pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0021491**
Facility Type	**Municipal**	APS ID	**276419**
Major / Minor	**Minor**	Authorization ID	**1343185**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Williamstown Borough Authority**	Facility Name	**Williamstown Borough Authority STP**
Applicant Address	200 S West Street	Facility Address	148 S Orange Street
	Williamstown, PA 17098-1553		Williamstown, PA 17098-9750
Applicant Contact	Stephen Denkovich	Facility Contact	Scott Maurer
Applicant Phone	(717) 647-4848	Facility Phone	(717) 647-4402
Client ID	80931	Site ID	451880
Ch 94 Load Status	Not Overloaded	Municipality	Williamstown Borough
Connection Status	No Limitations	County	Dauphin
Date Application Received	February 17, 2021	EPA Waived?	No
Date Application Accepted	March 3, 2021	If No, Reason	Significant CB Discharge

Purpose of Application: NPDES Renewal with Discharge to Wiconisco Creek - CWF.

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated sewage from Williamstown Borough Authority's wastewater treatment plant. Williamstown Borough Authority owns, maintains, and operates the wastewater treatment plant located in Williams Township, Dauphin County. The sequential batch reactor (SBR) treatment process discharges treated wastewater to Wiconisco Creek which is classified for warm water fishes. The collection system has no combined sewers. The facility has a design average annual flow of 0.45 MGD, hydraulic design capacity is also 0.45 MGD and the organic design capacity is 1000lbs/day. The facility receives flows from Williamstown Borough and Williams Township. The existing NPDES permit was issued on May 23, 2016 with an effective date of June 1, 2016 and expiration date of May 31, 2021. The applicant submitted NPDES renewal application to the Department for processing. A topographic map showing the discharge location is presented in attachment A.

1.1 Sludge use and disposal description and location(s):

Liquid digested sludge is hauled out periodically by a license hauler to Greater Hazleton Sewer Authority for further treatment and disposal.

1.2 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-

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	February 10, 2022
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	February 17, 2022
X		*Maria D. Bebenek* Maria D. Bebenek, P.E./ Program Manager	February 17, 2022

Summary of Review

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.

1.3 Changes to the existing Permit

- Seasonal limit was added for CBOD5
- Quarterly monitoring of E. Coli has been added
- Monthly monitoring of Total Copper, Total Lead and Total Zinc have been added.

1.4 Existing Limit and Monitoring Requirements

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum		
Flow (mgd)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/Day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/Day	Grab
TSS	113	169	XXX	30	45	60	1/week	24-hr comp
$CBOD_5$	75	113	XXX	20	30	40	1/week	24-hr comp
Fecal Coliform (5/1 to 9/30)[(5)]	XXX	XXX	XXX	200	XXX	1000	1/week	Grab
Fecal Coliform (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	10000	1/week	Grab
Ammonia Nov 1 - Apr 30	51	XXX	XXX	13.5	XXX	27	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	17	XXX	XXX	4.5	XXX	9	1/week	24-Hr Composite
Total Aluminum	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Iron	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Manganese	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Summary of Review

1.4.1 Chesapeake Bay Permit Requirements

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Load(lbs)		Concentrations (mg/l)				
	Monthly	Annual	Minimum	Monthly Average	Maximum	Minimum Measurement Frequency	Required Sample Type
Ammonia---N	Report	Report	XXX	Report	XXX	1/week	24-hr Comp
Kjeldahl---N	Report	XXX	XXX	Report	XXX	2/Week	24-hr Comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	2/Week	24-hr Comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculate
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-hr Comp
Net Total Nitrogen	Report	7,306	XXX	XXX	XXX	1/Month	Calculate
Net Total Phos.	Report	974	XXX	XXX	XXX	1/Month	Calculate

1.5 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.45
Latitude	40º 34' 40.39"	Longitude	-76º 37' 37.14"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		

Receiving Waters	Wiconisco Creek (WWF)	Stream Code	16895
NHD Com ID	54972235	RMI	62.4
Drainage Area	21.8	Yield (cfs/mi^2)	0.0401
Q_{7-10} Flow (cfs)	0.87	Q_{7-10} Basis	USGS Gage station
Elevation (ft)	695.0	Slope (ft/ft)	
Watershed No.	6-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, Siltation, pH,		
Source(s) of Impairment	Abandoned Mine Drainage,		
TMDL Status	Final,	Name	Wiconisco Creek AMD

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Suez Water PA		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>53

Changes Since Last Permit Issuance: None

1.5.1 Water Supply:

The nearest downstream water supply intake is approximately 53 miles downstream for Suez Water PA on the Susquehanna River in Susquehanna Township Dauphin County. The discharge has no impact on the intake.

