pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0218391**
Facility Type	**Municipal**	APS ID	**1058998**
Major / Minor	**Minor**	Authorization ID	**1388778**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Georges Creek Municipal Authority**	Facility Name	**Georges Creek Municipal Authority STP**
Applicant Address	14 Water Street	Facility Address	Trail 500 @ Georges Crk
	Smithfield, PA 15478		Smithfield, PA 15478
Applicant Contact	Jamie Hoone	Facility Contact	Vance James
Applicant Phone	(724) 569-9601	Facility Phone	412-965-4061
Client ID	45102	Site ID	263531
Ch 94 Load Status	Not Overloaded	Municipality	Georges Township
Connection Status	No Limitations	County	Fayette
Date Application Received	March 3, 2022	EPA Waived?	Yes
Date Application Accepted	March 11, 2022	If No, Reason	
Purpose of Application	NPDES permit renewal application.		

Summary of Review

The PA Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from K2 Engineering, Inc. on behalf of Georges Creek Municipal Authority (permittee) for permittee's Georges Creek Municipal Authority STP (facility) on March 3, 2022. The facility is a minor municipal WWTP with an average design flow of 0.16 MGD. The treated effluent is discharged into Georges Creek in state watershed 19-G, classified as WWF. The current permit will expire on August 31, 2022. The terms and conditions are automatically extended since the renewal application was received at least 180 days prior to the expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.

This fact sheet is developed in accordance with 40 CFR §124.56.

Changes in this renewal: E. Coli and Total Copper monitoring requirement added, Total Zinc limit with schedule is added, summer-time Fecal Coliform IMAX limit changed to 1,000 No./100 ml, and mass loading for NH3-N is added.

Sludge use and disposal description and location(s): Liquid sludge is hauled off to Somerset STP

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
√		Reza H. Chowdhury, E.I.T. / Project Manager	May 13, 2022
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	05/06/2022

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.16
Latitude	39º 47' 20.00"	Longitude	-79º 48' 46.00"
Quad Name	Smithfield	Quad Code	2007
Wastewater Description:	Sewage Effluent		
Receiving Waters	Georges Creek (WWF)	Stream Code	41340
NHD Com ID	99417698	RMI	10.25
Drainage Area	17.4 mi^2	Yield (cfs/mi^2)	0.017
Q_{7-10} Flow (cfs)	0.299	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	950.46	Slope (ft/ft)	
Watershed No.	19-G	Chapter 93 Class.	WWF
Existing Use	**WWF**	Existing Use Qualifier	Ch. 93
Exceptions to Use	None	Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, SILTATION		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE		
TMDL Status	**None**	Name	**N/A**

Background/Ambient Data		Data Source
pH (SU)	7.0	Default per 391-2000-013
Temperature (°C)	25	Default per 391-2000-007
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake	Dunkard Valley Joint Municipal Authority		
PWS Waters	Monongahela River	Flow at Intake (cfs)	
PWS RMI	83.59	Distance from Outfall (mi)	12.12

Changes Since Last Permit Issuance: None

Other Comments:

Streamflow:

There is no nearby active WQN Station or Streamgage from the discharge point. Therefore, USGS's web based watershed delineation tool StreamStats (accessible at https://streamstats.usgs.gov/ss/, accessed on May 12, 2022) was utilized to determine the drainage area and low flow statistics of the receiving stream at discharge point. The StreamStats delineation report shows a drainage area at the Outfall 001 to be 17.4 mi^2, Q_{7-10} of 0.299 cfs, and Q_{30-10} of 0.522 cfs.

Q_{7-10} runoff rate (low flow yield): 0.299 cfs/17.4 mi^2 or 0.017 cfs/mi^2
Q_{30-10}:Q_{7-10}: 0.522/0.299 or 1.746
Default Q_{1-10}:Q_{7-10} of 0.64 will be used for modeling, if needed.

PWS Intake:

The nearby downstream PWS intake is Dunkard Valley Joint Municipal Authority in Monongahela Township, Greene County, which is approximately 12.12 miles downstream of discharge point. Due to the distance, dilution of Monongahela River, and effluent limitations, it is expected that the discharge will not adversely impact the PWS intake.

Wastewater Characteristics:

A pH of 6.67 (median July- September 2021), default temperature of 20^0C (Default per 391-2000-007), and default Hardness value of 100 mg/l will be used for modeling, if needed.

Background data:
There is no nearby WQN station from the discharge point. In absence of site-specific data, a default pH of 7.0 S.U., default stream temperature of 25°C, and default hardness of 100 mg/l will be used, as appropriate.

