

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

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

Application No. PA0223026
APS ID 1007896
Authorization ID 1299212

Applicant and Facility Information

Applicant Name	<u>Saint Petersburg Borough Municipal Water Authority</u>	Facility Name	<u>Saint Petersburg Borough WTP</u>
Applicant Address	<u>P.O. Box 235, 144 Church Street</u> <u>St. Petersburg, PA 16054-0235</u>	Facility Address	<u>Waterworks Road</u> <u>St. Petersburg, PA 16054-0235</u>
Applicant Contact	<u>Marcy Courson</u>	Facility Contact	<u>William Logue</u>
Applicant Phone	<u>(724) 659-1116</u>	Facility Phone	<u>(814) 229-6002</u>
Client ID	<u>7191</u>	Site ID	<u>264243</u>
SIC Code	<u>4941</u>	Municipality	<u>Richland Township</u>
SIC Description	<u>Trans. & Utilities - Water Supply</u>	County	<u>Clarion</u>
Date Application Received	<u>December 3, 2019</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>July 07, 2021</u>	If No, Reason	
Purpose of Application	<u>Renewal of an NPDES Permit for an existing discharge of treated industrial waste.</u>		

Summary of Review

This facility is a public water treatment plant which discharges treated filter backwash wastewater. The plant was upgraded in 2021 to increase the treatment capacity of drinking water from 0.072 MGD to 0.228 MGD.

No changes are being proposed to the discharge quality or quantity as part of this permit renewal.

There were 5 water treatment chemicals listed for existing/proposed use on the permit renewal application.

There are currently 17 open violations listed in EFACTS for this client, all under the Safe Drinking Water Program (1/24/2023).

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
X		Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager	January 26, 2023
X		Chad W. Yurisc, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.0109*
Latitude	41° 9' 59.00"	Longitude	-79° 39' 13.00"
Quad Name	Emlenton	Quad Code	0908
Wastewater Description: Treated filter backwash			
Receiving Waters	Unnamed Tributary of Clarion River	Stream Code	49229
NHD Com ID	102671373	RMI	1.58
Drainage Area	0.04 (dry)	Yield (cfs/mi ²)	0.0379 (perennial)
Q ₇₋₁₀ Flow (cfs)	0 (dry), 0.01588 (perennial)	Q ₇₋₁₀ Basis	Toms Run @ Cooksburg gage
Elevation (ft)	1330	Slope (ft/ft)	0.02974
Watershed No.	17-B	Chapter 93 Class.	CWF
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	
Background/Ambient Data		Data Source	
pH (SU)	7.0	Default	
Temperature (°C)	20	Default	
Hardness (mg/L)	100	Default	
Other:			
Nearest Downstream Public Water Supply Intake	Parker Area Water Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	1450
PWS RMI	85.0	Distance from Outfall (mi)	9.3

Changes Since Last Permit Issuance:

Other Comments: There are no known threatened or endangered mussels within the vicinity of the discharge.

* The water treatment filters are backwashed approximately once every two weeks to the backwash sedimentation tank for 4 minutes @ 250 GPM and then 9 minutes at 410 GPM. The tank is then dewatered at a rate of 7.58 GPM which equates to a discharge rate of 0.0109 MGD.

Treatment Facility Summary				
Treatment Facility Name: St Petersburg WTP				
WQM Permit No.		Issuance Date		
1669202		1/9/1970		
1600406		2/15/2001		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial		Sedimentation		
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.006				Landfill

Changes Since Last Permit Issuance:

Other Comments: Sedimentation is achieved using a sedimentation tank.