2.0 Treatment Facility Summary				
Treatment Facility Name: Williamstown Borough STP				
WQM Permit No.	**Issuance Date**			
2208401	4/7/2008			
2208401 A-1	6/12/2010			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Tertiary	Sequencing Batch Reactor W/Sol Removal	Ultraviolet	0.45
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.45	1000	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

2.1 Treatment Facility Description

The treatment plant receives flow via gravity with the aid of 4 pump stations. Flow enters the headworks with an adjustable valve and passes through a mechanical screen and grit removal system. Sodium Aluminate is added after grit removal for phosphorus removal. Flow is then pumped to either of the two SBR trains by 5 pumps depending on the cycle of SBR. Effluent from SBR flows to the post EQ tank where air is added on a timed cycle. The flow then goes through a cloth media filter for filtration prior to a UV system for disinfection and eventually to outfall 001. There are two aerobic digesters that operates on time air cycles. Soda ash is added to the digester as needed

2.2 Treatment Chemicals

- Sodium Aluminate for phosphorus removal

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from December 1, 2020 to November 30, 2021)

Parameter	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20
Flow (MGD) Average Monthly	0.21774	0.20286	0.31427	0.19791	0.159	0.151	0.175	0.196	0.262	0.238	0.213	0.282
Flow (MGD) Daily Maximum	0.51011	0.44328	1.31186	0.38798	0.231	0.270	0.330	0.317	0.625	0.660	0.329	1.585
pH (S.U.) Minimum	5.64	6.04	6.28	6.52	6.50	6.49	6.27	6.34	6.02	6.08	6.06	6.13
pH (S.U.) Maximum	7.01	6.94	7.02	7.11	7.07	6.90	6.79	6.95	6.84	6.49	6.71	6.96
DO (mg/L) Minimum	5.74	7.27	5.36	6.12	6.22	5.72	5.69	7.11	8.34	7.68	6.51	6.63
CBOD5 (lbs/day) Average Monthly	< 4	< 5	< 7	< 5	< 3.0	< 3.0	6.0	5.0	8.0	< 5.0	< 5.0	5
CBOD5 (lbs/day) Weekly Average	< 6	< 6.0	19	< 8	< 4.0	6.0	8.0	6.0	14.0	8.0	< 6	9
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 4.0	< 3.0	< 3.0	< 3.0	4.0	4.0	3.0	< 3.0	< 3.0	3.0
CBOD5 (mg/L) Weekly Average	< 3.0	< 3.0	10.0	4.0	< 3.0	4.0	5.0	5.0	4.0	4.0	3.0	4.0
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	67	51	127	249	227	217	153	95	229	229	137	218
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	88	73	408	467	317	294	186	140	425	428	203	306
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	39.8	32.0	77.2	147	202	192	108	65.2	102.4	150	96	144.9
TSS (lbs/day) Average Monthly	< 5	< 5.0	< 28	< 19	< 3.0	6	< 7.0	< 5.0	< 8.0	< 11.0	< 6.0	4.0
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	43	25	157	307	206	216	259	129	232	204	< 173	403
TSS (lbs/day) Raw Sewage Influent Daily Maximum	62	40	710	486	269	385	360	185	514	514	378	1471
TSS (lbs/day) Weekly Average	< 6	< 6.0	94	37	< 4.0	12	15	7.0	14.0	19.0	10.0	6.0

