pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0014605**
Facility Type	**Industrial**	APS ID	**35010**
Major / Minor	**Minor**	Authorization ID	**1294914**

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

Applicant and Facility Information

Applicant Name	**Suez Water PA Inc.**	Facility Name	**Suez Water PA Mechanicsburg System**
Applicant Address	1081 Limekiln Road	Facility Address	1081 Limekiln Road
	New Cumberland, PA 17070		New Cumberland, PA 17365
Applicant Contact	Robert Eberly	Facility Contact	Robert Eberly
Applicant Phone	(717) 737-1475	Facility Phone	(717) 737-1475
Client ID	64718	Site ID	454918
SIC Code	4941	Municipality	Fairview Township
SIC Description	Trans. & Utilities - Water Supply	County	York
Date Application Received	November 1, 2019	EPA Waived?	Yes
Date Application Accepted	December 19, 2019	If No, Reason	

Purpose of Application: Application for renewal to discharge treated water treatment wastewater

Summary of Review

1.0 General Discussion

This factsheet supports the renewal of an existing NPDES permit for discharge of treated industrial wastewater from a potable water treatment plant known as Rabold Water treatment plant (Mechanicsburg system) located in Fairview Township in York County. The name of the facility changed from United Water PA to Suez Water PA Inc. during the last permit cycle. The facility takes raw water from Yellow Breeches Creek to produce potable water. The water treatment process consists of coagulation, clarification, dual media filtration and disinfection. Treatment chemicals include aluminum sulfate and polymer for coagulation, sodium hypochlorite for disinfection, zinc orthophosphate for corrosion control and hydrofluosilicic acid for public health protection. None of the chemical introduced into the system is considered a chemical additive. Wastewater is generated from backwashing of the dual media filters and directed to an on-site lagoon for treatment prior to discharge. The facility discharges an average of 0.10 mgd of treated filter backwash wastewater through outfall 001 to Yellow Breeches Creek which is classified for Cold Water Fishes (CWF) and Migratory Fishes (MF). The lagoon is cleaned periodically to remove sludge for land application off-site. The facility is not covered by ELG, but the technology-based treatment requirements developed by the Department for water treatment facilities apply. See details under technology limits section of the factsheet. The existing permit was issued on March 26, 2015 with effective date of April 1, 2015 and expiration date of March 31, 2020. The permit was amended on February 17, 2017 due to name change. The permittee submitted a timely permit renewal application to the Department and has been operating under the conditions in the existing permit under administrative extension provision pending Department action on the permit renewal.

Topographical map showing discharge location is presented in attachment A.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	May 15, 2021
X		Maria D. Bebenek for Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	May 21, 2021
X		Maria D. Bebenek Maria D. Bebenek, P.E. /Program Manager	May 21, 2021

Summary of Review

1.1 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.

1.2 Changes to the existing permit

Reporting of mass limits for TSS, Total Aluminum, Total Iron and Total Manganese has been added to the permit

1.3 Existing limitations and monitoring requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30	60	75	2/month	8-Hr Comp
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10	2/month	8-Hr Comp
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0	2/month	8-Hr Comp
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	2/month	8-Hr Comp

1.4 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.1
Latitude	40° 12’ 10.00”	Longitude	76° 55’ 30.00”
Quad Name	Lemoyne	Quad Code	1730
Wastewater Description:	Water Treatment Filter Backwash		

Receiving Waters	Yellow Breeches Creek	Stream Code	10121
NHD Com ID	56405319	RMI	7.42
Drainage Area	196.31 mi^2	Yield (cfs/mi^2)	0.318
Q_{7-10} Flow (cfs)	62.4	Q_{7-10} Basis	USGS gage no.01571500
Elevation (ft)	327	Slope (ft/ft)	
Watershed No.	7-E	Chapter 93 Class.	CWF, MF
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		Name	

Nearest Downstream Public Water Supply Intake	PA American Water Company		
PWS Waters	Yellow Breeches Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	7.0

Changes Since Last Permit Issuance: None

1.4.1 Water Supply Intake:

The closest water supply intake located downstream from the discharge is the PA American Water Company Steelton Municipal Waterworks on Yellow Breeches Creek. The distance downstream from the discharges to the intake is approximately 7 miles. The discharge is not expected to have an impact on the intake.