303d listed stream:
Georges Creek is impaired for metals and siltation from AMDs. No TMDL is proposed.

Treatment Facility Summary

Treatment Facility Name: Georges Creek Municipal Authority STP

WQM Permit No.	Issuance Date
2600401	4/4/2001

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Ultraviolet	0.16

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.16	272	Not Overloaded	Drying	Combination of methods

Changes Since Last Permit Issuance: None

Treatment Plant Description

Georges Creek STP is a minor sewage treatment plant with design flow of 0.16 MGD, hydraulic design capacity of 0.16 MGD, and organic loading capacity of 272 lbs./day. The facility receives flow from the following contributors:

TRIBUTARY INFORMATION

Municipalities Served	Flow Contribution (%)	Type of Sewer System		Population
		Separate (%)	Combined (%)	
Smithfield Borough	80	100		432
Georges Township	20	100		108

Sewage enters into a comminutor and proceeds to a pump station at the plant where it is pumped to the two EQ tanks. Flow then is pumped to the division/splitter box where it goes to the two aerations tanks. From there, the flow enters the clarifier and then to UV disinfection. Post UV, flow enters into a post aeration tank, through flow meter, and then is discharged into Georges Creek. There is no planned upgrade for next five years. The facility is operated and maintained by D and B Environmental. There is no commercial contributor to this STP.

Compliance History

DMR Data for Outfall 001 (from April 1, 2021 to March 31, 2022)

Parameter	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21
Flow (MGD) Average Monthly	0.089	0.110	0.103	0.082	0.042	0.045	0.079	0.082	0.069	0.090	0.043	0.035
Flow (MGD) Daily Maximum	0.129	0.116	0.113	0.196	0.049	0.059	0.130	0.130	0.089	0.155	0.071	0.035
pH (S.U.) Minimum	6.7	6.8	6.8	6.8	6.4	6.4	6.5	6.5	6.5	6.5	7.0	6.0
pH (S.U.) Maximum	7.2	7.1	7.2	7.1	6.7	6.7	7.0	7.0	6.5	7.0	7.5	7.0
DO (mg/L) Minimum	6.4	6.1	6.2	5.6	5.5	5.1	5.0	4.5	5.0	5.0	5.0	5.0
CBOD5 (lbs/day) Average Monthly	< 2.7	< 2.9	< 1.7	< 2.7	< 0.7	< 1.7	2.0	2.0	1.72	2.25	1.07	0.087
CBOD5 (lbs/day) Daily Maximum	5.1	3.8	< 2.4	< 3.3	< 1.2	3.1	2.0	2.0	1.72	2.25	1.07	0.087
CBOD5 (mg/L) Average Monthly	< 3.4	< 3.9	< 2.0	< 4.1	< 2.7	< 4.6	3.0	3.0	3.0	3.0	3.0	3.0
CBOD5 (mg/L) Weekly Average	6.5	4.6	< 2.0	6.0	< 3.0	9.4	3.0	3.0	3.0	3.0	3.0	3.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	85.0	106.6	126.5	115.4	31.7	106.4	205	210	143	181	96	80
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	134.5	132.1	155.2	138.1	68.3	117.2	251	244	184	271	124	105
BOD5 (mg/L) Raw Sewage Influent Average Monthly	104.1	143.7	166.4	172.5	133.2	274.0	311	307	249	241	270	276
BOD5 (mg/L) Raw Sewage Influent Weekly Average	10.0	180.0	265.0	210.0	234.0	325.0	382	358	321	407	346	362
TSS (lbs/day) Average Monthly	< 3.9	< 4.1	< 4.5	< 3.9	< 1.5	2.1	3.2	4.4	2.3	4.2	1.97	1.2
TSS (lbs/day) Raw Sewage Influent Average Monthly	63.6	53.8	72.0	82.7	21.5	71.6	177	118	124	83.5	73	74
TSS (lbs/day) Daily Maximum	< 5.4	4.8	< 6.0	< 8.2	2.3	2.5	5.0	8.2	4.8	6.6	3.87	1.8