TSS (mg/L) Average Monthly	< 3.0	< 3.0	< 15.0	< 11.0	< 3.0	5.0	< 5.0	< 4.0	< 4.0	< 7.0	4.0	< 3.0
TSS (mg/L) Raw Sewage Influent Ave. Monthly	26.0	16.0	87.0	182	182	197	181	90	101	142	< 100	263
TSS (mg/L) Weekly Average	4.0	< 3.0	51.0	23.0	< 3.0	11.0	9.0	4.0	8.0	12.0	7.0	3.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 3.0	108	< 120.0	41.0	< 10	< 10	< 10	< 2.0	< 23.0	< 230.0	< 119	< 1.0
Fecal Coliform (CFU/100 ml) Instant. Maximum	7.0	1070.0	3000	460.0	< 10	< 10	< 10	20.0	100.0	1000	1000	< 1.0
UV Intensity (mW/cm²) Minimum	82	84.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nitrate-Nitrite (mg/L) Average Monthly	9.28	8.75	6.3	5.69	4.22	4.94	2.23	3.46	7.63	12.4	8.83	5.03
Nitrate-Nitrite (lbs) Total Monthly	535	440	332	308	174	181	96	176	575	623	457	262
Total Nitrogen (mg/L) Average Monthly	< 9.35	9.23	7.17	7.41	5.35	6.62	3.65	5.72	10.66	15.02	10.6	7.99
Total Nitrogen (lbs) Effluent Net Total Monthly	< 539	466	13	410	220	243	155	282	846	751	553	412
Total Nitrogen (lbs) Total Monthly	< 539	466	380	410	220	243	155	282	846	751	553	412
Total Nitrogen (lbs) Effluent Net Total Annual			< 5099									
Total Nitrogen (lbs) Total Annual			< 5099									
Ammonia (lbs/day) Average Monthly	0.3	0.2	0.4	0.6	0.40	0.3	0.60	0.8	1.0	2.0	0.8	2.0
Ammonia (mg/L) Average Monthly	8.55	0.16	0.23	0.33	0.35	0.27	0.44	0.57	0.66	0.98	0.43	1.33
Ammonia (lbs) Total Monthly	10	8	11	19	13	10	17	24	42	46.0	24	66
Ammonia (lbs) Total Annual			339									
TKN (mg/L) Average Monthly	< 0.9	< 1.05	< 1.2	1.73	< 1.13	1.68	1.73	2.25	3.03	2.61	1.85	2.84
TKN (lbs) Total Monthly	< 53	< 53	< 65	< 103	< 46	62	74	107	272	127	100	145

Total Phosphorus (mg/L) Average Monthly	0.56	0.97	1.99	2.32	2.07	1.72	1.08	< 0.59	0.91	0.80	0.57	0.85
Total Phosphorus (lbs) Effluent Net Total Monthly	30	49	106	123	85	63	47	< 25	101	40	< 33	45
Total Phosphorus (lbs) Total Monthly	30	49	< 831	123	85	63	47	< 25	101	40	< 33	43
Total Phosphorus (lbs) Effluent Net Total Annual			< 883									
Total Phosphorus (lbs) Total Annual			< 883									
Total Aluminum (lbs/day) Average Monthly	< 0.2	< 5	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	9.0	< 0.20	< 0.2	< 0.1
Total Aluminum (mg/L) Ave. Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.77	< 0.01	< 0.11	< 0.10
Total Iron (lbs/day) Average Monthly	< 0.04	0.04	< 0.2	0.02	0.06	0.03	0.03	0.04	2.0	0.05	0.07	0.03
Total Iron (mg/L) Average Monthly	< 0.02	< 0.03	< 0.11	0.02	< 0.03	0.02	0.03	0.02	0.41	0.03	0.03	0.03
Total Manganese (lbs/day) Ave. Monthly	0.08	0.05	0.03	0.02	0.05	0.05	0.1	0.20	0.40	0.1	0.1	0.04
Total Manganese (mg/L) Ave. Monthly	0.04	0.03	0.02	0.02	< 0.04	0.04	0.08	0.08	0.12	0.08	0.06	0.03

3.2 Effluent Violations for Outfall 001, from: January 1, 2021 To: November 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	11/30/21	Min	5.64	S.U.	6.0	S.U.
TSS	09/30/21	Wkly Avg	51.0	mg/L	45.0	mg/L
Fecal Coliform	09/30/21	IMAX	3000	CFU/100 ml	1000	CFU/100 ml

