L		10.7									
	Total Molybdenum	µg/L	<	2									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Sewickley Borough WTP, NPDES Permit No. PA0217751, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Ohio River

No. Reaches to Model: 1

- ○ Statewide Criteria
- ○ Great Lakes Criteria
- ◉ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032317	969.22	963	19500	0.001		Yes
End of Reach 1	032317	968.72	962	19501	0.001	5.2	Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	969.22	0.1	4760			1,300	20					100	7		
End of Reach 1	968.72	0.1	4760			1,300	20								

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Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	969.22														
End of Reach 1	968.72														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Sewickley Borough WTP, NPDES Permit No. PA0217751, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.135 Analysis Hardness (mg/l): 101.51 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	241,833	
Total Antimony	0	0		0	1,100	1,100	354,689	
Total Arsenic	0	0		0	340	340	109,631	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	6,771,327	
Total Boron	0	0		0	8,100	8,100	2,611,797	
Total Cadmium	0	0		0	2.043	2.17	698	Chem Translator of 0.943 applied
Total Chromium (III)	0	0		0	576.787	1,825	588,550	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	5,254	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	30,632	
Total Copper	0	0		0	13.630	14.2	4,578	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	65.642	83.2	26,832	Chem Translator of 0.789 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	531	Chem Translator of 0.85 applied
Total Nickel	0	0		0	474.199	475	153,209	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.301	3.88	1,252	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	20,959	
Total Zinc	0	0		0	118.675	121	39,127	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.938 Analysis Hardness (mg/l): 100.22 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	490,167	
Total Arsenic	0	0		0	150	150	334,205	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	9,134,924	
Total Boron	0	0		0	1,600	1,600	3,564,848	
Total Cadmium	0	0		0	0.246	0.27	604	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.247	86.3	192,354	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	23,160	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	42,333	
Total Copper	0	0		0	8.972	9.35	20,824	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	3,562,754	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.523	3.19	7,108	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	2,018	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.102	52.3	116,435	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	11,116	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	28,964	
Total Zinc	0	0		0	118.357	120	267,448	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### THH PMF: 0.938 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 0.5418

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	##########	WQC applied at RMI 968.72 with a design stream flow of 4760 cfs
Chloride (PWS)	0	0		0	250,000	250,000	##########	WQC applied at RMI 968.72 with a design stream flow of 4760 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	##########	WQC applied at RMI 968.72 with a design stream flow of 4760 cfs
Fluoride (PWS)	0	0		0	1,000	1,000	1,287,406	THH WQC applied at PWS at RMI 968.72
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	7,209	THH WQC applied at PWS at RMI 968.72
Total Arsenic	0	0		0	10	10.0	12,874	THH WQC applied at PWS at RMI 968.72
Total Barium	0	0		0	1,000	1,000	1,287,406	THH WQC applied at PWS at RMI 968.72
Total Boron	0	0		0	3,100	3,100	3,990,958	THH WQC applied at PWS at RMI 968.72
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	1,300	1,300	1,673,627	THH WQC applied at PWS at RMI 968.72
Dissolved Iron	0	0		0	300	300	386,222	THH WQC applied at PWS at RMI 968.72
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,287,406	THH WQC applied at PWS at RMI 968.72
Total Mercury	0	0		0	0.012	0.012	15.4	THH WQC applied at PWS at RMI 968.72
Total Nickel	0	0		0	610	610	785,317	THH WQC applied at PWS at RMI 968.72
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	6,437	WQC applied at RMI 968.72 with a design stream flow of 4760 cfs
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	309	THH WQC applied at PWS at RMI 968.72
Total Zinc	0	0		0	7,400	7,400	9,526,802	THH WQC applied at PWS at RMI 968.72

☑ *CRL* CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	50	50.0	303,503	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	643,703	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	321,851	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	321,851	mg/L	Discharge Conc ≤ 10% WQBEL
Fluoride (PWS)	1,287	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	155,005	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	1,287,406	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,674,057	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	448	µg/L	Discharge Conc < TQL
Total Chromium (III)	192,354	µg/L	Discharge Conc < TQL
Hexavalent Chromium	3,367	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	19,634	µg/L	Discharge Conc < TQL
Total Copper	2,934	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	386,222	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	3,562,754	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	7,108	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	1,287,406	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.012	µg/L	Discharge Conc < TQL
Total Nickel	98,201	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	6,437	µg/L	Discharge Conc ≤ 10% WQBEL
Total Selenium	11,116	µg/L	Discharge Conc < TQL
Total Silver	803	µg/L	Discharge Conc < TQL
Total Thallium	309	µg/L	Discharge Conc < TQL
Total Zinc	25,079	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment C:
TRC Evaluation Model for Outfall 001

TRC EVALUATION

4760	= Q stream (cfs)	0.5	= CV Daily
1.296	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.25	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.25	= 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 =	189.359	**1.3.2.iii**	WLA cfc =	184.603
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	70.560	**5.1d**	LTA_cfc =	107.319

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**