pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0255254**
Facility Type	**Industrial**	APS ID	**1068441**
Major / Minor	**Minor**	Authorization ID	**1404945**

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

Applicant and Facility Information

Applicant Name	**Indian Creek Valley Water Authority**	Facility Name	**Mill Run Reservoir WTP**
Applicant Address	2019 Indian Head Road PO Box 486	Facility Address	465 Killarney Road
	Indian Head, PA 15446-0486		Mill Run, PA 15464
Applicant Contact	Kerry Witt	Facility Contact	Same as Applicant
Applicant Phone	(724) 455-7708	Facility Phone	Same as Applicant
Client ID	8055	Site ID	823188
SIC Code	4941	Municipality	Springfield Township
SIC Description	Municipal water supply	County	Fayette
Date Application Received	July 29, 2022	EPA Waived?	Yes
Date Application Accepted	August 2, 2022	If No, Reason	

Purpose of Application: Renewal NPDES Permit coverage for municipal water treatment plant filter backwash and sedimentation basin sludge discharge

Summary of Review

The Department received an NPDES permit renewal application from The Indian Creek Valley Water Authority (ICVWA) for the Mill Run Reservoir Water Treatment Plant in Springfield Township of Fayette County on July 29, 2022. The plant is an existing municipal water supply constructed in 1970, with SIC code 4941.

The site obtains raw water from the Mill Run Reservoir. The raw water is gravity fed to a pump station, which is equipped with a screen to remove large debris. Two low service pumps bring water to the flocculation basin where coagulate, potassium, permanganate, lime and powdered activated carbon are added. After mixing, the flocculated water discharges to an outdoor sedimentation basin. The settled water is then discharged to 2 single media anthracite filters. The filtered water discharges to the clear well where it is chlorinated and pumped into the distribution system. All wastewater from backwashing the filters, filtered waste and sedimentation sludge discharge to an impoundment structure (i.e. lagoon) for settling prior to discharge to outfall 001 into Indian Creek, designated in 25 PA Code Chapter 93 as a cold-water fishery (CWF). The plant is not run year-round and only operates in the summer months when the demand is needed.

The lagoon is a large, unlined, undefined depression that is bermed and fully taken over by vegetation. The filter backwash water and the sedimentation sludge from the site is discharged out of a pipe along the berm of the depression. Most, if not all, of the backwash water seems to infiltrate into the ground. The discharge sludge in the lagoon has never been removed and remains in the lagoon. The overflow for the lagoon is considered the site's outfall and where sampling should be conducted, and effluent limits imposed. There has been no reported discharges from Outfall 001 in the past two years.

The water quality analysis uses the effluent data from the discharge pipe into the lagoon rather than the pipe from the lagoon to Indian Creek to simulate worst case scenario of the discharge that could occur to the water ways of the commonwealth. Also, this is done because there is no data from the discharge of the lagoon, as no discharges have occurred in the past two

Approve	Deny	Signatures	Date
X		Adam Olesnanik / Project Manager	8/25/2022
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	9/9/2022

Summary of Review

years. It should be noted, discharges are not expected to occur regularly at the outfall due to infiltration and the size of the lagoon.

The permittee has four open violations with the SWRO Safe Drinking Water Program.

The site was last inspected on June 7, 2022, no violations were noted.

Draft Permit is recommended.

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)	2.88
Latitude	39º 58' 59.06"	Longitude	-79º 27' 19.39"
Quad Name	Mill Run	Quad Code	1910
Wastewater Description:	IW Process Effluent without ELG		

Receiving Waters	Indian Creek	Stream Code	38235
NHD Com ID	69918361	RMI	4.86
Drainage Area	110 sq mi	Yield (cfs/mi^2)	0.0326
Q_{7-10} Flow (cfs)	3.59	Q_{7-10} Basis	USGS StreamStat
Elevation (ft)	1219	Slope (ft/ft)	0.001
Watershed No.	19-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	

Assessment Status	Attaining Use(s)
Cause(s) of Impairment	
Source(s) of Impairment	
TMDL Status	

Nearest Downstream Public Water Supply Intake	North Fayette County Muni Authority		
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	460
PWS RMI	46.88	Distance from Outfall (mi)	10.06

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2.88
Latitude 39º 58' 59.06" **Longitude** -79º 27' 19.39"
Wastewater Description: IW Process Effluent without ELG

Technology-Based Effluent limitations:

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 1 below.

