pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0004685**
Facility Type	**Industrial**	APS ID	**1087837**
Major / Minor	**Minor**	Authorization ID	**1438533**

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

Applicant and Facility Information

Applicant Name	**Penna Flame Industries, Inc.**	Facility Name	**Penna Flame Industries**
Applicant Address	1856 Route 588	Facility Address	1856 Route 588
	Zelienople, PA 16063-3902		Zelienople, PA 16063-3902
Applicant Contact	Michael Orr, VP Operations	Facility Contact	***same as applicant***
Applicant Phone	(724) 452-8750	Facility Phone	***same as applicant***
Applicant Email	mikeo@pennaflame.com	Application Email	***same as applicant***
Client ID	43749	Site ID	243144
SIC Code(s)	3398	Municipality	Franklin Township
SIC Description	Manufacturing - Metal Heat Treating	County	Beaver
Date Application Received	May 1, 2023	EPA Waived?	Yes
Date Application Accepted	August 16, 2023	If No, Reason	
Purpose of Application	Renewal of an NPDES permit for discharges of industrial waste and storm water associated with industrial activities.		

Summary of Review

On May 1, 2023, Penna Flame Industries, Inc. (PFI) submitted an application to renew NPDES Permit PA0004685 for discharges from PFI's facility in Zelienople, PA. The current permit was issued on August 20, 2018 with an effective date of September 1, 2018 and an expiration date of August 31, 2023. The renewal application was due by March 4, 2023. DEP received the renewal application on May 1, 2023. The application was not timely.

PFI specializes in heat treating metal machine parts through flame hardening, precision surface hardening, and robotic flame hardening. PFI's operations also include cryogenics, tempering, stress relieving, straightening, metallurgical testing, roll manufacturing, roll refurbishing, and roll repair. Heat treated parts are quenched with contact cooling water, which is treated by an oil/water separator and then discharged through Outfall 001 (relocated during the last renewal) to Connoquenessing Creek. PFI's contact cooling water discharges are subject to Federal Effluent Limitations Guidelines under 40 CFR Part 438 – Metal Products and Machinery Point Source Category. However, PFI's existing limits at Outfall 001 are more stringent than those given by Part 438, so the technology-based limits at Outfall 001 will remain unchanged. Water quality-based effluent limits also are imposed for Total Copper at Outfall 001. The Total Copper limits imposed in the renewed permit are less stringent than the Total Copper limits imposed in the 2018 permit, so the limits will take effect on the effective date of the renewed permit. Other monitoring requirements previously imposed at Outfall 001 for Total Dissolved Solids, Chloride, Bromide, Sulfate, and Total Silver are removed from the permit.

Outfall 002 discharges storm water runoff from a series of catch basins that receive runoff from loading/unloading areas where spills or leaks may occur to a drainage channel that leads to an old strip mine pond and then to Connoquenessing Creek. Semi-annual monitoring requirements are included based on Appendix B of DEP's PAG-03 NPDES General Permit for Discharges of Stormwater Associated with Industrial Activities to monitor the quality of storm water runoff and the effectiveness of PFI's Best Management Practices. The monitoring requirements of Appendix B of the PAG-03 are unchanged except for the addition of Total Nitrogen and Total Phosphorus reporting.

Approve	Deny	Signatures	Date
✓		Ryan C. Decker, P.E. / Environmental Engineer	September 25, 2023
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	September 29, 2023

Summary of Review
No significant changes to the facility have occurred since the last permit renewal. There are no open violations for PFI and no reported violations within the last permit cycle. Public Participation DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

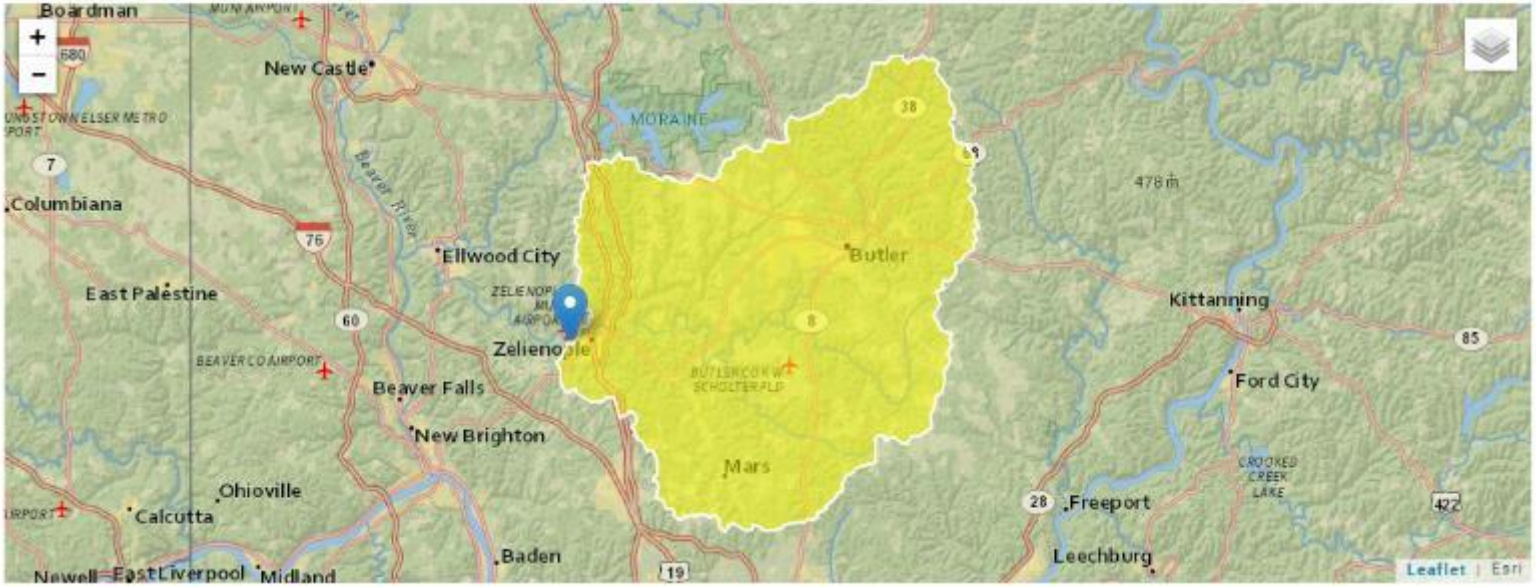
Outfall No.	001	Design Flow (MGD)	0.147
Latitude	40° 47' 36.52"	Longitude	-80° 9' 31.00"
Quad Name	1204	Quad Code	Zelienople
Wastewater Description:	Contact cooling water		
Receiving Waters	Connoquenessing Creek	Stream Code	34025
NHD Com ID	134395523	RMI	19.73
Drainage Area	323	Yield (cfs/mi^2)	0.06657
Q_{7-10} Flow (cfs)	21.5 (see Section 001.B)	Q_{7-10} Basis	USGS Gage 03106000 & DFLOW 4.0
Elevation (ft)	900	Slope (ft/ft)	0.00065
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	Organic Enrichment		
Source(s) of Impairment	Agriculture		
TMDL Status	None	Name	
Nearest Downstream Public Water Supply Intake	Beaver Falls Municipal Authority – Eastvale		
PWS ID	5040012	PWS Withdrawal (MGD)	10
PWS Waters	Beaver River	Flow at Intake (cfs)	640
PWS RMI	2.85	Distance from Outfall (mi)	36.62

Changes Since Last Permit Issuance: The Q_{7-10} flow of Connoquenessing Creek has changed from 18.93 to 21.50 based on the use of updated stream data from USGS Gage 03106000 – Connoquenessing Creek near Zelienople, PA.

Other Comments: None

StreamStats Report

Region ID:	PA
Workspace ID:	PA20230919133429745000
Clicked Point (Latitude, Longitude):	40.79344, -80.15882
Time:	2023-09-19 09:34:56 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	323	square miles
ELEV	Mean Basin Elevation	1195	feet

DFLOW Results

File Edit View Help

All available data from Apr 1, 1993 are included in analysis.
Climatic year defined as Apr 1 - Mar 31.