TSS (lbs/day) Raw Sewage Influent Daily Maximum	94.7	73.7	129.3	111.2	53.1	117.6	250	157	184	132	122	155
TSS (mg/L) Average Monthly	< 5.0	< 5.3	< 5.0	< 5.0	< 6.1	5.5	5.0	6.5	4.0	5.6	5.5	4.3
TSS (mg/L) Raw Sewage Influent Average Monthly	79	71	100	119	91	178	268	173	215	111.2	203	254
TSS (mg/L) Raw Sewage Influent Weekly Average	118	92	224	178	182	300	380	230	320	176.0	342	532
TSS (mg/L) Weekly Average	< 5.0	6.0	< 5.0	< 5.0	7.6	7.6	7.6	12.4	8.4	8.8	10.8	6.4
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 2	< 1	< 1	< 1	< 1	1	1.0	< 1	1	1	1
Fecal Coliform (No./100 ml) IMAX	< 1	6	< 1	2	< 1	< 1	1	1.0	< 1	1	1	1
UV Transmittance (%) Average Monthly	E	E	E	E	E	E	0.0	0.0	0.0	0.1	0.0	0.0
Total Nitrogen (mg/L) Daily Maximum				4.5								
Ammonia (mg/L) Average Monthly	< 0.8	< 0.8	< 0.8	< 0.8	< 0.3	< 0.4	0.36	0.5	1.0	0.5	0.5	0.1
Ammonia (mg/L) Weekly Average	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	4.1	1.4	0.5	2.5	0.5	0.5	0.1
Total Phosphorus (mg/L) Daily Maximum				0.380								

Compliance History

No DMR violation noted.
No inspection report available in WMS/eFACTS.

Compliance History

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	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	33.4	50.7	XXX	25.0	38.0	50	1/week	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	26.7	40.0	XXX	20.0	30.0	40	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
Total Suspended Solids	40.0	60.0	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	400	1/week	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	9.0	13.5	18.0	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	3.0	4.5	6.0	1/week	8-Hr Composite
Ultraviolet light transmittance (%)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.16
Latitude 39º 47' 20.00" **Longitude** -79º 48' 46.00"
Wastewater Description: Sewage Effluent

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)

Water Quality-Based Limitations

WQM 7.0:

WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for $CBOD_5$, NH_3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. DEP recently updated this model (ver. 1.1) to include new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. The model was utilized for this permit renewal by using updated Q_{7-10} and historic background water quality levels of the river. The following data were used in the attached computer model of the stream:

- Discharge pH 6.67 (median Jul-Sep, 2021, eDMR data)
- Discharge Temperature 20°C (Default per 391-2000-007)
- Discharge Hardness 100 mg/l (Default data)
- Stream pH 7.0 (Default per 391-2000-013)
- Stream Temperature 25°C (Default per 391-2000-013, WWF)
- Stream Hardness 100 mg/l (Application data)

The following nodes were considered in modeling:

Node 1: Georges Creek MA STP (PA0218391) Outfall 001 at Georges Creek (41340)
Elevation: 950.46 ft (USGS National Map viewer, 05/10/2022)
Drainage Area: 17.4 mi^2 (StreamStat Version 3.0, 05/10/2022)
River Mile Index: 10.25 (PA DEP eMapPA)
Low Flow Yield: 0.017 cfs/mi^2
Discharge Flow: 0.16 MGD

Node 2: At confluence with Mountain Creek (41384) at Georges Creek RMI 9.89
Elevation: 948.17 ft (USGS National Map viewer, 05/10/2022)
Drainage Area: 34.2 mi^2 (StreamStat Version 3.0, 05/10/2022)
River Mile Index: 9.89 (PA DEP eMapPA)
Low Flow Yield: 0.017 cfs/mi^2
Discharge Flow: 0.0 MGD

Pre-Draft survey:
Based on the Reasonable Potential (RP) analysis, a new pollutant was identified with new WQBELs. Per PADEP's SOP titled "*Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (SOP No. BCW-PMT-037, revised May 20, 2021)*", the permittee were provided a pre-draft survey on May 12, 2022. The response was received on May 16, 2022.

NH_3-N:
WQM 7.0 suggested NH_3-N limit of 3.0 mg/l as monthly average and 6.0 mg/l as IMAX limit during summer to protect water quality standards. The winter season limits are calculated by multiplying the summer limits with a factor of 3 that resulted in average monthly limit of 9.0 mg/l, and IMAX limit of 18.0 mg/l. Current permit has average weekly limits for both seasons. These are existing limits and will continue. The current permit doesn't have 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

PADEP's SOP BCW-PMT-033 (revised March 24, 2021) section IV states that "*For POTWs, mass loading limits will be established for CBOD5, TSS, NH3-N, and where necessary Total P and Total N. In general, average monthly mass loading will be established for CBOD5, TSS, NH3-N, and where necessary Total P and Total N, and average weekly mass loading limits will be established for CBOD5 and TSS.*"

Based on abode regulatory requirements and SOP's recommendation, summer and winter season average monthly mass-based limit for NH3-N will be imposed in this renewal. The above equation results in summer season average monthly mass limit to be 4 lbs./day and winter season average monthly mass limit to be 12 lbs./day.