3.3 Summary of Discharge Monitoring Reports (DMRs)**:**

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1 indicate permit limits have been met most of the time. pH, Fecal Coliform and TSS effluent violations were noted on DMRs during the period reviewed and presented in section 3.2 above. The violations appear to be operation related

3.4 Summary of Inspections:

The facility has been inspected a couple times during last permit cycle. No effluent violations were found during plant inspections. The facility is operated and well maintained.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .45
Latitude 40º 34' 40.66" **Longitude** -76º 37' 36.95"
Wastewater Description: Sewage Effluent

4.1 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 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.

4.2 Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: Total Residual Chlorine is not applicable see report for details.

4.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

4.4 Water Quality-Based Limitations

4.4.1 Receiving Stream

The receiving stream is the Wiconisco Creek. According to 25 PA § 93.9o, Wiconisco Creek is protected for Warm Water Fishes (WWF). It is located in Drainage List m and State Watershed 6-C. It has been assigned stream code 16895. According to the Department's Pennsylvania Integrated Water Quality Monitoring and Assessment Report, this stream is impaired for pH, siltation and metals due to abandoned mine drainage. A TMDL for the effects of Acid Mine Drainage was completed and approved on November 24, 2008 and is discussed further in this report.

4.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 0155500 on East Mahantango Creek at Dalmatia. The East Mahantango gage is the closest active gage to Wiconisco Creek and has similar geology. The Q_{7-10} and drainage area at the gage are 6.5ft^3/s and 162 mi^2 respectively. The resulting yields are as follows:

Q_{7-10} = 6.5 cfs /164 sq. mi = 0.0401cfs/sq.mi
Q_{30-10} /Q_{7-10} = 1.45
Q_{1-10} /Q_{7-10} = 0.75

The drainage area at the point of discharge calculated using streamStats = 21.8 sq. mi.
The design flow is calculated as: Q_{7-10} = 0.0401cfs x 21.8 sq. mi = 0.874cfs

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

- STP pH = 6.8 (DMR average July – Sept.)
- STP Temperature = 22 ° C (Inspection Report)
- Stream pH = 7.0 (Previous protection report)
- Stream Temperature = 20 ° C (Previous protection report)
- Background NH_3-N = 0.0 (default)

4.4.3 $CBOD_5$:

Due to the proximity of Lykens Borough, Washington Township and Elizabethville discharges, they were modelled together with Williamstown borough's discharge. The attached WQM 7.0 stream model (Attachment B) indicates that a summer monthly average limit of 15 mg/l is needed to protect the water quality of the stream. This is slightly more stringent than the existing limit of 20mg/l, but DMRs and inspection reports show the STP has can meet the proposed new limitation. For winter months the existing limitation of 20mg/l is adequate to protect water quality of the stream. Therefore, a summer limit of 15mg/l monthly average with 24 mg/l weekly average and 30 mg/l instantaneous maximum and winter limit of 20mg/l monthly average with 30mg/l weekly average and 40 mg/l instantaneous maximum will be applied for this current permit cycle.

4.4.4 **NH_3N**

The attached result of the WQM 7.0 stream model (Attachment B) indicates also that a summer average monthly limit of 4.0 mg/l NH_3 is necessary to protect the aquatic life from toxicity effects. The facility's DMR and inspection report indicate the facility is can meet the proposed limits without difficulty. Winter limit is 3 times the summer limit.

4.4.5 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

4.4.6 Total Suspended Solids:

There is no water quality criterion for TSS. A limit of 30 mg/l AML in the existing permit which was based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) will remain in the permit in addition to AWL of 45mg/l per 40CFR 133.102(b)(2) and 25 PA § 92a.47(a)(2) and IMAX of 60mg/l. Mass-based limits are calculated based on the equation presented in section 4.3.

4.4.7 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN and TP during permit renewal and any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. EPA published Chesapeake Bay TMDL in December of 2010. In order to address the TMDL, Pennsylvania developed Chesapeake Watershed Implementation Plan (WIP) Phase 1, Phase 2 and currently Phase 3 WIP and a supplement to the WIPs to be implemented with the original Chesapeake Bay Strategy.