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Gage	Period	Days in Record	Zero/Missing	1B3	Percentile	Excur per+	7Q10	Percentile	Excur per+	7Qy Type	xQy	Percentile	Harmonic	Percentile
03106000 - Connoquenessing Creek +	1992/04/01 - 2023/04/01	11,322	0/1	20.3	0.15%	0.97	23.7	0.50%	1.94	7Q11	12.3	0.00%	1.39E+02	32.22%

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	Variable
Latitude	40° 47' 35.50"	Longitude	-80° 9' 28.70"
Quad Name	1204	Quad Code	Zelienople
Wastewater Description:	Storm water		
Receiving Waters	Unnamed tributary to Connoquenessing Creek	Stream Code	N/A
NHD Com ID	134395523	RMI	0.40
Drainage Area	323	Yield (cfs/mi^2)	0.06657
Q_{7-10} Flow (cfs)	21.5 (see Section 001.B)	Q_{7-10} Basis	USGS Gage 03106000 & DFLOW 4.0
Elevation (ft)		Slope (ft/ft)	0.00065
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Organic Enrichment		
Source(s) of Impairment	Agriculture		
TMDL Status	None	Name	
Nearest Downstream Public Water Supply Intake	Beaver Falls Municipal Authority – Eastvale		
PWS ID	5040012	PWS Withdrawal (MGD)	10
PWS Waters	Beaver River	Flow at Intake (cfs)	640
PWS RMI	2.85	Distance from Outfall (mi)	36.62

Changes Since Last Permit Issuance: None

Other Comments: None

Image Source and Date: Google Earth Pro, November 2021. Annotations by DEP.

Treatment Facility Summary		
Treatment Facility: Oil/water separator		
WQM Permit No.	**Issuance Date**	**Purpose**
0401201	May 7, 2001	Permit issued to Penna Flame Industries, Inc. by the Pennsylvania DEP for an oil/water separator.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary	Oil/water separation	N/A	—

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from August 1, 2022 to July 31, 2023)

Parameter	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22
Flow (MGD) Average Monthly	0.021	0.031	0.029	0.033	0.037	0.028	0.027	0.029	0.033	0.028	0.028	0.028
Flow (MGD) Daily Maximum	0.044	0.053	0.058	0.061	0.059	0.196	0.197	0.197	0.199	0.198	0.205	0.208
pH (S.U.) Instantaneous Minimum	7.7	7.9	7.8	7.3	7.3	7.6	7.8	7.6	7.7	7.7	7.7	7.6
pH (S.U.) Instantaneous Maximum	8.0	8.1	7.8	8.1	7.9	7.9	8.2	7.9	7.9	8.1	7.8	8.0
TSS (mg/L) Average Monthly	9.8	< 5.0	< 5.0	< 6.5	< 7.8	7.8	< 5.0	< 5.0	< 5.0	< 11.3	< 5.0	< 5.0
TSS (mg/L) Daily Maximum	11.0	< 5.0	< 5.0	8.0	10.5	10.5	< 5.0	< 5.0	< 5.0	17.5	< 5.0	< 5.0
Total Dissolved Solids (mg/L) Daily Maximum	2590	2570	2420	2450	2480	2320	2360	2270	2280	2100	2160	2240
Oil and Grease (mg/L) Average Monthly	10.3	33.2	6.6	8.6	< 7.4	9.4	7.0	7.5	6.5	6.8	6.6	7.7
Oil and Grease (mg/L) Daily Maximum	12.7	58.9	7.5	10.4	9.5	12.4	7.2	8.5	7.9	7.4	7.9	9.2
Total Copper (mg/L) Average Monthly	0.041	0.021	0.014	0.074	0.014	0.038	0.033	0.021	0.019	0.079	0.039	0.0151
Total Copper (mg/L) Daily Maximum	0.043	0.024	0.016	0.133	0.015	0.067	0.042	0.024	0.022	0.126	0.041	0.0384
Total Iron (mg/L) Average Monthly	1.20	0.65	0.263	3.1	0.326	0.648	0.493	0.298	< 0.200	1.59	0.633	0.7
Total Iron (mg/L) Daily Maximum	1.48	1.07	0.325	5.68	0.348	0.969	0.560	0.319	< 0.200	2.52	0.837	1.1
Total Silver (mg/L) Average Monthly	< 0.004	< 0.004	0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
Total Silver (mg/L) Daily Maximum	< 0.004	< 0.004	0.004	0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.004	< 0.004	< 0.004
Sulfate (mg/L) Daily Maximum	16.0	40.1	50.1	57.7	42.3	38.2	30.4	20.6	48.1	64.6	42.7	53.4
Chloride (mg/L) Daily Maximum	1210	1280	1200	1320	1180	1130	1320	1100	1110	1050	1020	1450
Bromide (mg/L) Daily Maximum	8.29	8.84	8.36	8.85	8.38	7.73	9.66	8.49	8.14	7.2	6.98	9.24

DMR Data for Outfall 002 (from August 1, 2022 to July 31, 2023)

Parameter	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22
Flow (MGD) Daily Maximum		0.021						0.009				
pH (S.U.) Maximum		8.5						7.6				
TSS (mg/L) Daily Maximum		295						13.0				
Oil and Grease (mg/L) Daily Maximum		< 5.0						< 5.0				
Total Aluminum (mg/L) Daily Maximum		3.13						< 0.200				
Total Copper (mg/L) Daily Maximum		0.018						< 0.007				
Total Iron (mg/L) Daily Maximum		6.66						0.229				
Total Lead (mg/L) Daily Maximum		0.008						< 0.007				
Total Zinc (mg/L) Daily Maximum		0.087						0.018				

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.147
Latitude 40° 47' 36.52" **Longitude** -80° 9' 31.00"
Wastewater Description: Contact cooling water

Discharges from Outfall 001 are currently subject to the following effluent limits and monitoring requirements.

Table 1. Outfall 001 – Current Effluent Limits and Monitoring Requirements

Parameter	Average Monthly	Daily Maximum	IMAX	Units	Measurement Frequency	Sample Type	Basis
Flow	Report	Report	—	MGD	Continuous	Metered	25 Pa. Code § 92.61(d)(1)
pH	6.0 (min)	—	9.0	s.u.	2/month	Grab	25 Pa. Code § 95.2(1)
TSS	30.0	60.0	—	mg/L	2/month	8-hr Comp	BPJ TBELs
TDS	—	Report	—	mg/L	1/month	Grab	25 Pa. Code § 92a.61(b)
Oil and Grease	15.0	30.0	—	mg/L	2/month	Grab	BPJ TBELs
Copper, Total	0.159	0.247	—	mg/L	2/month	8-hr Comp	WQBELs
Iron, Total	2.0	4.0	—	mg/L	2/month	8-hr Comp	BPJ TBELs
Silver, Total	—	Report	—	mg/L	2/month	8-hr Comp	25 Pa. Code § 92a.61(b)
Sulfate, Total	—	Report	—	mg/L	1/month	Grab	25 Pa. Code § 92a.61(b)
Chloride, Total	—	Report	—	mg/L	1/month	Grab	25 Pa. Code § 92a.61(b)
Bromide	—	Report	—	mg/L	1/month	Grab	25 Pa. Code § 92a.61(b)

The effluent limits in Table 1 will remain in effect at Outfall 001 in the renewed permit pursuant to anti-backsliding requirements under Section 402(o) of the Clean Water Act and/or 40 CFR § 122.44(l) (incorporated by reference at 25 Pa. Code § 92a.44) [1]—unless the limits are superseded by more stringent limits developed for this renewal or are relaxed pursuant to the anti-backsliding exceptions listed in Section 402(o) of the Clean Water Act or 40 CFR § 122.44(l).

001.A. Technology-Based Effluent Limitations (TBELs)

DEP previously determined that PFI is not subject to Federal Effluent Limitations Guidelines (ELGs) promulgated under 40 CFR Part 433 – Metal Finishing Point Source Category. That determination was based on the applicability description given in 40 CFR § 433.10(a), which states:

> Except as noted in paragraphs (b) and (c), of this section, the provisions of this subpart apply to plants which perform any of the following six metal finishing operations on any basis material: Electroplating, Electroless Plating, Anodizing, Coating (chromating, phosphating, and coloring), Chemical Etching and Milling, and Printed Circuit Board Manufacture. If any of those six operations are present, then this part applies to discharges from those operations and also to discharges from any of the following 40 process operations: Cleaning, Machining, Grinding, Polishing, Tumbling, Burnishing, Impact Deformation, Pressure Deformation, Shearing, Heat Treating, Thermal Cutting, Welding, Brazing, Soldering, Flame Spraying, Sand Blasting, Other Abrasive Jet Machining, Electric Discharge Machining, Electrochemical Machining, Electron Beam Machining, Laser Beam Machining, Plasma Arc Machining, Ultrasonic Machining, Sintering, Laminating, Hot Dip Coating, Sputtering, Vapor Plating, Thermal Infusion, Salt Bath Descaling, Solvent Degreasing, Paint Stripping, Painting, Electrostatic Painting, Electropainting, Vacuum Metalizing, Assembly, Calibration, Testing, and Mechanical Plating.