Compliance History	
Summary of DMRs:	An administrative review showed one violation in May 2020 for total aluminum and two violations for total aluminum and one for TSS in October 2021.
Summary of Inspections:	<p>A site inspection was conducted on 7/15/2020. The inspection report noted the follow non-compliance items:</p> <ol style="list-style-type: none"> 1. 25 Pa. Code 92a.41(a)(10): Failure to maintain proper sample temperature. 2. 25 Pa. Code 92a.41(a)(10): Failure to use an NIST thermometer. 3. 25 Pa. Code 92a.41(a)(10): Failure to maintain proper sample temperature. 4. 25 Pa. Code 92a.41(a)(12): Failure to submit a required DMR supplemental report. 5. 25 Pa. Code 92a.41(a)(5): Failure to maintain permitted treatment units in operable condition <p>Electrical surge Saturday 7/11/2020</p> <ol style="list-style-type: none"> 6. 25 Pa. Code 92a.61(f)(1): Failure to properly document monitoring activities and results. Time is recorded but not analyst initials.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD)												
Average Monthly	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001
Flow (MGD)												
Daily Maximum	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001
pH (S.U.)												
Minimum	7.51	7.4	7.29	7.27	7.26	7.21	7.24	7.27	7.28	7.23	7.32	7.36
pH (S.U.)												
Maximum	7.51	7.4	7.29	7.27	7.26	7.21	7.24	7.27	7.28	7.23	7.32	7.36
TRC (mg/L)												
Average Monthly	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
TRC (mg/L)												
Instantaneous Maximum	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
TSS (lbs/day)												
Average Monthly	0.0041	0.0041	0.0041	0.0450	0.0041	0.0041	0.0041	0.00834	0.0216	0.00834	0.0041	0.0041
TSS (lbs/day)												
Daily Maximum	0.0041	0.0041	0.0041	0.0450	0.0041	0.0041	0.0041	0.00834	0.0216	0.00834	0.0041	0.0041
TSS (mg/L)												
Average Monthly	5	5	5	54	5	5	5	5	13	5	5	5
TSS (mg/L)												
Daily Maximum	5	5	5	54	5	5	5	5	13	5	5	5
Total Aluminum (lbs/day)												
Average Monthly	0.0003	0.0001	0.0007	0.01668	0.0001	0.0001	0.0002	0.0003	0.0001	0.0004	0.0001	0.00015
Total Aluminum (lbs/day)												
Daily Maximum	0.0003	0.0001	0.0007	0.01668	0.0001	0.0001	0.0002	0.0003	0.0001	0.0004	0.0001	0.00015
Total Aluminum (mg/L)												
Average Monthly	0.414	0.121	0.896	20.00	0.138	0.151	0.267	0.227	0.084	0.276	0.176	0.185
Total Aluminum (mg/L)												
Daily Maximum	0.414	0.121	0.896	20.00	0.138	0.151	0.267	0.227	0.084	0.276	0.176	0.185
Total Iron (lbs/day)												
Average Monthly	0.00001	0.00002	0.00005	0.0011	0.00001	0.00002	0.00005	0.0001	0.00003	0.00003	0.00001	0.00003
Total Iron (lbs/day)												
Daily Maximum	0.00001	0.00002	0.00005	0.0011	0.00001	0.00002	0.00005	0.0001	0.00003	0.00003	0.00001	0.00003
Total Iron (mg/L)												
Average Monthly	0.0239	0.0271	0.0676	1.34	0.0200	0.0358	0.0607	0.0610	0.0200	0.0202	0.0200	0.0412

Total Iron (mg/L) Daily Maximum	0.0239	0.0271	0.0676	1.34	0.0200	0.0358	0.0607	0.0610	0.0200	0.0202	0.0200	0.0412
Total Manganese (lbs/day) Average Monthly	0.00000 5	0.00002	0.00001	0.0003	0.00018	0.00003	0.00003	0.0001	0.00001	0.00001	0.00000 5	0.00002
Total Manganese (lbs/day) Daily Maximum	0.00000 5	0.00002	0.00001	0.0003	0.00018	0.00003	0.00003	0.0001	0.00001	0.00001	0.00000 5	0.00002
Total Manganese (mg/L) Average Monthly	0.006	0.027	0.016	0.439	0.219	0.046	0.036	0.078	0.007	0.006	0.006	0.024
Total Manganese (mg/L) Daily Maximum	0.006	0.027	0.016	0.439	0.219	0.046	0.036	0.078	0.007	0.006	0.006	0.024

Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	0.0109
Latitude	41° 9' 59.00"	Longitude	-79° 39' 13.00"
Wastewater Description:	Filter backwash		