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code §§ 95.2(1) which is displayed in Table 1 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 1 below.

Table 1. Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	IMAX
Flow (MGD)	Report	Report	----
pH (S.U.)	6.0 - 9.0 at all times		----
TRC	0.5 mg/l	----	1.6 mg/l

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which falls under Best Professional Judgement under 40 CFR § 125.3 and the limits imposed are displayed in Table 2 below.

Table 2. BPT Limits for WTP sludge and filter backwash wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow	Report	----
pH (S.U.)	6.0 – 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Water Quality-Based Effluent limitations:

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific

discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 3. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment C of this Fact Sheet. The WQBELs that the Toxics Management Spread Sheet recommend for Outfall 001 are displayed below in Table 4. The discharge concentrations used in the modeling are also included in Table 4.

Note, Total Antimony, Total Arsenic, Total Cadmium, Total Cobalt, Total Lead, Total Nickel, Total Selenium, and Total Thallium received limitations or monitoring requirements because of the reporting limits that were used during the analytical testing. The reporting limits used are less stringent that the Department's minimum quantitation limitations (QLs), therefore, it is uncertain if the parameters are discharging at concentrations above the Department QLs. During the 30-day public comment period, the Indian Creek Valley Water Authority may resample Total Antimony, Total Arsenic, Total Cadmium, Total Cobalt, Total Lead, Total Nickel, Total Selenium, and Total Thallium at the Department's QL to verify that if they not present in the discharge. If it is determined that the parameters are not present in the discharge at the Department's QLs, the parameters may be removed from the Final Permit.

Table 3: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	4.86
Discharge Flow (MGD)	2.88
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	110
Q_{7-10} (cfs)	3.59
Low-flow yield (cfs/mi^2)	0.0326
Elevation (ft)	1219
Slope	0.001

Table 4: Water Quality Based Effluent Limitations at Outfall 001

Parameters	Average Monthly	Daily Maximum	Discharge Concentration	Department's QLs
Total Aluminum (mg/L)	0.868	1.354	0.6	-
Total Antimony (µg/L)	10.1	15.8	<100	2.0
Total Arsenic (µg/L)	18.1	28.2	<200	3.0
Total Cadmium (µg/L)	0.46	0.72	<2	0.2
Hexavalent Chromium (µg/L)	18.8	29.3	20	-
Total Cobalt (µg/L)	Report	Report	<5	1.0
Total Copper (µg/L)	15.1	23.6	<10	4.0
Total Lead (µg/L)	5.24	8.17	<20	1.0
Total Manganese (µg/L)	Report	Report	210	-
Total Nickel (µg/L)	Report	Report	<10	4.0
Total Selenium (µg/L)	9.01	14.1	<20	5.0
Total Silver (µg/L)	3.86	6.03	<5	0.4
Total Thallium (µg/L)	0.43	0.68	<20	2.0

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using DEP"s TRC_CALC program created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment D, indicate that there will be WQBELs imposed for TRC. The Limits for TRC are included in Table 5 below.

Table 5: TRC WQBELs

Parameter	Monthly Average (mg/L)	IMAX (mg/L)
Total Residual Chlorine (TRC)	0.128	0.300

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The previous limitations for Outfall 001 are displayed below in Table 6.