PFI performs heat treating, which is one of the 40 process operations identified in § 433.10(a), but PFI does not perform any of the six metal finishing operations (Electroplating, Electroless Plating, Anodizing, Coating, Chemical Etching and Milling, and Printed Circuit Board Manufacture). DEP's interpretation of the portion of the applicability description that states, "If any of those six operations are present, then this part applies to discharges from those operations and also to discharges from any of the following 40 process operations…" was that wastewaters from any of the 40 process operations are only subject to the Metal Finishing ELGs if those operations are conducted in conjunction with one of the six metal finishing operations.

Even though 40 CFR Part 433 is not applicable, in 2003, EPA promulgated ELGs for the Metal Products and Machinery (MP&M) Point Source Category under 40 CFR Part 438. The MP&M ELGs regulate discharges from certain industrial

[1] *Reissued permits.* (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.)

sectors' process operations such as those listed in the § 433.10(a) excerpt above that are not conducted in conjunction with another activity that is subject to another existing ELG (e.g., standalone heat treating that is not conducted in conjunction with a metal finishing operation).

Effluent Limitations Guidelines for the Metal Products and Machinery Point Source Category

The general applicability description for the MP&M ELGs under 40 CFR § 438.1(a) states:

> As defined more specifically in subpart A, except as provided in paragraphs (b) through (e) of this section, this part applies to process wastewater discharges from oily operations (as defined at §438.2(f) and appendix B of this part) to surface waters from existing or new industrial facilities (including facilities owned and operated by Federal, State, or local governments) engaged in manufacturing, rebuilding, or maintenance of metal parts, products, or machines for use in the Metal Product & Machinery (MP&M) industrial sectors listed in this section. The MP&M industrial sectors consist of the following:
>
> Aerospace; Aircraft; Bus and Truck; Electronic Equipment; Hardware; Household Equipment; Instruments; Miscellaneous Metal Products; Mobile Industrial Equipment; Motor Vehicle; Office Machine; Ordnance; Precious Metals and Jewelry; Railroad; Ships and Boats; or Stationary Industrial Equipment.

The 16 industrial sectors regulated by the MP&M ELGs include facilities that manufacture, maintain, and rebuild metal products under more than 200 different Standard Industrial Classification (SIC) codes. The two NAICS/SIC codes that PFI operates under are 33281 (SIC 3398) – Coating, Engraving, Heat Treating and Allied Activities and 33351 (SIC 3547) – Metalworking Machinery Manufacturing.

Pursuant to Appendix A of EPA's "Development Document For the Final Effluent Limitations Guidelines and Standards for the Metal Products and Machinery Point Source Category", PFI's SIC codes are covered under the Hardware and Stationary Industrial Equipment MP&M industrial sectors, respectively (see **Attachment A** to this Fact Sheet for the relevant pages from Appendix A of the Development Document).

As described in § 438.1, the MP&M ELGs apply to process wastewater discharges from "oily operations" conducted at facilities within one of the 16 MP&M industrial sectors. "Oily operations" is defined in § 438.2(f):

> *Oily operations* means one or more of the following: abrasive blasting; adhesive bonding; alkaline cleaning for oil removal; alkaline treatment without cyanide; aqueous degreasing; assembly/disassembly; burnishing; calibration; corrosion preventive coating (as defined in paragraph (c) of this section); electrical discharge machining; floor cleaning (in process area); grinding; heat treating; impact deformation; iron phosphate conversion coating; machining; painting-spray or brush (including water curtains); polishing; pressure deformation; solvent degreasing; steam cleaning; testing (e.g., hydrostatic, dye penetrant, ultrasonic, magnetic flux); thermal cutting; tumbling/barrel finishing/mass finishing/vibratory finishing; washing (finished products); welding; wet air pollution control for organic constituents; and numerous sub-operations within those listed in this paragraph. In addition, process wastewater also results from associated rinses that remove materials that the preceding processes deposit on the surface of the workpiece. These oily operations are defined in appendix B of this part.

PFI flame hardens (i.e., heat treats) metal parts, so it conducts "oily operations" that are subject to the limitations under Subpart A of 40 CFR Part 438. Section 438.12 imposes the following Best Practicable Control Technology (BPT) effluent limitations on process wastewaters from oily operations:

Table 2. BPT/BCT Effluent Limits for Oily Wastes

Parameter	Maximum Daily (mg/L)
Total Suspended Solids	62
O&G (as HEM)[1]	46
pH	within the range of 6 to 9

[1] Total recoverable oil and grease measured as n-hexane extractable material

Effluent limits for the Best Control Technology for Conventional Pollutants (BCT) under § 438.13 are equivalent to those specified in § 438.12. There are no Best Available Technology (BAT) limits because Part 438 only controls conventional pollutants and conventional pollutants are not regulated by the BAT level of control.

Best Professional Judgment (BPJ) Effluent Limitations and Anti-backsliding

Prior to promulgation of the MP&M ELGs in 2003, DEP established TBELs for PFI's contact cooling water discharges. The limits that were previously imposed—shown in Table 3—are more stringent than those specified in 40 CFR Part 438.

Table 3. Outfall 001 BPJ TBELs

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instant Max (mg/L)
Total Suspended Solids	30	60	—
Oil and Grease	15	—	30
Iron, Total	2.0	4.0	—
pH	within the range of 6 to 9		

The effluent limitations in Table 3 will be maintained at Outfall 001 pursuant to EPA's anti-backsliding regulation at 40 CFR § 122.44(l)(1), which requires that "when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." Section 122.44(l)(2) further requires that "in the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA [i.e., case-by-case TBELs], a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit." The latter citation means that the promulgation of less stringent ELGs after the development and imposition of case-by-case TBELs in a permit does not compel the relaxation of effluent limits in the permit to be consistent with the ELGs' effluent limits; the most stringent limits always control as long as there are no exceptions to anti-backsliding. There are no exceptions to anti-backsliding for PFI.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1). Effluent standards for pH are imposed on industrial wastes by 25 Pa. Code § 95.2(1). The § 95.2(1) pH limits are the same as those previously imposed.

As oil-bearing wastewaters, discharges from Outfall 001 are subject to effluent standards for Oil and Grease from 25 Pa. Code § 95.2(2). The Oil and Grease limits are the same as those previously imposed.

DEP normally imposes a maximum temperature limit of 110°F on discharges that contain residual heat such as PFI's contact cooling waters. The limit is intended as a safety measure to protect sampling personnel or anyone who may come in contact with the heated discharge where it enters the receiving water. However, previous permit writers have forgone imposition of the 110°F effluent standard because 1) effluent data indicated that maximum historical discharge temperatures never exceeded 86°F and 2) water quality-based effluent limits for temperature were never needed to maintain designated uses in the receiving stream, thus indicating that the discharge temperatures are not significant. Consistent with these justifications, the 110°F effluent standard will not be imposed at this time. However, thermal WQBELs will be evaluated in Section 001.B, below.

001.B. Water Quality-Based Effluent Limitations (WQBELs)

Toxics Management Spreadsheet Water Quality Modeling Program and Procedures for Evaluating Reasonable Potential

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The Department of Environmental Protection developed the DEP Toxics Management Spreadsheet (TMS) to facilitate calculations necessary to complete a reasonable potential (RP) analysis and determine WQBELs for discharges of toxic and some nonconventional pollutants.

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports,

or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP's TOXCONC spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling. Ammonia-nitrogen, CBOD-5, and dissolved oxygen are analyzed separately using DEP's WQM 7.0 model, if necessary.