1.5 Treatment Facility Summary

Treatment Facility Name: Suez Water PA Inc.

WQM Permit No.	Issuance Date
N/A	N/A

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial Waste	Primary	Sedimentation	Chlorine Dioxide	0.1

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1			Settling Lagoon	Land Applied

Changes Since Last Permit Issuance: None

Other Comments:

2.0 Compliance History

2.1 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	0.071	0.083	0.080	0.075	0.069	0.080	0.103	0.103	0.082	0.070	0.071	0.068
Flow (MGD) Daily Maximum	0.102	0.117	0.103	0.127	0.077	0.112	0.151	0.156	0.125	0.110	0.115	0.096
pH (S.U.) Minimum	7.3	7.53	7.3	7.34	7.61	7.72	7.72	7.43	7.47	7.69	7.57	7.42
pH (S.U.) Instant. Maximum	7.98	7.64	7.45	7.57	7.68	7.72	7.72	7.67	7.61	7.74	7.69	7.53
TSS (mg/L) Average Monthly	6.5	< 5.5	< 5	< 7.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	5.0
TSS (mg/L) Daily Maximum	8	6	< 5	10.0	< 5	< 5	< 5	5	< 5	< 5	< 5	5.0
Total Aluminum (mg/L)Ave. Monthly	0.705	1.2	0.870	1.126	0.64	0.410	0.410	0.680	0.365	0.420	0.555	0.750
Total Aluminum (mg/L) Daily Max.	0.91	1.3	0.920	1.60	0.66	0.430	0.430	0.810	0.400	0.450	0.650	0.790
Total Iron (mg/L) Average Monthly	< 0.03	< 0.030	< 0.03	< 0.030	< 0.030	< 0.038	0.038	< 0.030	< 0.030	< 0.030	0.038	0.038
Total Iron (mg/L) Daily Maximum	< 0.03	< 0.030	< 0.03	< 0.030	< 0.030	0.098	0.098	0.031	< 0.030	< 0.030	0.064	0.058
Total Manganese (mg/L) Ave. Monthly	0.014	0.0080	0.0081	0.007	0.009	0.033	0.033	0.018	0.018	0.018	0.058	0.031
Total Manganese (mg/L) Daily Max.	0.015	0.0081	0.0083	0.008	0.0098	0.056	0.056	0.018	0.019	0.018	0.094	0.033

2.2 Summary of DMRs:

Discharge Monitoring Reports (DMRs) review summary for the facility for the last 12 months of operation presented in section 2.1 indicate permit limits have been met consistently. No permit violation noted on DMRs during the period reviewed.

2.3 Summary of Inspections:

The facility was inspected a couple of times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met satisfactorily. The reports indicate good operation and maintenance of the facility.

3.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .1
Latitude 40º 12' 10.00" **Longitude** -76º 55' 30.00"
Wastewater Description: Water Treatment Effluent

3.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit(WQBEL) is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

3.2 Technology-Based Limitations

Technology-based (BAT) effluent limits for water treatment plant wastewater discharges are presented in the Department's June 1989 Guidance document entitled, “Technology Based Controls for Discharges from Water Treatment Plants” as follows:

Parameter	Monthly Avg mg/l	Daily Max. mg/l
Total Suspended Solids	30	60
Aluminum	4	8
Iron	2	4
TRC*	0.5	1
Manganese	1	2
pH	6 - 9 S.U at all times	

*See TRC section of the report for details

3.3 Water Quality-Based Limitations

3.3.1 Streamflow

Streamflow was correlated with past streamflow records taken from a nearby USGS gage station No. 015715000 on Yellow Breeches Creek. The Q_{7-10} at the gage was determined as 67.64 cfs and the drainage area at the gage is 213 sq. mi. The resulting yield are as follow:

Q_{7-10} = 67.64 cfs /213 sq. mi = 0.318cfs/sq.mi
Q_{30-10} /Q_{7-10} = 1.08
Q_{1-10} /Q_{7-10} = 0.94

The drainage area at the point of discharge taken from previous factsheet = 196.31sq. mi.