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
Total Suspended Solids	30	Average Monthly		362-2183-003
Total Suspended Solids	40	Daily Maximum		362-2183-003
Aluminum	4.0	Average Monthly		362-2183-003
Aluminum	8.0	Daily Maximum		362-2183-003
Manganese	1.0	Average Monthly		362-2183-003
Manganese	2.0	Daily Maximum		362-2183-003
Total Iron	2.0	Average Monthly		362-2183-003
Total Iron	4.0	Daily Maximum		362-2183-003
Total Residual Chlorine	0.5	Average Monthly		92a.48(b)(2)
Total Residual Chlorine	1.0	Daily Maximum		362-2183-003
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)

Comments: 362-2183-003 References the Department's technical guidance document entitled "Technology-based Control Requirements for Water Treatment Plant Wastes." The limits are BPT (Best Practical Control Technology) and are not based on actual regulation. The Department has identified the TSD requirements as the Best Available Treatment (BAT) that, as a minimum, the permittee will be required to meet. Since no federal effluent limitation guidelines (ELGs) have been promulgated, the Department's Best Professional Judgment of BAT, as outlined in the TSD, satisfies the Federal requirements of the 40 CFR 125.3(d) regulations.

The BPJ TRC limits above were not previously applied, and thus the existing limits are less stringent than the BPJ limits. The permittee will be given a one-year compliance schedule to meet the new limits because it is unknown if the permittee can meet them currently.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Total Aluminum	0.93	Average Monthly	TMS Version 1.3
Total Aluminum	1.4	Daily Max	TMS Version 1.3

Comments: The Toxics Management Spreadsheet also recommended monitoring for hexavalent chromium, total cobalt, total copper, total iron, and total manganese. Total iron and total manganese have BPJ limits that will be placed in the permit. Monitoring for hexavalent chromium, total cobalt, and total copper will be placed in the permit at a monitoring frequency of 1/quarter.

Best Professional Judgment (BPJ) Limitations

Comments: See Tech-Based Limitations section above.

Anti-Backsliding

N/A

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through January 31, 2024.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.7	XXX	1.7	1/month	Grab

Compliance Sampling Location: Outfall 001 (prior to mixing with any other waters)

Other Comments:

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: February 1, 2024 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.0	1/month	Grab

Compliance Sampling Location: Outfall 001 (prior to mixing with any other waters)

Other Comments:

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	1/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
Total Suspended Solids	Report	Report	XXX	30	60	75	1/month	Grab
Aluminum, Total	0.058	0.13	XXX	0.93	1.45	2.33	1/month	Grab
Chromium, Hexavalent	XXX	Report	XXX	XXX	Report	XXX	1/quarter	Grab
Cobalt, Total	XXX	Report	XXX	XXX	Report	XXX	1/quarter	Grab
Copper, Total	XXX	Report	XXX	XXX	Report	XXX	1/quarter	Grab
Iron, Total	Report	Report	XXX	2.0	3.45	5	1/month	Grab
Manganese, Total	Report	Report	XXX	1.0	2.0	2.5	1/month	Grab

Compliance Sampling Location: Outfall 001 (prior to mixing with any other waters)

Other Comments:

Discharge Information

Instructions Discharge Stream

Facility: **St. Petersburg Boro WTP**

NPDES Permit No.: **PA0223026**

Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste**

Wastewater Description: **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
0.0109	59.9	7.5						