The TMS evaluates each pollutant by computing a wasteload allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following RP thresholds:

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. 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).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

In most cases, pollutants with effluent concentrations that are not detectable at the level of DEP's Target Quantitation Limits (Target QLs) are eliminated as candidates for WQBELs and water quality-based monitoring.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Table 4. TMS Inputs for 001

Parameter	**Value**
River Mile Index	19.73
Discharge Flow (MGD)	0.147
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	323
Q_{7-10} (cfs)	21.50
Low-flow yield (cfs/mi^2)	0.06657
Elevation (ft)	900
Slope (dimensionless)	0.00065
Hardness (mg/L)	118

Discharges from Outfall 001 are evaluated based on the maximum concentrations reported on the application and on DMRs. The TMS model is run for Outfall 001 with the modeled discharge and receiving stream characteristics shown in Table 4. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

Outfall 001 discharges to Connoquenessing Creek. The basin and stream characteristics in Table 4 are based on data reported at USGS Gaging Station 03106000 – Connoquenessing Creek near Zelienople, PA, which is located downstream of PFI. The Q_{7-10} flow of Connoquenessing Creek at the Outfall 001 discharge point is extrapolated from the Q_{7-10} flow at the gaging station (23.7 cfs) using the last 30 years of stream flow data and the drainage area contributing to flow at the gaging station's location (356 square miles) as shown below.

Low Flow Yield = (Q_{7-10} at Gage) ÷ (Drainage Area at Gage) = 23.7 cfs ÷ 356 mi^2 = 0.06657 cfs/mi^2

Q_{7-10} at 001 = Low Flow Yield × (Drainage Area at 001) = 0.06657 cfs/mi^2 × 323 mi^2 = 21.50 cfs

Based on the results of the TMS modeling, the WQBELs and monitoring requirements shown in Table 5 apply to Outfall 001's discharges. Output from the TMS model run is included in **Attachment B** to this Fact Sheet.

Table 5. Water Quality-Based Effluent Limits for Outfall 001

Parameter	**Permit Limits**			**Discharge Conc. (µg/L) †**	**Target QL (µg/L)**	**Governing WQBEL Basis‡**
	Avg Mo. (µg/L)	**Max Daily (µg/L)**	**IMAX (µg/L)**			
Copper, Total	0.207	0.323	0.517	0.124	0.2	AFC

† Maximum concentration reported in the last two years (August 2021 – August 2023)
‡ AFC = Acute Fish Criterion

The WQBELs for Total Copper are slightly less stringent than the WQBELs in the current permit due to the higher Q_{7-10} flow used for modeling. PFI currently complies with more stringent WQBELs for Total Copper, so DEP expects PFI to comply with the less stringent WQBELs calculated for this renewal. No schedule of compliance will be included in the permit for the new WQBELs for Total Copper.

Reporting for Total Silver is no longer recommended by the TMS model, so the reporting requirement for Total Silver at Outfall 001 will be removed from the permit pursuant to the exception to anti-backsliding in 40 CFR § 122.44(l)(2)(i)(B)*(1)* regarding the availability of new information (i.e., effluent data for silver) that justifies the application of less stringent limits. Reporting for Total Dissolved Solids, Chloride, Bromide, and Sulfate also is no longer recommended by the TMS model. When PFI's permit was renewed in 2018, DEP was implementing a monitoring initiative for those emerging pollutants of concern based on the recommendations of Pennsylvania's Environmental Quality Board and the U.S. Environmental Protection Agency. The monitoring initiative for those pollutants ended in 2021. Therefore, the reporting requirements for those parameters will be removed from Outfall 001 pursuant to the exception to anti-backsliding in 40 CFR § 122.44(l)(2)(i)(B)*(1)* regarding the availability of new information (i.e., DEP's policy revisions) that justifies the application of less stringent limits.

Thermal WQBELs for Heated Discharges

Thermal WQBELs are evaluated using a DEP program called "Thermal Discharge Limit Calculation Spreadsheet" created with Microsoft Excel for Windows. The program calculates temperature WLAs through the application of a heat transfer equation, which takes two forms in the program depending on the source of the facility's cooling water. In Case 1, intake water to a facility is from the receiving stream. In Case 2, intake water is from a source other than the receiving stream (e.g., a municipal water supply). The determination of which case applies to a given discharge is determined by the input data which include the receiving stream flow rate ($Q_{7\text{-}10}$ or the minimum regulated flow for large rivers), the stream intake flow rate, external source intake flow rates, consumptive flow rates and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures.

Since the temperature criteria from 25 Pa. Code Chapter 93.7(a) are expressed on monthly and semi-monthly bases for three different aquatic life-uses—cold water fishes, warm water fishes and trout stocking—the program generates monthly and semi-monthly limits for each use. DEP selects the output that corresponds to the aquatic life-use of the receiving stream and consequently which limits apply to the discharge. Temperature WLAs are bounded by an upper limit of 110°F (as discussed in Section 001.A) for the safety of sampling personnel and anyone who may come in contact with the heated discharge where it enters the receiving water. If no WLAs below 110°F are calculated, then an instantaneous maximum limit of 110°F is recommended by the program.

DEP's "Implementation Guidance for Temperature Criteria" directs permit writers to assume instantaneous complete mixing of the discharge with the receiving stream when calculating thermal effluent limits unless adverse factors exist. DEP is not aware of any adverse factors, so the full $Q_{7\text{-}10}$ flow of Connoquenessing Creek is used for modeling.

Discharges from Outfall 001 are classified under Case 2 because PFI's water is obtained from the local municipal supply. The flow rate used for modeling is 0.147 MGD, which is the maximum flow rate at Outfall 001. The results of the thermal analysis indicate that no WQBELs for temperature are required at Outfall 001. As a secondary check on the analysis, DEP also ran the model using a partial mix factor of 0.193, which is the acute partial mix factor calculated by the TMS model. No temperature WQBELs were calculated using the reduced stream flow based. The results of the thermal analysis using the most limiting modeling conditions (i.e., the 0.193 partial mix factor) are included in **Attachment C** to this Fact Sheet.

Aquatic Life Impairment of Connoquenessing Creek

A 14.38-mile long segment of Connoquenessing Creek was listed on DEP's 2014 Integrated Water Quality Monitoring and Assessment Report as impaired for aquatic life uses and requiring a Total Maximum Daily Load. The cause of the impairment is listed as "organic enrichment" and the source as "agriculture." PFI does not discharge wastewaters that contribute to organic enrichment or low D.O., so PFI is not affected by the impairment.

001.C. Effluent Limitations and Monitoring Requirements for Outfall 001

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits for Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in the table below.

Table 6. Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (µg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)

Table 6 (continued). Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (µg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Total Suspended Solids	—	—	30.0	60.0	—	BPJ TBELs; 40 CFR §122.44(l)
Oil and Grease	—	—	15.0	30.0	—	BPJ TBELs; 40 CFR §122.44(l)
Copper, Total	—	—	0.207	0.323	0.517	WQBELs; 25 Pa. Code § 92a.12
Iron, Total	—	—	2.0	4.0	—	BPJ TBELs; 40 CFR §122.44(l)
pH	within the range of 6.0 to 9.0					BPJ; § 122.44(l); § 95.2(1)

Monitoring frequencies and sample types are imposed based on those in the existing permit and on Chapter 6, Table 6-4 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 386-0400-001]. Flow must be measured continuously (metered). TSS, Total Copper, and Total Iron will require 2/month sampling using 8-hour composite samples. Oil and Grease and pH will require 2/month grab sampling. Copper will require 2/month sampling using 8-hour composite samples.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** Variable
Latitude 40° 47' 35.50" **Longitude** -80° 9' 28.70"
Wastewater Description: Storm water

Discharges from Outfall 002 are currently subject to the following monitoring requirements.

Table 7. Outfall 002 – Current Monitoring Requirements

Parameter	Average Monthly	Daily Maximum	IMAX	Units	Measurement Frequency	Sample Type	Basis
Flow	—	Report	—	MGD	1/6 months	Estimate	25 Pa. Code § 92.61(h)
pH	—	Report	—	s.u.	1/6 months	Grab	25 Pa. Code § 92.61(h)
TSS	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)
Oil and Grease	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)
Aluminum, Total	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)
Copper, Total	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)
Iron, Total	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)
Lead, Total	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)
Zinc, Total	—	Report	—	mg/L	1/6 months	Grab	25 Pa. Code § 92.61(h)

The monitoring requirements in Table 7 will remain in effect at Outfall 002 in the renewed permit pursuant to anti-backsliding requirements under Section 402(o) of the Clean Water Act and/or 40 CFR § 122.44(l) (incorporated by reference at 25 Pa. Code § 92a.44)—unless the limits are superseded by more stringent limits developed for this renewal or are relaxed pursuant to the anti-backsliding exceptions listed in Section 402(o) of the Clean Water Act or 40 CFR § 122.44(l).