Q_{7-10} at discharge point = 0.318cfs x 196.31 sq. mi = 62.4cfs

3.3.2 CBOD5, NH3-N and DO

A water quality analysis utilizing model, WQM 7.0 for CBOD5, NH3-N and DO was not conducted for the renewal since no significant discharge levels of these pollutants are expected in the effluent due to the nature of the wastewater. Sampling data shows BOD5 of 4.0 mg/L and NH3-N of less than 0.5 mg/L.

3.3.3 The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

- Discharge pH = 7.47 (DMR median July – Sept.)
- Discharge Temperature = 25 ° C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20 ° C (Default)
- Discharge Hardness = 126 mg/l
- Stream Hardness = 140 mg/l

3.3.4 Toxics

A reasonable potential (RP) was done for pollutant Groups 1 and 2 submitted with the application. All pollutants that were presented in the application sampling data were entered into the TMS which combines the logic in the previous Toxics Screening Analysis Spreadsheet and PENTOXSD Model to calculate WQBELs. WQBELs recommended by the TMS are presented in attachment B. The results of the TMS indicates discharge levels of all pollutants except Total Aluminum are well below DEP's target quantitation limits and the calculated WQBELs, therefore, no monitoring or limitation was recommended. Monitoring was recommended for Total Aluminum however, the existing Technology based limits for Total Aluminum, Total Iron and Total Manganese will remain the permit. There is no water quality criteria for Total Suspended Solids, the existing technology limit will remain in the permit. Requirement to report Mass loads for technology-based limits will be added to the permit following permit writer's manual No. 362-0400-001 Table 5-2, 10/1/97 Edition.

The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

3.3.5 Total Residual Chlorine

The attached TRC evaluation presented in attachment C utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92a, Section 92a.48 (b) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The result of the TRC evaluation indicates that the BAT limit of 0.5 mg/l and 1.6mg/l IMAX would be needed to prevent toxicity concerns. However, 3 application sample results show TRC was non detect for 2 samples in the effluent at reported levels of 0.02 mg/L and one sample was detected at 0.02 mg/L (maximum). The maximum concentration reported in the application is well below the BAT limit (i.e., less than 10%) which demonstrated that there is no reasonable potential for this discharge to exceed the standard. Consequently, no TRC limit is recommended for this facility This is consistent with the existing permit.

3.3.6 Chesapeake Bay Strategy:

In 2003, EPA established state-wide cap loads for Total Nitrogen(TN) and Total Phosphorus(TP) for Pennsylvania that are needed to ensure compliance with new water quality standards enacted to restore the water quality of the Chesapeake Bay. DEP released Pennsylvania's Chesapeake Bay Tributary Strategy (CBTS) in January of 2005 to guide Pennsylvania's efforts to meet those cap loads and revised the Strategy in 2006-2007 following a stakeholder process. Industrial discharges have been prioritized by Central Office based on their delivered TN and Total Phosphorus TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed Chesapeake Bay IW monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream therefore, no monitoring of TP and TN series (nitrate-nitrite, TKN) is required at this time.

4.0 Other Requirements

4.1 Anti-backsliding

Not applicable to this permit

4.2 Flow Monitoring

The requirement to monitor the volume of effluent discharged from Outfall 001 is required in accordance with 40 CFR § 122.44(i)(1)(ii).

4.3 Cleaning of Lagoon/Sedimentaton Basin

The lagoon is cleaned periodically, and the solid removed. Conditions and reporting requirements prior and during lagoon cleaning are presented in PART C.II of the permit.

4.4 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

4.5 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

4.6 303d Listed Streams

The discharge is not located on a 303d listed stream segment. The receiving stream is attaining all of its designated uses.

4.7 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

4.8 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

5.0 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.