$CBOD_5$:
The WQM 7.0 model suggests a monthly average $CBOD_5$ limit of 20 mg/l. The weekly average and IMAX limits are calculated to be 30 mg/l and 40 mg/l, respectively. The average monthly and average weekly mass loadings were calculated as 26.7 lbs./day and 40.0 lbs./day respectively. The current permit has winter season average monthly, weekly average, and IMAX limits as 25 mg/l, 38 mg/l and 50 mg/l. The calculated average monthly and weekly average limits are 33.4 lbs./day and 50.7 lbs./day. These limits are same as existing permit and will be carried over.

Dissolved Oxygen (DO):
The existing permit has a minimum DO of 4.0 mg/l. Per Pa Code 25 Ch.93.7, a minimum DO of 5.0 is required for WWF. This is also supported by WQM 7.0 output. However, the model also shows no adverse effects on the receiving stream at 4.0 mg/l. The SOP BCW-PMT-033 recommends a minimum DO limit of 4.0 mg/l based on BPJ to ensure adequate operation and maintenance where there is no water quality concerns. It is recommended that the existing limit will be carried over.

Toxics:
Based on the available data, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as "non-detect", but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the appropriate action for the Pollutants of Concerns based on the following logic:

1. In general, establish limits in the draft permit where the effluent concentration determined in B.1 or B.2 equals or exceeds 50% of the WQBEL (i.e., RP is demonstrated). Use the average monthly, maximum daily and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).

2. For non-conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 25% - 50% of the WQBEL.

3. For conservative pollutants, in general, establish monitoring requirements where the effluent concentration determined in B.1 or B.2 is between 10% - 50% of the WQBEL.

***NOTE 4** – If the effluent concentration determined in B.1 or B.2 is "non-detect" at or below the target quantitation limit (TQL) for the pollutant as specified in the TMS and permit application, the pollutant may be eliminated as a candidate for WQBELs or monitoring requirements unless 1) a more sensitive analytical method is available for the pollutant under 40 CFR Part 136 where the quantitation limit for the method is less than the applicable water quality criterion and 2) a detection at the more sensitive method may lead to a determination that an effluent limitation is necessary, considering available dilution at design conditions.*

***NOTE 5** – If the effluent concentration determined in B.1 or B.2 is a detection below the TQL but above or equal to the applicable water quality criterion, WQBELs or monitoring may be established for the pollutant.*

4. Application managers may, on a site- and pollutant-specific basis, deviate from these guidelines where there is specific rationale that is documented in the fact sheet.

The TMS model was utilized with maximum reported effluent concentrations for Total Copper, Total Lead, and Total Zinc. Model output is provided below:

☑ ***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 Copper	Report	Report	Report	Report	Report	µg/L	19.7	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	0.22	0.35	169	263	421	µg/L	169	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Each of the parameters are discussed below:

Total Copper:
The application provided a maximum Total Copper concentration of 0.005 mg/l out of 3 sample results. TMS suggests monitoring requirement for it. Therefore, a monthly monitoring will be added for Total Copper. The sample results will be analyzed in next permit term for a RP analysis.

Total Zinc:
A concentration of 0.146 mg/l was entered in TMS (The maximum of 3 effluent results). TMS suggests limits as 0.169 mg/l average monthly, 0.263 mg/l daily maximum, and 0.421 mg/l IMAX. The mass-based AML and MDL are 0.22 lbs./day and 0.35 lbs./day, respectively. The suggested limits are higher than maximum effluent concentration, however, since this is a new parameter with limits requirement it was included in the pre-draft survey. The survey was sent to the permittee on May 12, 2022 and was requested to return within 30 days. The survey response was returned to the Department on May 16, 2022. The permittee stated that they are not aware of the source, didn't complete any studies in the past, uncertain if they can meet the final WQBEL now, and uncertain when they can meet the final WQBEL. PADEP's SOP suggests, in this case, to provide a schedule for 36 months with a TRE requirement. The draft permit will have a proposed schedule with TRE.