002.A. Technology-Based Effluent Limitations (TBELs)

Discharges of storm water from Outfall 002 are not subject to any Federal Effluent Limitations Guidelines. Therefore, requirements are based on applicable regulatory effluent standards and monitoring requirements.

Outfall 002 is subject to reporting requirements for flow and pH based on 25 Pa. Code § 92.61(h). Also, consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities[2], minimum standards described in DEP's PAG-03 NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity will be applied to Outfall 002's storm water discharges. Based on PFI's SIC Code of 3398, the facility would be classified under Appendix B – "Primary Metals" of the PAG-03 General Permit.[3] The monitoring requirements of Appendix B, summarized in Table 8, will be imposed at Outfall 002 to the extent that they are not superseded by more stringent requirements.

Table 8. PAG-03 Appendix B – Minimum Monitoring Requirements

Pollutant	Units	Sample Type	Measurement Frequency	Benchmark Value
Total Nitrogen	mg/L	Calculation†	1/6 months	—
Total Phosphorus	mg/L	Grab	1/6 months	—
Total Suspended Solids	mg/L	Grab	1/6 months	100
Oil and Grease	mg/L	Grab	1/6 months	30
Total Aluminum	mg/L	Grab	1/6 months	—
Total Zinc	mg/L	Grab	1/6 months	—
Total Copper	mg/L	Grab	1/6 months	—
Total Iron	mg/L	Grab	1/6 months	—
Total Lead	mg/L	Grab	1/6 months	—

† Total Nitrogen is the sum of Total Kjeldahl-N (TKN) plus Nitrite-Nitrate as N (NO_2+NO_3-N), where TKN and NO2+NO3-N are measured in the same sample.

[2] See Note 8 in DEP's "Standard Operating Procedure (SOP) for Clean Water Program: Establishing Effluent Limitations for Individual Industrial Permits" [SOP No. BCW-PMT-032, Version 1.6, October 1, 2023]

[3] The PAG-03 General Permit imposes requirements on industrial storm water discharges based on a facility's SIC Code, as enumerated in 40 CFR § 122.26(b)(14).

To the extent that effluent limits are necessary to ensure that storm water Best Management Practices (BMPs) are adequately implemented, effluent limits are developed for industrial storm water discharges based on a determination of Best Available Technology (BAT) using Best Professional Judgment (BPJ). BPJ of BAT typically involves the evaluation of end-of-pipe wastewater treatment technologies, but DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control.

Table 9 summarizes the effluent data reported for the general chemistry pollutants listed on Module 1 of the NPDES permit application and effluent data for additional parameters reported on Discharge Monitoring Reports between January 2018 and June 2023. Not all Module 1 parameters are analyzed under the requirements of the current permit. Some results are based on only one sample collected to complete the permit application. For mixed datasets consisting of detected and non-detect results, the '<' symbol is ignored when calculating the average and then added back to the calculated result.

Table 9. Effluent Concentrations Reported at Outfall 002

Parameter	Module 1 Application Results (mg/L)	DMR Average Conc. (mg/L)	DMR Maximum Conc. (mg/L)	No. of Samples	No Exposure Threshold	PAG-03 Benchmark Value	Permit Benchmark Value
Oil and Grease	<5.0	—	—	1	≤5.0	30	—
BOD_5	11.2	—	—	1	≤10	—	—
COD	<5.0	—	—	1	≤30	120	—
TSS	295	<63.2	295	9	≤30	100	100
Total Nitrogen	<1.25	—	—	1	≤2	—	—
Total Phosphorus	0.719	—	—	1	≤1	—	—
Total Aluminum	3.13	<1.063	3.13	9	—	—	0.75
Total Copper	0.0175	<0.0455	0.131	9	—	—	
Total Iron	6.66	<1.64	6.66	9	—	—	1.5
Total Lead	0.008	<0.0092	0.014	9	—	—	
Total Zinc	0.087	0.162	0.362	9	—	—	
pH (S.U.)	7.9 Min; 8.5 Max	7.3	8.5	9	6.0 to 9.0	—	6.0 to 9.0

Based on the results in Table 9, no additional requirements are imposed at Outfall 002. PFI has reported high concentrations of TSS, aluminum, and iron, but not during consecutive monitoring periods. No Corrective Action Plans were required or submitted.

Even though no additional requirements are imposed, the benchmark values in the current permit will be maintained in the renewed permit. DEP uses benchmark monitoring in the PAG-03 General Permit as an indicator of the ongoing effectiveness of a facility's best management practices. The storm water benchmark values in the PAG-03 differ from the "No Exposure" thresholds because the PAG-03's benchmark values presume that storm water is exposed to industrial activities. The benchmark values represent values achievable by storm water controls as opposed to storm water that is not exposed to industrial activities, which is generally free of contamination and therefore does not require controls.

002.B. Water Quality-Based Effluent Limitations (WQBELs)

Generally, DEP does not develop numerical WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q_{7-10} low-flow conditions. Storm water discharges generally do not occur at Q_{7-10} conditions because the precipitation that causes a storm water discharge also will increase the receiving stream's flow (or, in this case, generate a non-zero flow in the drainage channel that leads to the former strip mine pond) and that increased stream flow will provide additional assimilative capacity during a storm event. Consequently, there should be no reasonable potential for storm water discharges to cause or contribute to an exceedance of water quality criteria at design conditions.

Even though no mathematical modeling is performed, the permit will ensure compliance with water quality standards through a combination of best management practices including pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response.

Aquatic Life Impairment of Connoquenessing Creek

As explained in Section 001.B of this Fact Sheet, Connoquenessing Creek has an impaired for aquatic life use caused by organic enrichment from agriculture. BOD_5, nitrogen, and phosphorus concentrations in Outfall 002's storm water discharges are either low, less than the corresponding 'no exposure' thresholds, or not detectable. Based on those results, PFI does not discharge wastewaters that contribute to organic enrichment, so PFI is not affected by the impairment. Data collected under the permit will allow DEP to monitor Outfall 002's contribution to the impairment, if any.

002.C. Effluent Limitations and Monitoring Requirements for Outfall 002

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits for Outfall 002 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in the table below.

Table 10. Effluent Limits and Monitoring Requirements for Outfall 002

Parameter	Mass (pounds)		Concentration (µg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Oil and Grease	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Nitrogen, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Phosphorus, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Aluminum, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Copper, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Iron, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Lead, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
Zinc, Total	—	—	—	Report	—	§ 92a.61(h); PAG-03, Appendix B
pH (s.u.)	—	—	—	Report	—	§ 92a.61(h)

The sampling frequency for all parameters will be 1/6 months based on the sampling frequency in Appendix B of the PAG-03 General Permit. Grab sampling is required for all parameters except Total Nitrogen, which must be calculated as the sum of Total Kjeldahl Nitrogen (TKN) plus Nitrite-Nitrate as N (NO_2+NO_3-N), where TKN and NO_2+NO_3-N are measured in the same sample.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment B)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment C)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☒	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☒	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	Standard Operating Procedure (SOP) for Clean Water Program: Establishing Effluent Limitations for Individual Industrial Permits [SOP No. BCW-PMT-032, Version 1.6, October 1, 2023]
☐	Other:

ATTACHMENT A

SIC Codes Covered by MP&M Effluent Limitations Guidelines

Table A-1 (Continued)

Example NAICS and SIC Codes for the MP&M Industrial Sectors		
NAICS Code	**SIC Code**	**Standard Industrial Classification Groups**
	Bus and Truck (Continued)	
49211010 49221000	4215	Courier Services, Except by Air
48849020	4231	Trucking Terminal Facilities
	Electronic Equipment	
33421000	3661	Telephone and Telegraph Apparatus
33422010	3663	Radio and Television Broadcast and Communications Equipment
33429000	3669	Communications Equipment, N.E.C.
33441100	3671	Electron Tubes
33441400	3675	Electronic Capacitors
33441610 33441620	3677	Electronic Coils and Transformers
33441700	3678	Connectors for Electronic Applications
33422020 33441820 33441900 33632210	3679	Electronic Components, N.E.C.
33451010 33451110 33451610 33451910 33512920 33599920 33911410	3699	Electrical Machinery, Equipment, and Supplies, N.E.C.
	Hardware	
32312220	2796	Platemaking and Related Services
33281100	3398	Metal Heat Treating
33243910	3412	Metal Shipping Barrels, Drums, Kegs, Pails
33221110	3421	Cutlery
33221210 33221240	3423	Hand and Edge Tools, Except Machine Tools and Handsaws
33221300	3425	Hand Saws and Saw Blades
33243920	3429	Hardware, N.E.C.