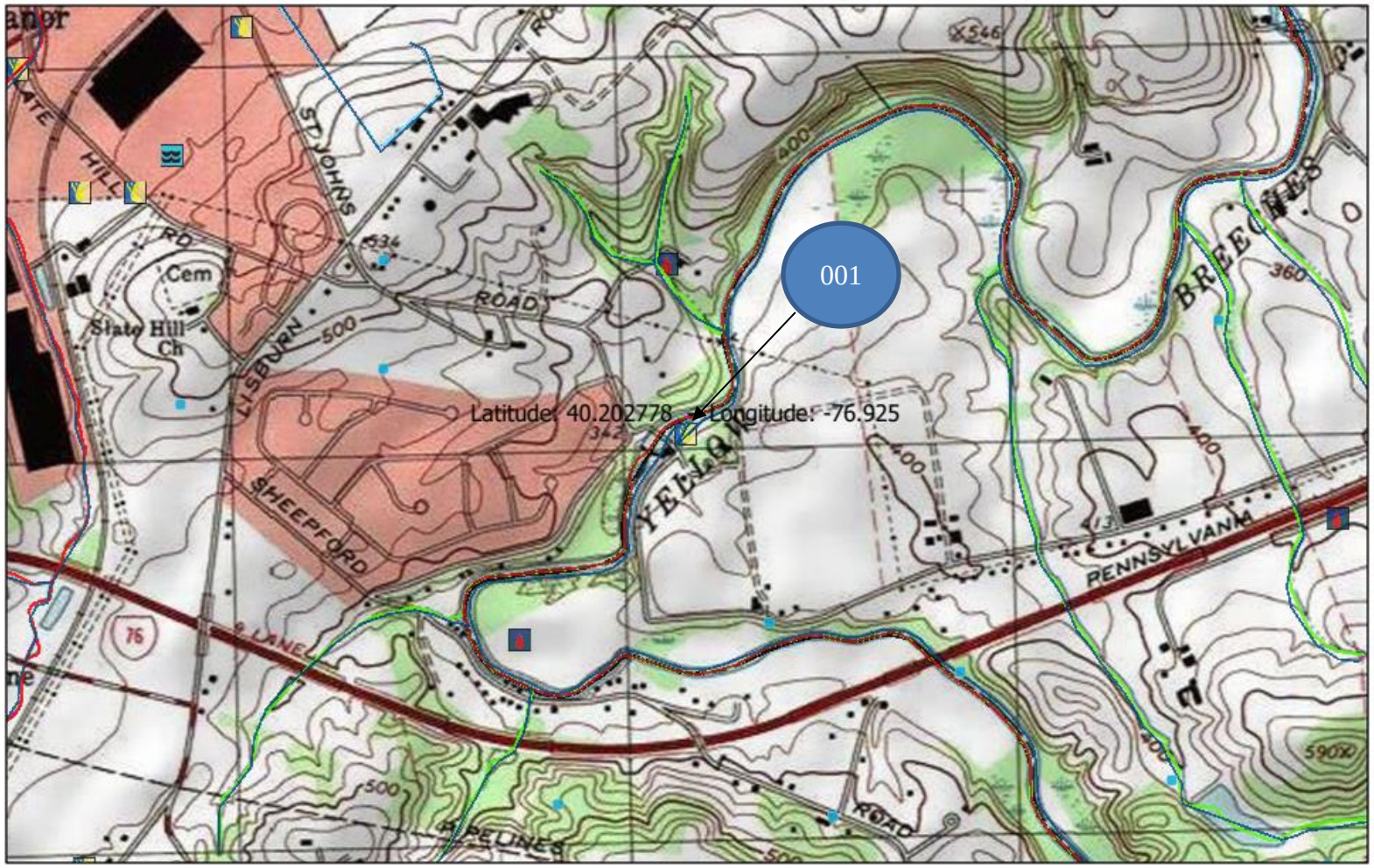
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	2/month	Grab
TSS	Report	Report	XXX	30	60	75	2/month	8-Hr Composite
Total Aluminum	Report	Report	XXX	4.0	8.0	10	2/month	8-Hr Composite
Total Iron	Report	Report	XXX	2.0	4.0	5	2/month	8-Hr Composite
Total Manganese	Report	Report	XXX	1.0	2.0	2.5	2/month	8-Hr Composite

Compliance Sampling Location: At Outfall 001

6.0 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, 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: Establishing effluent limitations for individual industrial permit
☐	Other:

Attachments

A. Topographical Map



B. Toxic Management Spreadsheet

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Suez Mechanicsburg System** NPDES Permit No.: **PA0014605** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Water treatment plant filter backwash**