Additional Considerations

Fecal Coliform:
The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. The current permit has summer IMAX limit of 400/100 ml. An evaluation of past 12 months eDMR data indicated that the facility is discharging at <1/100 ml as IMAX year-round. The year 2000 permit proposed IMAX as 1,000. Therefore, it is believed that 400/100 ml was imposed due to an error and will be reverted at 1,000/100 ml from this permit term.

E. Coli:
DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends quarterly E. Coli monitoring for all dischargers with flow between ≥0.05 MGD to <1.0 MGD. This requirement will be applied from this permit term.

pH:
The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 § 95.2(1)) which are existing limits and will be carried over.

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l as weekly average, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly average load is calculated to be 40.0 lbs./day and 60.0 lbs./day, respectively, based on a flow of 0.16 MGD. These limits are same as existing limits and will be carried over.

UV Disinfection:
PADEP's SOP BCW-PMT-033 recommends UV parameter monitoring where UV is used as a method of disinfection, with the same frequency as would be if Chlorine is used for disinfection. The current permit has UV Transmittance monitoring in %, which will be carried over in this renewal.

Flow, Influent BOD_5 and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94.

Best Professional Judgement (BPJ):
Total Nitrogen:
PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria. This is an existing requirement and will be carried over.

Total Phosphorus:
PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria. This is an existing requirement and will be carried over.

Monitoring Frequency and Sample Types:
Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Anti-Backsliding
The proposed limits are at least as stringent as are in existing permit, unless otherwise stated; therefore, anti-backsliding is not applicable.

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 End of Interim Period 1 (3 years from effective 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		
Zinc, Total	Report	Report Daily Max	Report Avg Mo	Report Daily Max	XXX	XXX	1/month	8-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

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: End of Interim Period 1 (3 years from 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Zinc, Total	0.22	0.35 Daily Max	XXX	0.169	0.263 Daily Max	0.421	1/month	8-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

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	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	33.4	50.7	XXX	25.0	38.0	50	1/week	8-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	26.7	40.0	XXX	20.0	30.0	40	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
Total Suspended Solids	40.0	60.0	XXX	30.0	45.0	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	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
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured

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

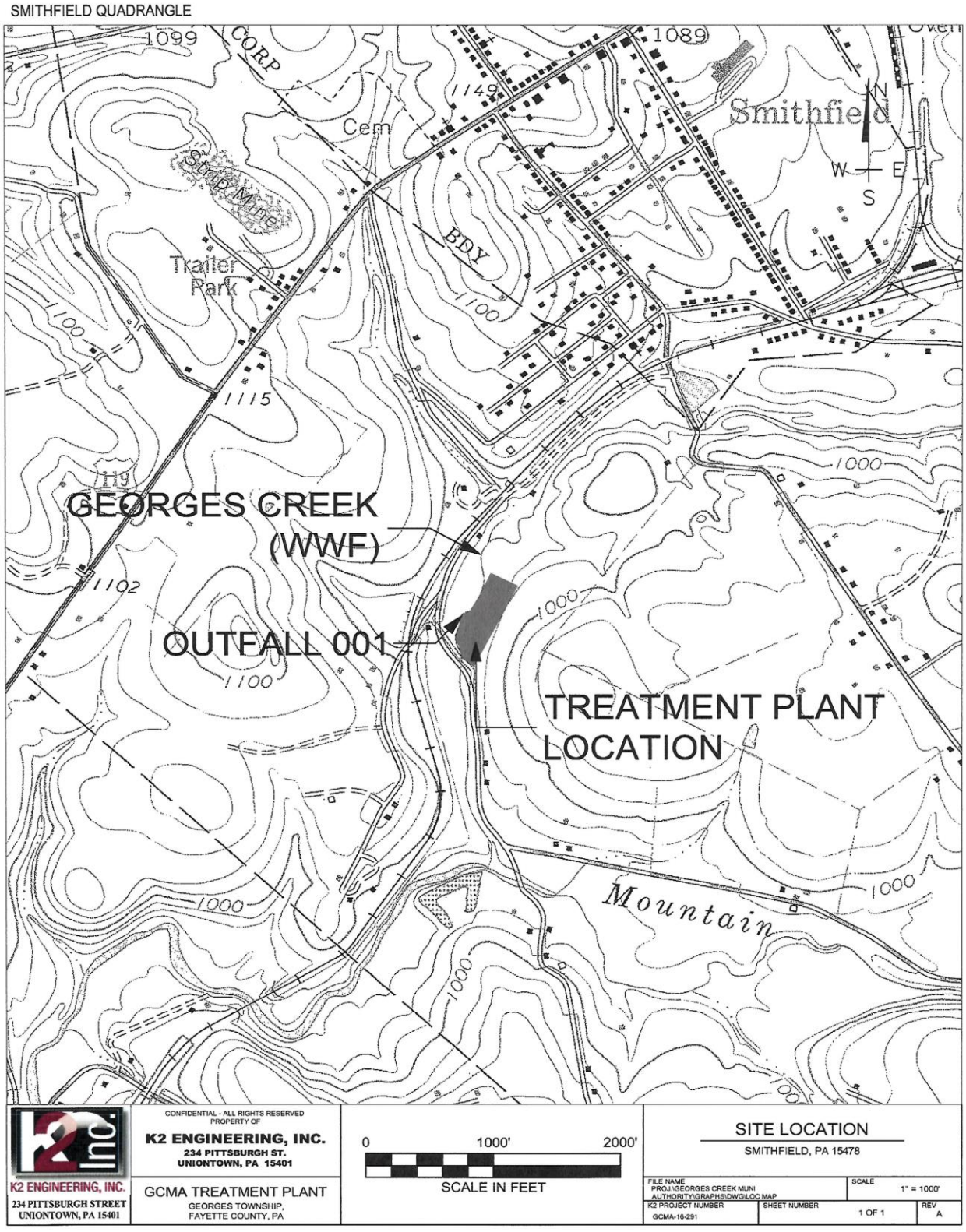
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	12.0	XXX	XXX	9.0	13.5	18	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	4.0	XXX	XXX	3.0	4.5	6	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Copper, Total	Report	Report	XXX	Report	Report Daily Max	XXX	1/month	8-Hr Composite