As outlined in the current Phase 3 WIP and the current supplement to the WIP, re-issuing permits for significant dischargers would follow the same phased approach formulated in the original Bay strategy whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewals.

This facility was a non-significant phase 4 but expanded from 0.375MGD to 0.45MGD and was issued a final permit with total maximum annual Total Nitrogen Cap load of 7,306 lbs/ and a TP cap load of 974 lbs/year. These loads are the maximum a non-significant facility can receive after comparing with loads based on existing performance and the design flow prior to August 29, 2005.

4.4.8 Total Residual Chlorine

The discharge does not have the reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee does not add chlorine to the wastewater for disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. The permittee may use chlorine-based chemicals for cleaning and is required to optimize chlorine usage to prevent negative impacts on receiving stream. Daily UV Intensity (mW/cm^2) monitoring is required in the permit to ensure efficiency of the UV unit.

4.4.9 Toxics

A reasonable potential (RP) analysis was done for pollutants sampled in support of the permit renewal application. All pollutants that were presented in the application sampling data were entered into DEP's Toxics Management Spreadsheet (TMS) to calculate WQBELs. The results of the TMS are presented in attachment C. Limitation was recommended for Total Copper, Total Lead and Total Zinc and monitoring was recommended for Total Aluminum and Total Manganese. The permittee responded to a pre-draft permit survey for toxic pollutants and stated they are not certain of the sources of these toxics and is uncertain of meeting the new limits. The permit will be drafted requiring monitoring for Total Aluminum and Total Manganese. For Total Copper, Total Lead and Total Zinc, monitoring will be required in the interim to allow the permittee to collect site-specific data and conduct toxic reduction evaluation if they wish and provide compliance report for the recommended new permit limits.

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.

4.4.10 TDS, Chloride, Sulfate, Bromide, and 1,4-dioxane

The maximum daily TDS data submitted with the application is 324 mg/l which is equivalent to 1216 lbs/day based on the permitted flow of 0.45 MGD. The discharge level for TDS is well below 1000 mg/l and the 20,000lbs/day cut-off to require monitoring in the permit. There is no data on 1,4-dioxane.

4.4.11 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E.coli. As a result, DEP is including monitoring requirements for E. Coli in new and

renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 – 0.05 MGD. Your discharge of 0.45MGD requires 1/quarter monitoring as included in the permit.

4.4.12 Influent BOD and TSS Monitoring

The permit will include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

4.4.13 Stormwater

There is no stormwater outfall associated with this facility.

4.4.14 Industrial Users

This Wastewater Treatment Plant does not receive wastewater from any significant industrial users.

4.4.15 Pretreatment Requirements

The design annual average flow of the treatment plant is 0.45 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 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.

5.3 Class A Wild Trout Fisheries

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

5.4 303d Listed Streams

The discharge is located on a 303d listed stream segment for the effects of AMD. A TMDL was completed and approved on November 24, 2008. The TMDL calls for reduction in metals (Aluminum, Iron and Manganese) and to maintain a pH within 6-9 S.U at some areas and no reduction at all in certain areas. Sewage treatment plants such as this facility were not considered a source of AMD and were not included in the TMDL. This facility discharge treated wastewater that limits pH to between 6-9 S.U. Monitoring data indicates the facility contributes some level of Total Aluminum, Total Manganese and Total Iron to the stream therefore monitoring for Total Aluminum, Total Manganese and Total Iron will continue in the permit at a frequency of 1/month to ensure discharge levels remain low.

5.5 Special Permit Conditions

The permit contains the following special conditions:

- Stormwater Prohibition, Approval Contingencies, Solids Management and Restriction on receipt of hauled in waste under certain conditions and site-specific data collection requirement.

5.6 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).

5.7 Effluent Monitoring Frequency

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.