Table 6: Current Effluent Limitation at Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Discharge	Measured
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/Discharge	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.128	XXX	0.3	2/Discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	1.17	XXX	2/Discharge	Grab
Total Cadmium (µg/L)	XXX	XXX	XXX	0.49	0.76	XXX	2/Discharge	Grab
Hexavalent Chromium	XXX	XXX	XXX	0.016	0.025	XXX	2/Discharge	Grab
Total Copper	XXX	XXX	XXX	0.014	0.021	XXX	2/Discharge	Grab
Total Lead	XXX	XXX	XXX	0.0057	0.009	XXX	2/Discharge	Grab
Total Iron	XXX	XXX	XXX	2.0	4.0	XXX	2/Discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/Discharge	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Discharge	Grab

Final Effluent Limitations

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 7. The limits are the most stringent values from the above limitation analysis. As noted above, Total Antimony, Total Arsenic, Total Cadmium, Total Cobalt, Total Lead, Total Nickel, Total Selenium, and Total Thallium received limitations or monitoring requirements because of the reporting limits that were used during the analytical testing. The reporting limits used are less stringent that the Department's minimum quantitation limitations (QLs), therefore, it is uncertain if the parameters are discharging at concentrations above the Department QLs. During the 30-day public comment period, the Indian Creek Valley Water Authority may resample Total Antimony, Total Arsenic, Total Cadmium, Total Cobalt, Total Lead, Total Nickel, Total Selenium, and Total Thallium at the Department's QL to verify that if they not present in the discharge. If it is determined that the parameters are not present in the discharge at the Department's QLs, the parameters may be removed from the Final Permit.

Table 7: Current Effluent Limitation at Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Discharge	Measured
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/Discharge	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.128	XXX	0.3	2/Discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	1.17	XXX	2/Discharge	Grab
Total Antimony (µg/L)	XXX	XXX	XXX	10.1	15.8	XXX	2/Discharge	Grab
Total Arsenic (µg/L)	XXX	XXX	XXX	18.1	28.2	XXX	2/Discharge	Grab
Total Cadmium (µg/L)	XXX	XXX	XXX	0.46	0.72	XXX	2/Discharge	Grab
Hexavalent Chromium (µg/L)	XXX	XXX	XXX	16.0	25.0	XXX	2/Discharge	Grab
Total Cobalt (µg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Discharge	Grab
Total Copper (µg/L)	XXX	XXX	XXX	14.0	21.0	XXX	2/Discharge	Grab
Total Lead (µg/L)	XXX	XXX	XXX	5.24	8.17	XXX	2/Discharge	Grab
Total Iron	XXX	XXX	XXX	2.0	4.0	XXX	2/Discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/Discharge	Grab
Total Nickel (µg/L)	XXX	XXX	XXX	Report	Report	XXX	2/Discharge	Grab
Total Selenium (µg/L)	XXX	XXX	XXX	9.01	14.1	XXX	2/Discharge	Grab
Total Silver (µg/L)	XXX	XXX	XXX	3.86	6.03	XXX	2/Discharge	Grab
Total Thallium (µg/L)	XXX	XXX	XXX	0.43	0.68	XXX	2/Discharge	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Discharge	Grab

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:
☐	Other:

ATTACHMENTS:

Attachment A: Site Line Diagram

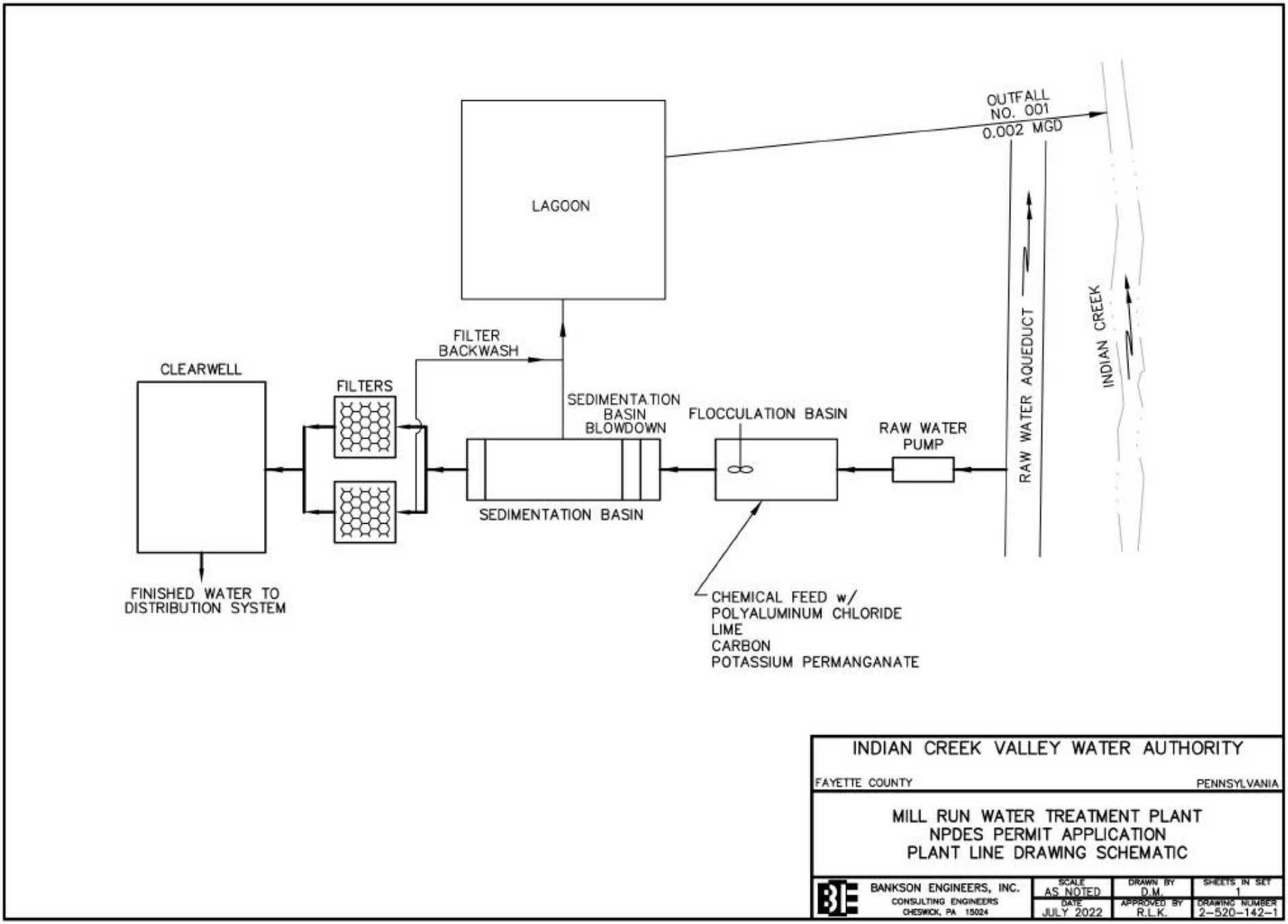
Attachment B: Outfall 001 StreamStats Report

Attachment C: Outfall 001 Toxics Management Spread Sheet Model

Attachment D: Outfall 001 Total Residual Choline Model

Attachment A:

Site Line Diagram

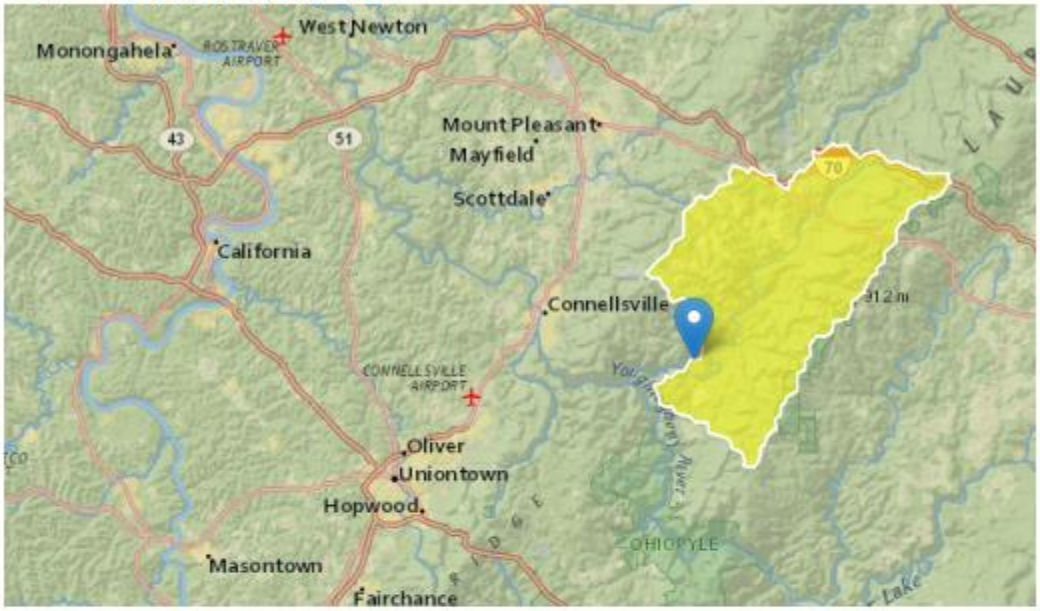

OUTFALL
NO. 001
0.002 MGD
LAGOON
FILTER
BACKWASH
CLEARWELL
FILTERS
SEDIMENTATION
BASIN
BLOWDOWN
FLOCCULATION BASIN
RAW WATER
PUMP
RAW WATER AQUEDUCT
INDIAN CREEK
SEDIMENTATION BASIN
FINISHED WATER TO
DISTRIBUTION SYSTEM
CHEMICAL FEED w/
POLYALUMINUM CHLORIDE
LIME
CARBON
POTASSIUM PERMANGANATE
INDIAN CREEK VALLEY WATER AUTHORITY
FAYETTE COUNTY
PENNSYLVANIA
MILL RUN WATER TREATMENT PLANT
NPDES PERMIT APPLICATION
PLANT LINE DRAWING SCHEMATIC
BANKSON ENGINEERS, INC.
CONSULTING ENGINEERS
CHESWICK, PA 15024
SCALE
AS NOTED
DRAWN BY
D.M.
SHEETS IN SET
1
DATE
JULY 2022
APPROVED BY
R.L.K.
DRAWING NUMBER
2-520-142-1

Attachment B:

Outfall 001 StreamStats Report

StreamStats Report Mill Run Outfall 001

Region ID: PA
Workspace ID: PA20220810121108294000
Clicked Point (Latitude, Longitude): 39.98309, -79.45521
Time: 2022-08-10 08:11:27 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	110	square miles
ELEV	Mean Basin Elevation	1986	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (110 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	110	square miles	2.26	1400
ELEV	Mean Basin Elevation	1986	feet	1050	2580

Low-Flow Statistics Flow Report [100.0 Percent (110 square miles) 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	9.05	ft^3/s	43	43
30 Day 2 Year Low Flow	14.4	ft^3/s	38	38
7 Day 10 Year Low Flow	3.59	ft^3/s	66	66
30 Day 10 Year Low Flow	5.66	ft^3/s	54	54
90 Day 10 Year Low Flow	10.3	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/)

Attachment C:

Outfall 001 Toxics Management Spread Sheet Model

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Mill Run WTP** NPDES Permit No.: **PA0255254** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Water Treatment Backwash**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
2.88	87.3	7						

					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		120									
	Chloride (PWS)	mg/L		19									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		33									
	Fluoride (PWS)	mg/L	<	0.1									
Group 2	Total Aluminum	µg/L		600									
	Total Antimony	µg/L	<	100									
	Total Arsenic	µg/L	<	200									
	Total Barium	µg/L		60									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	50									
	Total Cadmium	µg/L	<	2									
	Total Chromium (III)	µg/L	<	10									
	Hexavalent Chromium	µg/L		20									
	Total Cobalt	µg/L	<	5									
	Total Copper	µg/L	<	10									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	20									
	Dissolved Iron	µg/L	<	50									
	Total Iron	µg/L		240									
	Total Lead	µg/L	<	20									
	Total Manganese	µg/L		210									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	10									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20									
	Total Selenium	µg/L	<	20									
	Total Silver	µg/L	<	5									
	Total Thallium	µg/L	<	20									
	Total Zinc	µg/L	<	10									
	Total Molybdenum	µg/L	<	20									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Mill Run WTP, NPDES Permit No. PA0255254, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Indian 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	038235	4.86	1219	110			Yes
End of Reach 1	038235	3.86	1175	111			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	4.86	0.1	3.59									100	7		
End of Reach 1	3.86	0.1	3.63												