Compliance Sampling Location: At Outfall 001

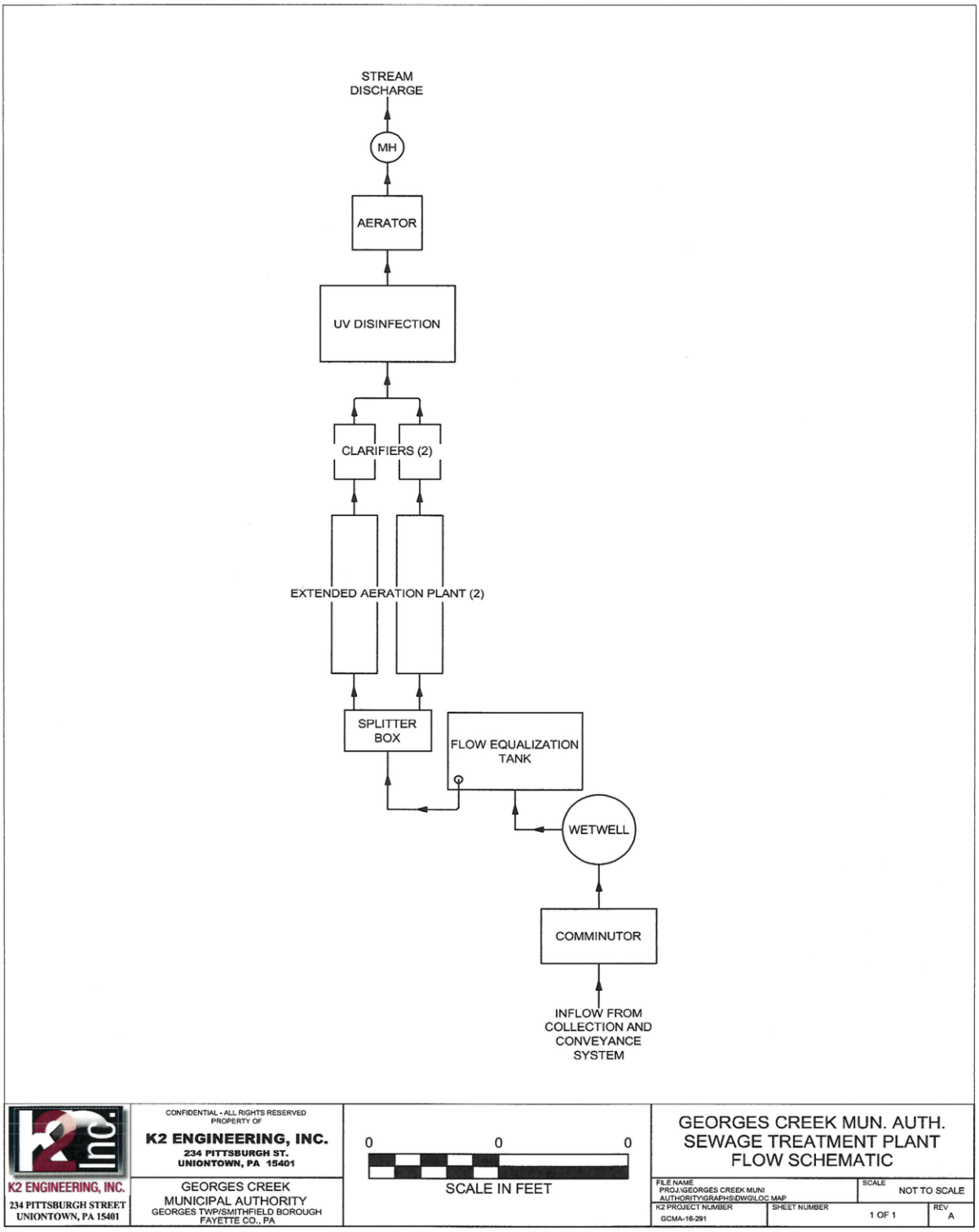
Other Comments: None

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	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: BCW-PMT-033
☐	Other:

Permit No. PA0218391



Permit No. PA0218391



Permit No. PA0218391

PA0218391 at Outfall 001

Region ID: PA
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Time: 2022-05-10 22:46:59 -0400

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	17.4	square miles
ELEV	Mean Basin Elevation	1360	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Permit No. PA0218391