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
0.1	126	7.47						

					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		199									
	Chloride (PWS)	mg/L		21.1									
	Bromide	mg/L	<	0.6									
	Sulfate (PWS)	mg/L		36.5									
	Fluoride (PWS)	mg/L	<	0.2									
Group 2	Total Aluminum	µg/L		4400									
	Total Antimony	µg/L		1.3									
	Total Arsenic	µg/L	<	1.5									
	Total Barium	µg/L		45									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		150									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	0.1									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L	<	2.5									
	Total Copper	µg/L		26									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		4.4									
	Dissolved Iron	µg/L	<	60									
	Total Iron	µg/L		430									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		280									
	Total Mercury	µg/L		0.0012									
	Total Nickel	µg/L	<	2.5									
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L	<	2									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		8.8									
	Total Molybdenum	µg/L	<	1									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Suez Mechanicsburg System, NPDES Permit No. PA0014605, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Yellow Breeches Creek**

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	010121	7.42	327	196.31			Yes
End of Reach 1	010121	6.25	326	198.43			Yes

Q_{7-10}

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	7.42	0.318										140	7		
End of Reach 1	6.25	0.318													

Q_h

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	7.42														
End of Reach 1	6.25														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Suez Mechanicsburg System, NPDES Permit No. PA0014605, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ ***AFC*** CCT (min): 15 PMF: 0.099 Analysis Hardness (mg/l): 139.66 Analysis pH: 7.01

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	30,729	
Total Antimony	0	0		0	1,100	1,100	45,069	
Total Arsenic	0	0		0	340	340	13,930	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	860,405	
Total Boron	0	0		0	8,100	8,100	331,870	
Total Cadmium	0	0		0	2.786	3.0	123	Chem Translator of 0.93 applied
Total Chromium (III)	0	0		0	749.039	2,370	97,118	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	668	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	3,892	
Total Copper	0	0		0	18.410	19.2	786	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	92.725	125	5,118	Chem Translator of 0.742 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	67.5	Chem Translator of 0.85 applied
Total Nickel	0	0		0	621.142	622	25,500	Chem Translator of 0.998 applied
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	5.714	6.72	275	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	2,663	
Total Zinc	0	0		0	155.514	159	6,515	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.686 Analysis Hardness (mg/l): 139.95 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	61,145	
Total Arsenic	0	0		0	150	150	41,690	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	1,139,520	
Total Boron	0	0		0	1,600	1,600	444,691	
Total Cadmium	0	0		0	0.311	0.35	96.5	Chem Translator of 0.895 applied
Total Chromium (III)	0	0		0	97.601	113	31,542	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	2,889	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	5,281	
Total Copper	0	0		0	11.935	12.4	3,455	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	606,800	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.621	4.88	1,356	Chem Translator of 0.742 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	252	Chem Translator of 0.85 applied
Total Nickel	0	0		0	69.111	69.3	19,266	Chem Translator of 0.997 applied
Total Selenium	0	0		0	4.600	4.99	1,387	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	3,613	
Total Zinc	0	0		0	157.063	159	44,273	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 720 PMF: 0.686 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	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	1,556	
Total Arsenic	0	0		0	10	10.0	2,779	
Total Barium	0	0		0	2,400	2,400	667,036	
Total Boron	0	0		0	3,100	3,100	861,588	
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	300	300	83,380	
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	277,932	
Total Mercury	0	0		0	0.050	0.05	13.9	
Total Nickel	0	0		0	610	610	169,538	
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	66.7	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***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 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	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

	Mass Limits		Concentration Limits						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	19,696	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***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)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	Discharge Conc < TQL
Total Antimony	1,556	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	551,485	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	212,716	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	78.7	µg/L	Discharge Conc < TQL
Total Chromium (III)	31,542	µg/L	Discharge Conc < TQL
Hexavalent Chromium	428	µg/L	Discharge Conc < TQL
Total Cobalt	2,495	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	504	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	83,380	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	606,800	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,356	µg/L	Discharge Conc < TQL
Total Manganese	277,932	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	13.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	16,345	µg/L	Discharge Conc < TQL
Total Selenium	1,387	µg/L	Discharge Conc < TQL
Total Silver	177	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	66.7	µg/L	Discharge Conc < TQL
Total Zinc	4,176	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

C. TRC Calculations

TRC EVALUATION			
Input appropriate values in A3:A9 and D3:D9			
62.4	= Q stream (cfs)	0.5	= CV Daily
0.1	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.099	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.686	= 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)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 12.758	1.3.2.iii	WLA cfc = 86.067
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 4.754	5.1d	LTA_cfc = 50.035

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**