ATTACHMENT B

Toxics Management Spreadsheet Results for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Penna Flame Industries, Inc. NPDES Permit No.: PA0004685 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Contact cooling water

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
0.147	181.67	7.9						

					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		2770									
	Chloride (PWS)	mg/L		1450									
	Bromide	mg/L		9.66									
	Sulfate (PWS)	mg/L		199									
	Fluoride (PWS)	mg/L		1.59									
Group 2	Total Aluminum	µg/L		50									
	Total Antimony	µg/L		2									
	Total Arsenic	µg/L		4.97									
	Total Barium	µg/L		1740									
	Total Beryllium	µg/L	<	0.8									
	Total Boron	µg/L		248									
	Total Cadmium	µg/L		0.077									
	Total Chromium (III)	µg/L		4									
	Hexavalent Chromium	µg/L		0.26									
	Total Cobalt	µg/L	<	0.8									
	Total Copper	µg/L		126									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	6									
	Dissolved Iron	µg/L		29									
	Total Iron	µg/L		2900									
	Total Lead	µg/L	<	0.8									
	Total Manganese	µg/L		101									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	0.8									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2.5									
	Total Selenium	µg/L		12.4									
	Total Silver	µg/L	<	4									
	Total Thallium	µg/L	<	0.8									
	Total Zinc	µg/L		107									
	Total Molybdenum	µg/L	<	0.8									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5										
	Chlorobenzene	µg/L	<	0.5										
	Chlorodibromomethane	µg/L	<	0.5										
	Chloroethane	µg/L	<	0.5										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L	<	0.6										
	Dichlorobromomethane	µg/L	<	0.5										
	1,1-Dichloroethane	µg/L	<	0.5										
	1,2-Dichloroethane	µg/L	<	0.5										
	1,1-Dichloroethylene	µg/L	<	0.5										
	1,2-Dichloropropane	µg/L	<	0.5										
	1,3-Dichloropropylene	µg/L	<	0.5										
	1,4-Dioxane	µg/L	<	5										
	Ethylbenzene	µg/L	<	0.5										
	Methyl Bromide	µg/L	<	0.5										
	Methyl Chloride	µg/L	<	0.5										
	Methylene Chloride	µg/L	<	0.5										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5										
	Tetrachloroethylene	µg/L	<	0.5										
	Toluene	µg/L	<	0.5										
	1,2-trans-Dichloroethylene	µg/L	<	0.5										
	1,1,1-Trichloroethane	µg/L	<	0.5										
	1,1,2-Trichloroethane	µg/L	<	0.5										
	Trichloroethylene	µg/L	<	0.5										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	5										
	2,4-Dichlorophenol	µg/L	<	5										
	2,4-Dimethylphenol	µg/L	<	5										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	10										
	2-Nitrophenol	µg/L	<	10										
	4-Nitrophenol	µg/L	<	5										
	p-Chloro-m-Cresol	µg/L	<	5										
	Pentachlorophenol	µg/L	<	10										
	Phenol	µg/L	<	2.5										
	2,4,6-Trichlorophenol	µg/L	<	5										
Group 5	Acenaphthene	µg/L	<	2.5										
	Acenaphthylene	µg/L	<	2.5										
	Anthracene	µg/L	<	2.5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2.5										
	Benzo(a)Pyrene	µg/L	<	2.5										
	3,4-Benzofluoranthene	µg/L	<	2.5										
	Benzo(ghi)Perylene	µg/L	<	2.5										
	Benzo(k)Fluoranthene	µg/L	<	2.5										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2.5										
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5										
	1,2-Dichlorobenzene	µg/L	<	0.5										
	1,3-Dichlorobenzene	µg/L	<	0.5										
	1,4-Dichlorobenzene	µg/L	<	0.5										
	3,3-Dichlorobenzidine	µg/L	<	5										
	Diethyl Phthalate	µg/L	<	5										
	Dimethyl Phthalate	µg/L	<	2.5										
	Di-n-Butyl Phthalate	µg/L	<	5										
	2,4-Dinitrotoluene	µg/L	<	5										

	2,6-Dinitrotoluene	µg/L	<	5										
	Di-n-Octyl Phthalate	µg/L	<	5										
	1,2-Diphenylhydrazine	µg/L	<	5										
	Fluoranthene	µg/L	<	2.5										
	Fluorene	µg/L	<	2.5										
	Hexachlorobenzene	µg/L	<	5										
	Hexachlorobutadiene	µg/L	<	0.5										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	2.5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5										
	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	0.5										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	2.5										
	Pyrene	µg/L	<	2.5										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
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												

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Penna Flame Industries, Inc., NPDES Permit No. PA0004685, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Connoquenessing 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	034025	19.73	900	323	0.00065		Yes
End of Reach 1	034025	19	899.5	325	0.00065		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	19.73	0.06657										118	7		
End of Reach 1	19	0.06657													

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	19.73														
End of Reach 1	19														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Penna Flame Industries, Inc., NPDES Permit No. PA0004685, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.193 Analysis Hardness (mg/l): 121.31 Analysis pH: 7.02

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	14,414	
Total Antimony	0	0		0	1,100	1,100	21,141	
Total Arsenic	0	0		0	340	340	6,535	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	403,602	
Total Boron	0	0		0	8,100	8,100	155,675	
Total Cadmium	0	0		0	2.430	2.6	49.9	Chem Translator of 0.936 applied
Total Chromium (III)	0	0		0	667.443	2,112	40,594	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	313	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,826	
Total Copper	0	0		0	16.122	16.8	323	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	79.649	104	2,007	Chem Translator of 0.763 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	31.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	551.378	552	10,618	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	4.485	5.28	101	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	1,249	
Total Zinc	0	0		0	138.022	141	2,712	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	57.7	

Acrylonitrile	0	0		0	650	650	12,492	
Benzene	0	0		0	640	640	12,300	
Bromoform	0	0		0	1,800	1,800	34,594	
Carbon Tetrachloride	0	0		0	2,800	2,800	53,814	
Chlorobenzene	0	0		0	1,200	1,200	23,063	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	345,945	
Chloroform	0	0		0	1,900	1,900	36,516	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	288,287	
1,1-Dichloroethylene	0	0		0	7,500	7,500	144,144	
1,2-Dichloropropane	0	0		0	11,000	11,000	211,411	
1,3-Dichloropropylene	0	0		0	310	310	5,958	
Ethylbenzene	0	0		0	2,900	2,900	55,736	
Methyl Bromide	0	0		0	550	550	10,571	
Methyl Chloride	0	0		0	28,000	28,000	538,136	
Methylene Chloride	0	0		0	12,000	12,000	230,630	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	19,219	
Tetrachloroethylene	0	0		0	700	700	13,453	
Toluene	0	0		0	1,700	1,700	32,673	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	130,690	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	57,657	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	65,345	
Trichloroethylene	0	0		0	2,300	2,300	44,204	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	10,763	
2,4-Dichlorophenol	0	0		0	1,700	1,700	32,673	
2,4-Dimethylphenol	0	0		0	660	660	12,685	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	1,538	
2,4-Dinitrophenol	0	0		0	660	660	12,685	
2-Nitrophenol	0	0		0	8,000	8,000	153,753	
4-Nitrophenol	0	0		0	2,300	2,300	44,204	
p-Chloro-m-Cresol	0	0		0	160	160	3,075	
Pentachlorophenol	0	0		0	8.902	8.9	171	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	8,841	
Acenaphthene	0	0		0	83	83.0	1,595	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	5,766	
Benzo(a)Anthracene	0	0		0	0.5	0.5	9.61	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	576,574	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	86,486	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	5,189	
Butyl Benzyl Phthalate	0	0		0	140	140	2,691	