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	17.4	square miles	2.26	1400
ELEV	Mean Basin Elevation	1360	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.807	ft^3/s	43	43
30 Day 2 Year Low Flow	1.37	ft^3/s	38	38
7 Day 10 Year Low Flow	0.299	ft^3/s	66	66
30 Day 10 Year Low Flow	0.522	ft^3/s	54	54
90 Day 10 Year Low Flow	0.956	ft^3/s	41	41

Low-Flow Statistics Citations

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

PA0218391 at node 2

Region ID: PA
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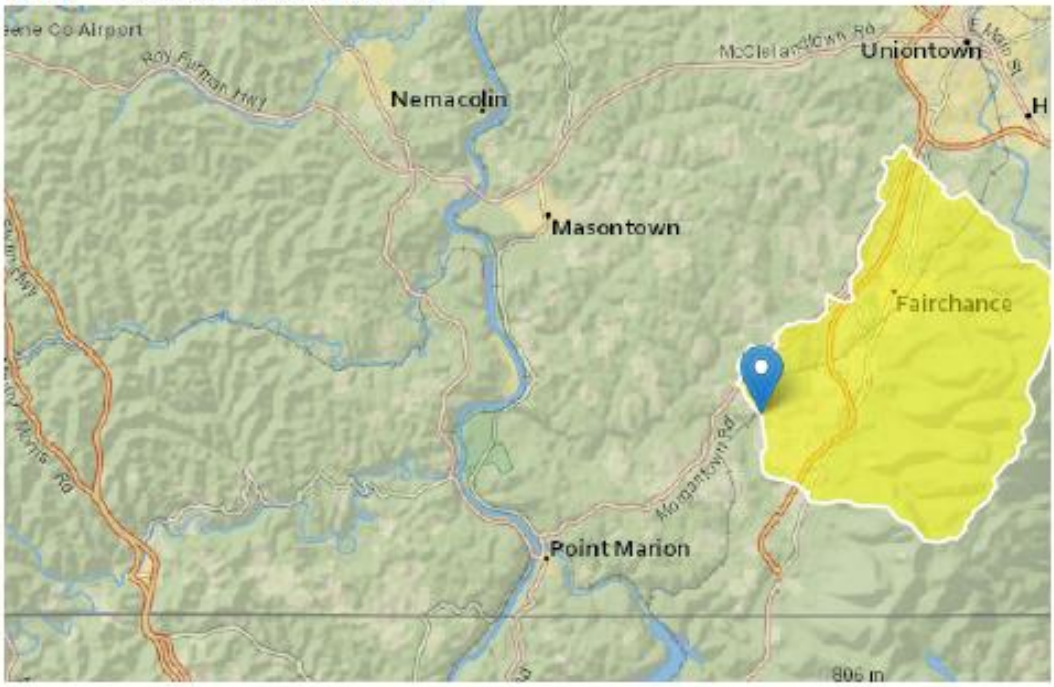