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	4.86														
End of Reach 1	3.86														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Mill Run WTP, NPDES Permit No. PA0255254, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 7.975 PMF: 1 Analysis Hardness (mg/l): 92.967 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	750	750	1,354	
Total Antimony	0	0		0	1,100	1,100	1,986	
Total Arsenic	0	0		0	340	340	614	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	37,921	
Total Boron	0	0		0	8,100	8,100	14,627	
Total Cadmium	0	0		0	1.876	1.98	3.58	Chem Translator of 0.947 applied
Total Chromium (III)	0	0		0	536.730	1,699	3,067	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	29.4	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	172	
Total Copper	0	0		0	12.547	13.1	23.6	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	59.647	74.4	134	Chem Translator of 0.802 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.97	Chem Translator of 0.85 applied
Total Nickel	0	0		0	440.221	441	797	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	2.838	3.34	6.03	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	117	
Total Zinc	0	0		0	110.159	113	203	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 7.975 PMF: 1 Analysis Hardness (mg/l): 92.967 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	397	
Total Arsenic	0	0		0	150	150	271	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	7,404	
Total Boron	0	0		0	1,600	1,600	2,889	
Total Cadmium	0	0		0	0.234	0.26	0.46	Chem Translator of 0.912 applied
Total Chromium (III)	0	0		0	69.818	81.2	147	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	18.8	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	34.3	
Total Copper	0	0		0	8.415	8.77	15.8	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	2,709	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.324	2.9	5.24	Chem Translator of 0.802 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.64	Chem Translator of 0.85 applied
Total Nickel	0	0		0	48.895	49.0	88.6	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	9.01	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	23.5	
Total Zinc	0	0		0	111.060	113	203	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 7.975 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	10.1	
Total Arsenic	0	0		0	10	10.0	18.1	
Total Barium	0	0		0	2,400	2,400	4,334	
Total Boron	0	0		0	3,100	3,100	5,598	
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	542	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,806	
Total Mercury	0	0		0	0.050	0.05	0.09	
Total Nickel	0	0		0	610	610	1,102	
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	0.43	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 12.539 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	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits* AML (lbs/day)	*Mass Limits* MDL (lbs/day)	*Concentration Limits* AML	*Concentration Limits* MDL	*Concentration Limits* IMAX	*Concentration Limits* Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	20.9	32.5	868	1,354	2,170	µg/L	868	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Antimony	0.24	0.38	10.1	15.8	25.3	µg/L	10.1	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Arsenic	0.43	0.68	18.1	28.2	45.1	µg/L	18.1	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Cadmium	0.011	0.017	0.46	0.72	1.16	µg/L	0.46	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	0.45	0.7	18.8	29.3	46.9	µg/L	18.8	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Cobalt	Report	Report	Report	Report	Report	µg/L	34.3	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.36	0.57	15.1	23.6	37.8	µg/L	15.1	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	0.13	0.2	5.24	8.17	13.1	µg/L	5.24	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	1,806	THH	Discharge Conc > 10% WQBEL (no RP)
Total Nickel	Report	Report	Report	Report	Report	µg/L	88.6	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Selenium	0.22	0.34	9.01	14.1	22.5	µg/L	9.01	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Silver	0.093	0.14	3.86	6.03	9.66	µg/L	3.86	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Thallium	0.01	0.016	0.43	0.68	1.08	µg/L	0.43	THH	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	Discharge Conc < TQL
Total Barium	4,334	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	N/A	N/A	Discharge Conc < TQL
Total Chromium (III)	147	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	542	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	2,709	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.09	µg/L	**Discharge Conc < TQL**
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Zinc	130	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment D:

Outfall 001 Total Residual Choline Model

TRC EVALUATION

3.59	= Q stream (cfs)	0.5	= CV Daily
2.88	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.705	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
	= %Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	0.200	**1.3.2.iii**	WLA cfc =	0.262
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	0.075	**5.1d**	LTA_cfc =	0.152

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.128	AFC
		INST MAX LIMIT (mg/l) =	0.300	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...**
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...**
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**