2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	15,760	
1,3-Dichlorobenzene	0	0		0	350	350	6,727	
1,4-Dichlorobenzene	0	0		0	730	730	14,030	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	76,877	
Dimethyl Phthalate	0	0		0	2,500	2,500	48,048	
Di-n-Butyl Phthalate	0	0		0	110	110	2,114	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	30,751	
2,6-Dinitrotoluene	0	0		0	990	990	19,027	
1,2-Diphenylhydrazine	0	0		0	15	15.0	288	
Fluoranthene	0	0		0	200	200	3,844	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	192	
Hexachlorocyclopentadiene	0	0		0	5	5.0	96.1	
Hexachloroethane	0	0		0	60	60.0	1,153	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	192,191	
Naphthalene	0	0		0	140	140	2,691	
Nitrobenzene	0	0		0	4,000	4,000	76,877	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	326,725	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	5,766	
Phenanthrene	0	0		0	5	5.0	96.1	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	2,498	

☑ *CFC* CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 118.67 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	21,022	
Total Arsenic	0	0		0	150	150	14,333	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	391,766	
Total Boron	0	0		0	1,600	1,600	152,884	
Total Cadmium	0	0		0	0.277	0.31	29.4	Chem Translator of 0.902 applied
Total Chromium (III)	0	0		0	85.266	99.1	9,474	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	993	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	1,815	

Total Copper	0	0		0	10.366	10.8	1,032	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	143,329	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.031	3.96	378	Chem Translator of 0.766 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	86.6	Chem Translator of 0.85 applied
Total Nickel	0	0		0	60.109	60.3	5,761	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	477	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	1,242	
Total Zinc	0	0		0	136.575	139	13,235	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	287	
Acrylonitrile	0	0		0	130	130	12,422	
Benzene	0	0		0	130	130	12,422	
Bromoform	0	0		0	370	370	35,354	
Carbon Tetrachloride	0	0		0	560	560	53,509	
Chlorobenzene	0	0		0	240	240	22,933	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	334,434	
Chloroform	0	0		0	390	390	37,266	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	296,213	
1,1-Dichloroethylene	0	0		0	1,500	1,500	143,329	
1,2-Dichloropropane	0	0		0	2,200	2,200	210,216	
1,3-Dichloropropylene	0	0		0	61	61.0	5,829	
Ethylbenzene	0	0		0	580	580	55,421	
Methyl Bromide	0	0		0	110	110	10,511	
Methyl Chloride	0	0		0	5,500	5,500	525,539	
Methylene Chloride	0	0		0	2,400	2,400	229,326	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	20,066	
Tetrachloroethylene	0	0		0	140	140	13,377	
Toluene	0	0		0	330	330	31,532	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	133,774	
1,1,1-Trichloroethane	0	0		0	610	610	58,287	
1,1,2-Trichloroethane	0	0		0	680	680	64,976	
Trichloroethylene	0	0		0	450	450	42,999	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	10,511	
2,4-Dichlorophenol	0	0		0	340	340	32,488	
2,4-Dimethylphenol	0	0		0	130	130	12,422	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	1,529	
2,4-Dinitrophenol	0	0		0	130	130	12,422	
2-Nitrophenol	0	0		0	1,600	1,600	152,884	
4-Nitrophenol	0	0		0	470	470	44,910	

p-Chloro-m-Cresol	0	0		0	500	500	47,776	
Pentachlorophenol	0	0		0	6.830	6.83	653	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	8,695	
Acenaphthene	0	0		0	17	17.0	1,624	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	5,638	
Benzo(a)Anthracene	0	0		0	0.1	0.1	9.56	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	573,316	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	86,953	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	5,160	
Butyl Benzyl Phthalate	0	0		0	35	35.0	3,344	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	15,288	
1,3-Dichlorobenzene	0	0		0	69	69.0	6,593	
1,4-Dichlorobenzene	0	0		0	150	150	14,333	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	76,442	
Dimethyl Phthalate	0	0		0	500	500	47,776	
Di-n-Butyl Phthalate	0	0		0	21	21.0	2,007	
2,4-Dinitrotoluene	0	0		0	320	320	30,577	
2,6-Dinitrotoluene	0	0		0	200	200	19,111	
1,2-Diphenylhydrazine	0	0		0	3	3.0	287	
Fluoranthene	0	0		0	40	40.0	3,822	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	191	
Hexachlorocyclopentadiene	0	0		0	1	1.0	95.6	
Hexachloroethane	0	0		0	12	12.0	1,147	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	200,660	
Naphthalene	0	0		0	43	43.0	4,109	
Nitrobenzene	0	0		0	810	810	77,398	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	324,879	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	5,638	
Phenanthrene	0	0		0	1	1.0	95.6	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	2,484	

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	535	
Total Arsenic	0	0		0	10	10.0	956	
Total Barium	0	0		0	2,400	2,400	229,326	
Total Boron	0	0		0	3,100	3,100	296,213	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	28,666	
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	95,553	
Total Mercury	0	0		0	0.050	0.05	4.78	
Total Nickel	0	0		0	610	610	58,287	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	22.9	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	287	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	9,555	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	545	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	3,153	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	6,498	

Methyl Bromide	0	0		0	100	100.0	9,555	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	5,446	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	9,555	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	955,526	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	2,867	
2,4-Dichlorophenol	0	0		0	10	10.0	956	
2,4-Dimethylphenol	0	0		0	100	100.0	9,555	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	191	
2,4-Dinitrophenol	0	0		0	10	10.0	956	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	382,210	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	6,689	
Anthracene	0	0		0	300	300	28,666	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	19,111	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	9.56	
2-Chloronaphthalene	0	0		0	800	800	76,442	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	95,553	
1,3-Dichlorobenzene	0	0		0	7	7.0	669	
1,4-Dichlorobenzene	0	0		0	300	300	28,666	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	57,332	
Dimethyl Phthalate	0	0		0	2,000	2,000	191,105	
Di-n-Butyl Phthalate	0	0		0	20	20.0	1,911	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	1,911	
Fluorene	0	0		0	50	50.0	4,778	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	382	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	3,249	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	956	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	1,911	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	6.69	

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

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

Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	28.7	
Benzene	0	0		0	0.58	0.58	277	
Bromoform	0	0		0	7	7.0	3,348	
Carbon Tetrachloride	0	0		0	0.4	0.4	191	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	383	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.95	0.95	454	
1,2-Dichloroethane	0	0		0	9.9	9.9	4,735	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	430	
1,3-Dichloropropylene	0	0		0	0.27	0.27	129	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	9,566	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	95.7	
Tetrachloroethylene	0	0		0	10	10.0	4,783	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	263	
Trichloroethylene	0	0		0	0.6	0.6	287	
Vinyl Chloride	0	0		0	0.02	0.02	9.57	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	14.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	717	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.048	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.48	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.048	

3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.48	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	4.78	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	14.3	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	153	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	57.4	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.048	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	23.9	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	23.9	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	23.9	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	14.3	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.038	
Hexachlorobutadiene	0	0		0	0.01	0.01	4.78	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	47.8	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.48	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.33	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	2.39	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	1,578	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	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	0.25	0.4	207	323	517	µg/L	207	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 Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	9,239	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	535	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	956	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	229,326	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	99,781	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	29.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	9,474	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	201	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	1,170	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	28,666	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	143,329	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	378	µg/L	Discharge Conc < TQL
Total Manganese	95,553	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	4.78	µg/L	Discharge Conc < TQL
Total Nickel	5,761	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	477	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	65.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	22.9	µg/L	Discharge Conc < TQL
Total Zinc	1,739	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	37.0	µg/L	Discharge Conc < TQL
Acrylonitrile	28.7	µg/L	Discharge Conc < TQL
Benzene	277	µg/L	Discharge Conc < TQL
Bromoform	3,348	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	191	µg/L	Discharge Conc < TQL
Chlorobenzene	9,555	µg/L	Discharge Conc < TQL
Chlorodibromomethane	383	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	221,737	µg/L	Discharge Conc < TQL
Chloroform	545	µg/L	Discharge Conc ≤ 25% WQBEL