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	34.2	square miles
ELEV	Mean Basin Elevation	1534	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	34.2	square miles	2.26	1400
ELEV	Mean Basin Elevation	1534	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.93	ft^3/s	43	43
30 Day 2 Year Low Flow	3.2	ft^3/s	38	38
7 Day 10 Year Low Flow	0.735	ft^3/s	66	66
30 Day 10 Year Low Flow	1.24	ft^3/s	54	54
90 Day 10 Year Low Flow	2.25	ft^3/s	41	41

Low-Flow Statistics Citations

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

Permit No. PA0218391

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
19G	41340	GEORGES CREEK	10.250	950.46	17.40	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	0.017	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
Georges Crk MA	PA0218391	0.1600	0.1600	0.1600	0.000	20.00	6.67

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	3.00	0.00	0.00	0.70

Permit No. PA0218391

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
19G	41340	GEORGES CREEK	9.890	948.17	34.20	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	0.017	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Permit No. PA0218391

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19G	41340	GEORGES 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												
10.250	0.30	0.00	0.30	.2475	0.00120	.505	15.2	30.09	0.07	0.311	22.72	6.82
Q1-10 Flow												
10.250	0.19	0.00	0.19	.2475	0.00120	NA	NA	NA	0.06	0.351	22.17	6.78
Q30-10 Flow												
10.250	0.52	0.00	0.52	.2475	0.00120	NA	NA	NA	0.09	0.257	23.38	6.86

Permit No. PA0218391

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.746	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	4		

Permit No. PA0218391

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19G	41340	GEORGES 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
10.250	Georges Crk MA	9.33	6	9.33	6	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
10.250	Georges Crk MA	1.63	3	1.63	3	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)		
10.25	Georges Crk MA	20	20	3	3	4	4	0	0

Permit No. PA0218391

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19G	41340	GEORGES CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
10.250	0.160	22.722	6.819
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
15.200	0.505	30.091	0.071
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.20	1.296	1.37	0.863
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.310	13.887	Owens	4
Reach Travel Time (days)			
0.311			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.031	9.74	1.33	6.47
0.062	9.31	1.30	6.59
0.093	8.89	1.26	6.71
0.124	8.50	1.23	6.80
0.155	8.12	1.20	6.89
0.187	7.76	1.16	6.97
0.218	7.41	1.13	7.05
0.249	7.08	1.10	7.12
0.280	6.76	1.07	7.19
0.311	6.46	1.05	7.25

Permit No. PA0218391

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19G	41340	GEORGES 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)
10.250	Georges Crk MA	PA0218391	0.160	CBOD5	20		
				NH3-N	3	6	
				Dissolved Oxygen			4

Permit No. PA0218391

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Georges Creek MA STP** NPDES Permit No.: **PA0218391** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated 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
0.16	100	6.67						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	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		5									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L		0.3									
	Total Manganese	µg/L											
	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		146									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Permit No. PA0218391

Group 3	Carbon Tetrachloride	µg/L	<											
	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	<											
	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	<											
Group 4	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	<											
	Pentachlorophenol	µg/L	<											
	Phenol	µg/L	<											
	2,4,6-Trichlorophenol	µg/L	<											
Group 5	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)Anthrancene	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	<											

Permit No. PA0218391

	2,6-Dinitrotoluene	µg/L	<											
	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 6	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 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

Permit No. PA0218391

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Georges Creek MA STP, NPDES Permit No. PA0218391, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Georges Creek

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	041340	10.25	950.46	17.4			Yes
End of Reach 1	041340	9.89	948.17	34.2			Yes

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

Location	RMI	LFY (cfs/mi²)*	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	10.25	0.017										100	7		
End of Reach 1	9.89	0.017													

Q_h

Location	RMI	LFY (cfs/mi²)	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	10.25														
End of Reach 1	9.89														

Permit No. PA0218391

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Georges Creek MA STP, NPDES Permit No. PA0218391, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 7.532 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.82

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 Copper	0	0		0	13.439	14.0	30.7	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	179	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	263	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 7.532 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 6.82

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 Copper	0	0		0	8.956	9.33	20.5	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	6.98	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	263	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 7.532 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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 7.144 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 Copper	0	0		0	N/A	N/A	N/A	

Permit No. PA0218391

Total Lead	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 Copper	Report	Report	Report	Report	Report	µg/L	19.7	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	0.22	0.35	169	263	421	µg/L	169	AFC	Discharge Conc ≥ 50% WQBEL (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 Lead	6.98	µg/L	Discharge Conc ≤ 10% WQBEL