				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	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl	
Group 1	Total Dissolved Solids (PWS)	mg/L		131												
	Chloride (PWS)	mg/L		22.9												
	Bromide	mg/L	<	1												
	Sulfate (PWS)	mg/L		35.2												
	Fluoride (PWS)	mg/L														
Group 2	Total Aluminum	µg/L		1230												
	Total Antimony	µg/L	<	0.4												
	Total Arsenic	µg/L	<	0.4												
	Total Barium	µg/L	<	55												
	Total Beryllium	µg/L	<	5												
	Total Boron	µg/L	<	250												
	Total Cadmium	µg/L	<	0.1												
	Total Chromium (III)	µg/L	<	5												
	Hexavalent Chromium	µg/L	<	10												
	Total Cobalt	µg/L	<	5												
	Total Copper	µg/L	<	5												
	Free Cyanide	µg/L	<													
	Total Cyanide	µg/L	<	20												
	Dissolved Iron	µg/L	<	20												
	Total Iron	µg/L		933												
	Total Lead	µg/L	<	0.3												
	Total Manganese	µg/L		716												
	Total Mercury	µg/L	<	0.2												
	Total Nickel	µg/L	<	5												
	Total Phenols (Phenolics) (PWS)	µg/L	<	250												
	Total Selenium	µg/L	<	0.6												
	Total Silver	µg/L	<	0.2												
	Total Thallium	µg/L	<	0.05												
	Total Zinc	µg/L	<	10												
	Total Molybdenum	µg/L	<	5												
	Acrolein	µg/L	<													
	Acrylamide	µg/L	<													
	Acrylonitrile	µg/L	<													
	Benzene	µg/L	<													
	Bromoform	µg/L	<													
	Carbon Tetrachloride	µg/L	<													

Group 3	Chlorobenzene	µg/L	<																
	Chlorodibromomethane	µg/L	<																
	Chloroethane	µg/L	<																
	2-Chloroethyl Vinyl Ether	µg/L	<																
	Chloroform	µg/L	<																
	Dichlorobromomethane	µg/L	<																
	1,1-Dichloroethane	µg/L	<																
	1,2-Dichloroethane	µg/L	<																
	1,1-Dichloroethylene	µg/L	<																
	1,2-Dichloropropane	µg/L	<																
	1,3-Dichloropropylene	µg/L	<																
	1,4-Dioxane	µg/L	<																
	Ethylbenzene	µg/L	<																
	Methyl Bromide	µg/L	<																
	Methyl Chloride	µg/L	<																
	Methylene Chloride	µg/L	<																
	1,1,2,2-Tetrachloroethane	µg/L	<																
	Tetrachloroethylene	µg/L	<																
	Toluene	µg/L	<																
Group 4	1,2-trans-Dichloroethylene	µg/L	<																
	1,1,1-Trichloroethane	µg/L	<																
	1,1,2-Trichloroethane	µg/L	<																
	Trichloroethylene	µg/L	<																
	Vinyl Chloride	µg/L	<																
	2-Chlorophenol	µg/L	<																
	2,4-Dichlorophenol	µg/L	<																
	2,4-Dimethylphenol	µg/L	<																
	4,6-Dinitro-o-Cresol	µg/L	<																
	2,4-Dinitrophenol	µg/L	<																
	2-Nitrophenol	µg/L	<																
	4-Nitrophenol	µg/L	<																
	p-Chloro-m-Cresol	µg/L	<																
Group 5	Pentachlorophenol	µg/L	<																
	Phenol	µg/L	<																
	2,4,6-Trichlorophenol	µg/L	<																
	Acenaphthene	µg/L	<																
	Acenaphthylene	µg/L	<																
	Anthracene	µg/L	<																
	Benzidine	µg/L	<																
	Benzo(a)Anthracene	µg/L	<																
	Benzo(a)Pyrene	µg/L	<																
	3,4-Benzofluoranthene	µg/L	<																
	Benzo(ghi)Perylene	µg/L	<																
	Benzo(k)Fluoranthene	µg/L	<																
	Bis(2-Chloroethoxy)Methane	µg/L	<																
	Bis(2-Chloroethyl)Ether	µg/L	<																
	Bis(2-Chloroisopropyl)Ether	µg/L	<																
	Bis(2-Ethylhexyl)Phthalate	µg/L	<																
	4-Bromophenyl Phenyl Ether	µg/L	<																
	Butyl Benzyl Phthalate	µg/L	<																
	2-Chloronaphthalene	µg/L	<																
	4-Chlorophenyl Phenyl Ether	µg/L	<																
	Chrysene	µg/L	<																
	Dibenzo(a,h)Anthracene	µg/L	<																
	1,2-Dichlorobenzene	µg/L	<																
	1,3-Dichlorobenzene	µg/L	<																
	1,4-Dichlorobenzene	µg/L	<																
	3,3-Dichlorobenzidine	µg/L	<																
	Diethyl Phthalate	µg/L	<																
	Dimethyl Phthalate	µg/L	<																
	Di-n-Butyl Phthalate	µg/L	<																
	2,4-Dinitrotoluene	µg/L	<																
	2,6-Dinitrotoluene	µg/L	<																