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6.0 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	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	75	113	XXX	20.0	30.0	40	1/week	24-Hr Composite
CBOD5 May 1 – Oct 31	56	90	XXX	15.0	24.0	30	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	113	169	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite

Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	45	XXX	XXX	12	XXX	24	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	15	XXX	XXX	4.0	XXX	8	1/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Aluminum	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Iron	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Manganese	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Lead	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Zinc	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Total Copper	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Compliance Sampling Location: At Outfall 001

6.1 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

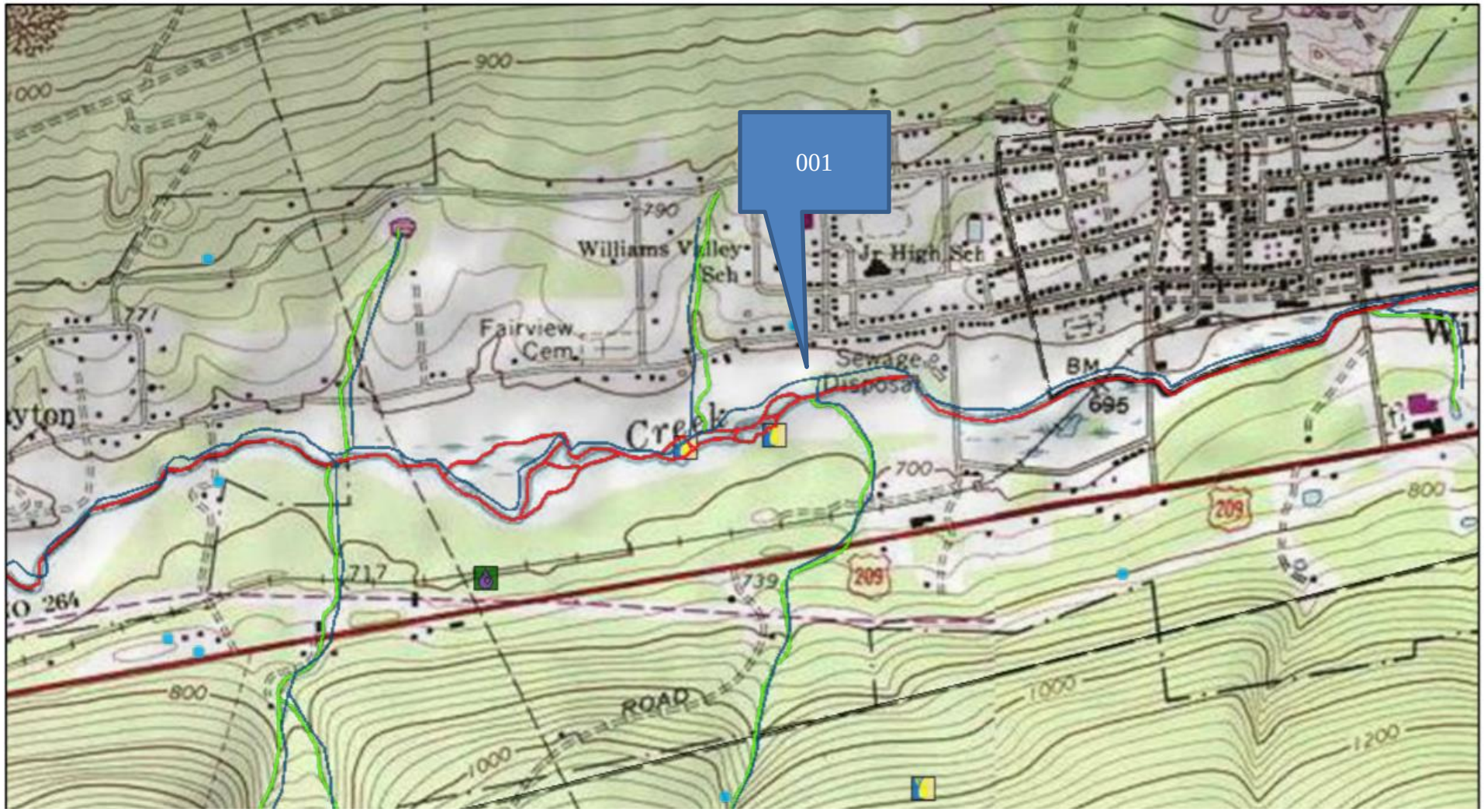
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	7306 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	974 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: At outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☒	Toxics Management Spreadsheet (see Attachment **C**)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing effluent limitations for individual sewage permit
☐	Other:

8. Attachments

A. Topographical Map



B. WQM Mode Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
06C	16895	WICONISCO CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
32.400	Williamstwn STP	PA0021491	0.450	CBOD5	15.01		
				NH3-N	4.49	8.98	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
27.600	Lykens Boro STP	PA0043575	0.410	CBOD5	25		
				NH3-N	11.82	23.64	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
23.500	Washingtom Twp	PA0086185	0.050	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
15.950	Elizabethville	PA0037737	0.400	CBOD5	25		
				NH3-N	15.76	31.52	
				Dissolved Oxygen			5

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06C	16895	WICONISCO CREEK	**32.400**	695.00	21.80	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Williamstwn STP	PA0021491	0.4500	0.4500	0.4500	0.000	22.00	6.80

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06C	16895	WICONISCO CREEK	**27.600**	645.00	60.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Lykens Boro STP	PA0043575	0.4100	0.4100	0.4100	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06C	16895	WICONISCO CREEK	**23.500**	580.00	66.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Washingtom Twp	PA0086185	0.0500	0.0500	0.0500	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06C	16895	WICONISCO CREEK	**15.950**	518.00	80.49	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Elizabethville	PA0037737	0.4000	0.4000	0.4000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06C	16895	WICONISCO CREEK	**7.420**	450.00	89.60	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.040	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Dauphin Meadows	PA0080187	0.0500	0.0500	0.0500	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	50.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	50.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
06C	16895	WICONISCO CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
32.400	Williamstwn STP	16.87	32.56	16.87	32.56	0	0
27.600	Lykens Boro STP	15.03	50	15.52	50	0	0
23.500	Washingtom Twp	16.5	50	15.47	50	0	0
15.950	Elizabethville	15.39	50	14.89	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
32.400	Williamstwn STP	1.86	5.28	1.86	5.28	0	0
27.600	Lykens Boro STP	1.8	11.82	1.8	11.82	0	0
23.500	Washingtom Twp	1.88	25	1.8	25	0	0
15.950	Elizabethville	1.82	15.76	1.76	15.76	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
32.40	Williamstwn STP	15.01	15.01	4.49	4.49	5	5	0	0
27.60	Lykens Boro STP	25	25	11.82	11.82	5	5	0	0
23.50	Washingtom Twp	25	25	25	25	3	3	0	0
15.95	Elizabethville	25	25	15.76	15.76	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
06C	16895	WICONISCO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
32.400	0.450	20.887	6.900
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
21.429	0.577	37.171	0.127
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
7.77	0.565	1.99	0.749
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.805	2.433	Tsivoglou	5
Reach Travel Time (days)			
2.308			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.231	6.78	1.67	5.53
0.462	5.92	1.41	5.12
0.692	5.17	1.18	5.16
0.923	4.51	1.00	5.41
1.154	3.94	0.84	5.76
1.385	3.44	0.71	6.12
1.615	3.00	0.59	6.48
1.846	2.62	0.50	6.80
2.077	2.29	0.42	7.10
2.308	2.00	0.35	7.36

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
27.600	0.860	21.221	6.955
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
32.565	0.670	48.580	0.171
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.90	0.675	2.15	0.769
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.320	5.027	Tsivoglou	5
Reach Travel Time (days)			
1.464			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.146	5.32	1.92	6.82
0.293	4.79	1.72	6.71
0.439	4.32	1.54	6.79
0.586	3.89	1.37	6.94
0.732	3.50	1.23	7.11
0.878	3.15	1.10	7.29
1.025	2.84	0.98	7.45
1.171	2.56	0.88	7.60
1.317	2.31	0.78	7.74
1.464	2.08	0.70	7.86

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
06C	16895	WICONISCO CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
23.500	0.910	21.221	6.958
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
35.272	0.692	50.979	0.166
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.51	0.077	1.12	0.769
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.793	2.527	Tsivoglou	5
Reach Travel Time (days)			
2.777			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.278	2.45	0.91	7.62
0.555	2.40	0.73	7.67
0.833	2.34	0.59	7.80
1.111	2.29	0.48	7.96
1.389	2.24	0.39	8.06
1.666	2.19	0.31	8.06
1.944	2.14	0.25	8.06
2.222	2.09	0.20	8.06
2.499	2.05	0.16	8.06
2.777	2.00	0.13	8.06