Dichlorobromomethane	454	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	4,735	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	3,153	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	430	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	129	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	6,498	µg/L	Discharge Conc < TQL
Methyl Bromide	6,775	µg/L	Discharge Conc < TQL
Methyl Chloride	344,923	µg/L	Discharge Conc < TQL
Methylene Chloride	9,566	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	95.7	µg/L	Discharge Conc < TQL
Tetrachloroethylene	4,783	µg/L	Discharge Conc < TQL
Toluene	5,446	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	9,555	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	36,956	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	263	µg/L	Discharge Conc < TQL
Trichloroethylene	287	µg/L	Discharge Conc < TQL
Vinyl Chloride	9.57	µg/L	Discharge Conc < TQL
2-Chlorophenol	2,867	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	956	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	8,130	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	191	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	956	µg/L	Discharge Conc < TQL
2-Nitrophenol	98,550	µg/L	Discharge Conc < TQL
4-Nitrophenol	28,333	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	1,971	µg/L	Discharge Conc < TQL
Pentachlorophenol	14.3	µg/L	Discharge Conc < TQL
Phenol	382,210	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	717	µg/L	Discharge Conc < TQL
Acenaphthene	1,022	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	28,666	µg/L	Discharge Conc < TQL
Benzidine	0.048	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.48	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.048	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.48	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	4.78	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	14.3	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	19,111	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	153	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	3,326	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	9.56	µg/L	Discharge Conc < TQL

2-Chloronaphthalene	76,442	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	57.4	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.048	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	10,101	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	669	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	8,993	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	23.9	µg/L	Discharge Conc < TQL
Diethyl Phthalate	49,275	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	30,797	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	1,355	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	23.9	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	23.9	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	14.3	µg/L	Discharge Conc < TQL
Fluoranthene	1,911	µg/L	Discharge Conc < TQL
Fluorene	4,778	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.038	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	4.78	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	61.6	µg/L	Discharge Conc < TQL
Hexachloroethane	47.8	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.48	µg/L	Discharge Conc < TQL
Isophorone	3,249	µg/L	Discharge Conc < TQL
Naphthalene	1,725	µg/L	Discharge Conc < TQL
Nitrobenzene	956	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.33	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	2.39	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	1,578	µg/L	Discharge Conc < TQL
Phenanthrene	61.6	µg/L	Discharge Conc < TQL
Pyrene	1,911	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	6.69	µg/L	Discharge Conc < TQL

ATTACHMENT C

Temperature Modeling Results for Outfall 001

Facility: **Penna Flame Industries, Inc.**
Permit Number: PA0004685 **PMF**
Stream Name: Connoquenessing Creek 0.19
Analyst/Engineer: Ryan Decker
Stream Q7-10 (cfs): 21.5

	Facility Flows				Stream Flows		
	Intake (Stream) (MGD)	Intake (External) (MGD)	Consumptive Loss (MGD)	Discharge Flow (MGD)	Upstream Stream Flow (cfs)	Adjusted Stream Flow (cfs)	Downstream Stream Flow (cfs)
Jan 1-31	0	0.147	0	0.147	68.80	68.80	69.03
Feb 1-29	0	0.147	0	0.147	75.25	75.25	75.48
Mar 1-31	0	0.147	0	0.147	150.50	150.50	150.73
Apr 1-15	0	0.147	0	0.147	199.95	199.95	200.18
Apr 16-30	0	0.147	0	0.147	199.95	199.95	200.18
May 1-15	0	0.147	0	0.147	109.65	109.65	109.88
May 16-30	0	0.147	0	0.147	109.65	109.65	109.88
Jun 1-15	0	0.147	0	0.147	64.50	64.50	64.73
Jun 16-30	0	0.147	0	0.147	64.50	64.50	64.73
Jul 1-31	0	0.147	0	0.147	36.55	36.55	36.78
Aug 1-15	0	0.147	0	0.147	30.10	30.10	30.33
Aug 16-31	0	0.147	0	0.147	30.10	30.10	30.33
Sep 1-15	0	0.147	0	0.147	23.65	23.65	23.88
Sep 16-30	0	0.147	0	0.147	23.65	23.65	23.88
Oct 1-15	0	0.147	0	0.147	25.80	25.80	26.03
Oct 16-31	0	0.147	0	0.147	25.80	25.80	26.03
Nov 1-15	0	0.147	0	0.147	34.40	34.40	34.63
Nov 16-30	0	0.147	0	0.147	34.40	34.40	34.63
Dec 1-31	0	0.147	0	0.147	51.60	51.60	51.83

Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.

Version 2.0 -- 07/01/2005 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017

NOTE: The user can only edit fields that are blue.

NOTE: MGD x 1.547 = cfs.

Facility: **Penna Flame Industries, Inc.**
Permit Number: PA0004685
Stream: Connoquenessing Creek

	WWF Criteria (ºF)	CWF Criteria (ºF)	TSF Criteria (ºF)	316 Criteria (ºF)	Q7-10 Multipliers (Used in Analysis)	Q7-10 Multipliers (Default - Info Only)
Jan 1-31	40	38	40	0	3.2	3.2
Feb 1-29	40	38	40	0	3.5	3.5
Mar 1-31	46	42	46	0	7	7
Apr 1-15	52	48	52	0	9.3	9.3
Apr 16-30	58	52	58	0	9.3	9.3
May 1-15	64	54	64	0	5.1	5.1
May 16-30	72	58	68	0	5.1	5.1
Jun 1-15	80	60	70	0	3	3
Jun 16-30	84	64	72	0	3	3
Jul 1-31	87	66	74	0	1.7	1.7
Aug 1-15	87	66	80	0	1.4	1.4
Aug 16-31	87	66	87	0	1.4	1.4
Sep 1-15	84	64	84	0	1.1	1.1
Sep 16-30	78	60	78	0	1.1	1.1
Oct 1-15	72	54	72	0	1.2	1.2
Oct 16-31	66	50	66	0	1.2	1.2
Nov 1-15	58	46	58	0	1.6	1.6
Nov 16-30	50	42	50	0	1.6	1.6
Dec 1-31	42	40	42	0	2.4	2.4

NOTES:
WWF= Warm water fishes
CWF= Cold water fishes
TSF= Trout stocking

Facility: **Penna Flame Industries, Inc.**

Permit Number: PA0004685 **PMF**

Stream: Connoquenessing Creek 0.19

	WWF Ambient Stream Temperature (ºF) (Default)	Ambient Stream Temperature (ºF) (Site-specific data)	Target Maximum Stream Temp.[1] (ºF)	**WWF** Daily WLA[2] (Million BTUs/day)	**WWF** Daily WLA[3] (ºF)	at Discharge Flow (MGD)
Jan 1-31	35	0	40	N/A -- Case 2	110.0	0.147
Feb 1-29	35	0	40	N/A -- Case 2	110.0	0.147
Mar 1-31	40	0	46	N/A -- Case 2	110.0	0.147
Apr 1-15	47	0	52	N/A -- Case 2	110.0	0.147
Apr 16-30	53	0	58	N/A -- Case 2	110.0	0.147
May 1-15	58	0	64	N/A -- Case 2	110.0	0.147
May 16-30	62	0	72	N/A -- Case 2	110.0	0.147
Jun 1-15	67	0	80	N/A -- Case 2	110.0	0.147
Jun 16-30	71	0	84	N/A -- Case 2	110.0	0.147
Jul 1-31	75	0	87	N/A -- Case 2	110.0	0.147
Aug 1-15	74	0	87	N/A -- Case 2	110.0	0.147
Aug 16-31	74	0	87	N/A -- Case 2	110.0	0.147
Sep 1-15	71	0	84	N/A -- Case 2	110.0	0.147
Sep 16-30	65	0	78	N/A -- Case 2	110.0	0.147
Oct 1-15	60	0	72	N/A -- Case 2	110.0	0.147
Oct 16-31	54	0	66	N/A -- Case 2	110.0	0.147
Nov 1-15	48	0	58	N/A -- Case 2	110.0	0.147
Nov 16-30	42	0	50	N/A -- Case 2	110.0	0.147
Dec 1-31	37	0	42	N/A -- Case 2	110.0	0.147

[1] This is the maximum of the WWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for WWF, or the ambient stream temperature based on site-specific data entered by the user. A minimum of 1ºF above ambient stream temperature is allocated.

[2] The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

[3] The WLA expressed in ºF is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110ºF are displayed as 110ºF.