Group 6	Di-n-Octyl Phthalate	µg/L	<																
	1,2-Diphenylhydrazine	µg/L	<																
	Fluoranthene	µg/L	<																
	Fluorene	µg/L	<																
	Hexachlorobenzene	µg/L	<																
	Hexachlorobutadiene	µg/L	<																
	Hexachlorocyclopentadiene	µg/L	<																
	Hexachloroethane	µg/L	<																
	Indeno(1,2,3-cd)Pyrene	µg/L	<																
	Isophorone	µg/L	<																
	Naphthalene	µg/L	<																
	Nitrobenzene	µg/L	<																
	n-Nitrosodimethylamine	µg/L	<																
	n-Nitrosodi-n-Propylamine	µg/L	<																
	n-Nitrosodiphenylamine	µg/L	<																
	Phenanthrene	µg/L	<																
	Pyrene	µg/L	<																
	1,2,4-Trichlorobenzene	µg/L	<																
Group 7	Aldrin	µg/L	<																
	alpha-BHC	µg/L	<																
	beta-BHC	µg/L	<																
	gamma-BHC	µg/L	<																
	delta BHC	µg/L	<																
	Chlordane	µg/L	<																
	4,4-DDT	µg/L	<																
	4,4-DDE	µg/L	<																
	4,4-DDD	µg/L	<																
	Dieldrin	µg/L	<																
	alpha-Endosulfan	µg/L	<																
	beta-Endosulfan	µg/L	<																
	Endosulfan Sulfate	µg/L	<																
	Endrin	µg/L	<																
	Endrin Aldehyde	µg/L	<																
	Heptachlor	µg/L	<																
	Heptachlor Epoxide	µg/L	<																
	PCB-1016	µg/L	<																
	PCB-1221	µg/L	<																
	PCB-1232	µg/L	<																
	PCB-1242	µg/L	<																
	PCB-1248	µg/L	<																
	PCB-1254	µg/L	<																
	PCB-1260	µg/L	<																
	PCBs, Total	µg/L	<																
	Toxaphene	µg/L	<																
	2,3,7,8-TCDD	ng/L	<																
Group 8	Gross Alpha	pCi/L	<																
	Total Beta	pCi/L	<																
	Radium 226/228	pCi/L	<																
	Total Strontium	µg/L	<																
	Total Uranium	µg/L	<																
Group 9	Osmotic Pressure	mOs/kg																	
Group 10																			

Stream / Surface Water Information

St. Petersburg Boro WTP, NPDES Permit No. PA0223026, Outfall 001

Instructions **Discharge** **Stream**

Receiving Surface Water Name: UNT to Clarion 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	049229	9.3	1260	0.4	0.02974		Yes
End of Reach 1	049229	0	846	7671		1	Yes

Q₇₋₁₀

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	9.3	0.1	0.01588									100	7		
End of Reach 1	0	0.1	2050									75	8.1		

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	9.3														
End of Reach 1	0														

Model Results

St. Petersburg Boro WTP, NPDES Permit No. PA0223026, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All

☐ Inputs

☐ Results

☐ Limits

☒ Hydrodynamics

Q₇₋₁₀

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
9.3	0.02		0.02	0.017	0.03	0.296	2.518	8.503	0.044	12.939	0.074
0	2050.00	1.547	2048.453								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
9.3	0.20		0.20	0.017	0.03	0.679	2.518	3.709	0.126	4.502	0.077
0	5827.224	1.547	5825.68								

☒ Wasteload Allocations

☒ AFC

CCT (min): 0.074

PMF: 1

Analysis Hardness (mg/l): 79.348

Analysis pH: 7.19

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	
Total Aluminum	0	0		0	750	750	1,456	
Total Antimony	0	0		0	1,100	1,100	2,136	
Total Arsenic	0	0		0	340	340	660	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	40,777	
Total Boron	0	0		0	8,100	8,100	15,728	
Total Cadmium	0	0		0	1,608	1,69	3.27	Chem Translator of 0.954 applied
Total Chromium (III)	0	0		0	471.429	1,492	2,897	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	31.6	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	184	
Total Copper	0	0		0	10.807	11.3	21.9	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	50.158	60.8	118	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.2	Chem Translator of 0.85 applied
Total Nickel	0	0		0	385.012	386	749	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	2.161	2.54	4.94	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	126	
Total Zinc	0	0		0	96.324	98.5	191	Chem Translator of 0.978 applied