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
15.950	1.310	21.531	6.968
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
39.698	0.722	55.018	0.183
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.71	0.281	1.96	0.788
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.719	2.729	Tsivoglou	5
Reach Travel Time (days)			
2.842			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.284	4.32	1.57	6.73
0.568	3.97	1.25	6.55
0.853	3.64	1.00	6.70
1.137	3.34	0.80	6.95
1.421	3.07	0.64	7.22
1.705	2.82	0.51	7.46
1.989	2.59	0.41	7.68
2.273	2.37	0.33	7.86
2.558	2.18	0.26	8.01
2.842	2.00	0.21	8.01

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.74	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.47	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
06C	16895	WICONISCO CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
32.400	0.87	0.00	0.87	.6962	0.00197	.577	21.43	37.17	0.13	2.308	20.89	6.90
27.600	2.41	0.00	2.41	1.3304	0.00300	.67	32.56	48.58	0.17	1.464	21.22	6.96
23.500	2.65	0.00	2.65	1.4078	0.00156	.692	35.27	50.98	0.17	2.777	21.22	6.96
15.950	3.23	0.00	3.23	2.0266	0.00151	.722	39.7	55.02	0.18	2.842	21.53	6.97
Q1-10 Flow												
32.400	0.65	0.00	0.65	.6962	0.00197	NA	NA	NA	0.12	2.519	21.04	6.88
27.600	1.78	0.00	1.78	1.3304	0.00300	NA	NA	NA	0.15	1.622	21.47	6.95
23.500	1.96	0.00	1.96	1.4078	0.00156	NA	NA	NA	0.15	3.082	21.47	6.95
15.950	2.39	0.00	2.39	2.0266	0.00151	NA	NA	NA	0.17	3.133	21.82	6.96
Q30-10 Flow												
32.400	1.29	0.00	1.29	.6962	0.00197	NA	NA	NA	0.14	2.026	20.70	6.92
27.600	3.54	0.00	3.54	1.3304	0.00300	NA	NA	NA	0.20	1.262	20.94	6.97
23.500	3.89	0.00	3.89	1.4078	0.00156	NA	NA	NA	0.19	2.391	20.93	6.97
15.950	4.74	0.00	4.74	2.0266	0.00151	NA	NA	NA	0.21	2.466	21.19	6.97

C. Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Williamstown Borough Authority** NPDES Permit No.: **PA0083491** Outfall No.: **001**

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

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
0.45	100	6.8						

					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		394									
	Chloride (PWS)	mg/L		51									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		49.1									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		250									
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		20									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L		300									
	Total Lead	µg/L	<	20									
	Total Manganese	µg/L		300									
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L		200									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Stream / Surface Water Information

Williamstown Borough Authority, NPDES Permit No. PA0083491, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Wiconisco 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	016895	32.4	695	21.8			Yes
End of Reach 1	016895	27.6	645	60			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	32.4	0.0401										100	7		
End of Reach 1	27.6	0.0401													

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	32.4														
End of Reach 1	27.6														

Model Results

Williamstown Borough Authority, NPDES Permit No. PA0083491, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (●) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 10.032 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.90

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	1,692	
Total Copper	0	0		0	13.439	14.0	31.6	Chem Translator of 0.96 applied
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	64.581	81.6	184	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	117.180	120	270	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 10.032 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.90

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 Copper	0	0		0	8.956	9.33	21.0	Chem Translator of 0.96 applied
Total Iron	0	0		0	1,500	1,500	3,384	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	7.18	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	118.139	120	270	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 10.032 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	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	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Copper	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	1,000	1,000	2,256	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 9.608 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 Copper	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 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	1,084	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.076	0.12	20.2	31.6	50.6	µg/L	20.2	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	0.027	0.042	7.18	11.2	17.9	µg/L	7.18	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	2,256	THH	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	0.65	1.01	173	270	433	µg/L	173	AFC	Discharge Conc ≥ 50% WQBEL (RP)