☒ **CFC**

CCT (min): 0.074

PMF: 1

Analysis Hardness (mg/l): 79.348

Analysis pH: 7.19

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	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	427	
Total Arsenic	0	0		0	150	150	291	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	7,961	
Total Boron	0	0		0	1,600	1,600	3,107	
Total Cadmium	0	0		0	0.209	0.23	0.44	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	61.323	71.3	138	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	20.2	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	36.9	
Total Copper	0	0		0	7.349	7.66	14.9	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	2,913	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.955	2.37	4.6	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.76	Chem Translator of 0.85 applied
Total Nickel	0	0		0	42.763	42.9	83.3	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	9.69	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	25.2	
Total Zinc	0	0		0	97.112	98.5	191	Chem Translator of 0.986 applied

☒ **THH**

CCT (min): 0.074

THH PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

PWS PMF: 1

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 0 with a design stream flow of 2050 cfs
Chloride (PWS)	0	0		0	250,000	250,000	#####	WQC applied at RMI 0 with a design stream flow of 2050 cfs

Sulfate (PWS)	0	0		0	250,000	250,000	#####	WQC applied at RMI 0 with a design stream flow of 2050 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	10.9	
Total Arsenic	0	0		0	10	10.0	19.4	
Total Barium	0	0		0	2,400	2,400	4,660	
Total Boron	0	0		0	3,100	3,100	6,019	
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	583	
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	1,942	
Total Mercury	0	0		0	0.050	0.05	0.097	
Total Nickel	0	0		0	610	610	1,184	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	607,870	WQC applied at RMI 0 with a design stream flow of 2050 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	0.47	
Total Zinc	0	0		0	N/A	N/A	N/A	

☒ **CRL**

CCT (min): 0.077

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	
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	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

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Aluminum	0.085	0.13	933	1,456	2,334	µg/L	933	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	20.2	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Cobalt	Report	Report	Report	Report	Report	µg/L	36.9	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	14.0	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	2,913	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	1,942	THH	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)	60,786,988	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	30,393,494	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	30,393,494	mg/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	4,660	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	3,107	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	0.44	µg/L	Discharge Conc < TQL
Total Chromium (III)	138	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS

DECL

Dissolved Iron	583	µg/L	Discharge Conc < TQL
Total Lead	4.6	µg/L	Discharge Conc < TQL
Total Mercury	0.097	µg/L	Discharge Conc < TQL
Total Nickel	83.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	607,870	µg/L	Discharge Conc ≤ 10% WQBEL
Total Selenium	9.69	µg/L	Discharge Conc < TQL
Total Silver	3.16	µg/L	Discharge Conc < TQL
Total Thallium	0.47	µg/L	Discharge Conc < TQL
Total Zinc	123	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

DK

1A	B	C	D	E	F	G
2	TRC EVALUATION					
3	St. Petersburg Boro WTP					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.015	= Q stream (cfs)		0.5	= CV Daily	
5	0.0025	= Q discharge (MGD)		0.5	= CV Hourly	
6	4	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
9	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations	Reference	CFC Calculations	
11	TRC	1.3.2.iii	WLA_afc = 1.256	1.3.2.iii	WLA_cfc = 1.217	
12	PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581	
13	PENTOXSD TRG	5.1b	LTA_afc= 0.468	5.1d	LTA_cfc = 0.708	
14						
15	Source	Effluent Limit Calculations				
16	PENTOXSD TRG	5.1f	AML MULT = 1.720			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.170			
	WLA_afc	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$				
	LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$				
	LTA_afc	wla_afc * LTAMULT_afc				
	WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$				
	LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$				
	LTA_cfc	wla_cfc * LTAMULT_cfc				
	AML MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$				
	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)				