pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0255301**
Facility Type	**Industrial**	APS ID	**1066084**
Major / Minor	**Minor**	Authorization ID	**1400773**

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

Applicant and Facility Information

Applicant Name	**Springdale Borough**	Facility Name	**Springdale Borough WTP**
Applicant Address	325 School Street	Facility Address	600 Remaley Street
	Springdale, PA 15144		Springdale, PA 15144
Applicant Contact	Veronica McKay	Facility Contact	Same as Applicant
Applicant Phone	(724) 274-6800	Facility Phone	Same as Applicant
Client ID	87534	Site ID	824104
SIC Code	4941	Municipality	Springdale Borough
SIC Description	Trans. & Utilities - Water Supply	County	Allegheny
Date Application Received	June 23, 2022	EPA Waived?	Yes
Date Application Accepted	July 1, 2022	If No, Reason	

Purpose of Application: Renewal Coverage of NPDES Permit

Summary of Review

The Department received an NPDES permit renewal application for the discharge of industrial wastewater from the Springdale Borough Water Treatment Plant (WTP) on June 23, 2022. The plant is a potable water treatment plant with an SIC code of 4941. The plant discharges filter backwash water from one outfall (Outfall 001) to the Allegheny River, designated in 25 PA code chapter 93 as a Warm Water Fishery.

The WTP facilities include greensand pressure filters to remove manganese, an air stripping tower and ion exchange softening units. The WTP treatment process consists of adding potassium permanganate to the raw water prior to being pumped through the greensand pressure filters. The manganese removal filters are dual media, direct filtration type, pressurized greensand and both are in operation. The filters have a surface area of 169 ft² and a rated capacity of 500 gpm each. Backwash water is pumped at a rate of approximately 480 gpm from the clear well through each of the filter cells. All of the residual waste generated at the water treatment plant is produced during the pressure filter backwash. The pressure filters are backwashed once a week and produce approximately 24,200 gallons of backwash water waste per backwash cycle. Two setting basins allow the solids in the backwash water to settle, while the effluent of the tank discharges to Outfall 001. An anionic polymer is added to the filter backwash to aid the coagulation of the settled solids in the basins.

The site was last inspected on August 20, 2021, no violations were noted. The permittee has no open violations.

Draft permit issuance 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*,

Approve	Deny	Signatures	Date
X		Adam Olesnanik / Project Manager	7/5/2022
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	7/5/2022

Summary of Review
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)	0.0242
Latitude	40º 32' 06.52"	Longitude	-79º 47' 01.80"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Water Treatment Plant Filter Backwash		

Receiving Waters	Allegheny River	Stream Code	42122
NHD Com ID	123972852	RMI	16.43
Drainage Area	11500	Yield (cfs/mi^2)	0.208
Q_{7-10} Flow (cfs)	2,390	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	740	Slope (ft/ft)	0.0001
Watershed No.	18-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	Chlordane, PCB --- both are now banned in the United States		
Source(s) of Impairment	Agricultural Pesticide, Synthetic Oils		
TMDL Status	EPA Approved	Name	TMDL for Allegheny River

Nearest Downstream Public Water Supply Intake	Oakmont Water Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	13.47	Distance from Outfall (mi)	2.96

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0242
Latitude 40º 32' 06.52" **Longitude** -79º 47' 01.80"
Wastewater Description: Water Treatment Plant Filter Backwash

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 Toxics Management Spread Sheet did not recommend any WQBELs for Outfall 001.

Table 3: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	16.43
Discharge Flow (MGD)	0.0242
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	11500
Q_{7-10} (cfs)	2390
Low-flow yield (cfs/mi^2)	0.208
Elevation (ft)	740
Slope	0.0001

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC 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 no WQBELs are required for TRC.

Total Maximum Daily Loads

The Allegheny River has a TMDL for PCBs and Chlordane. The TMDL outlines a plan to achieve water quality standards in the water body. The TMDL applies only to discharges of PCBs and chlordane to the Allegheny River and does not provide waste load allocations for either. The TMDL goal is for levels of PCB and chlordane in the water column to be equal to or less than the Commonwealth's water quality criteria. The production and use of PCB in the United States was banned in July of 1979. In addition, the TMDL acknowledges that there are no longer any known point sources of either pollutant in the watershed and the TMDL is expected to achieve implementation through "natural attenuation". While it is now illegal to manufacture, distribute, or use PCBs in the United states, these synthetic oils were used in the past. However, this site has not been shown to have PCBs in its discharge and has not been known to use PCBs. Neither chlordane nor PCB's are used, generated, or stored at the site; nor is there any evidence to suggest that PCBs and chlordane were ever used, generated, or stored onsite in the past. Based upon these considerations, the Allegheny River TMDL is not applicable to site's discharges.

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 4.

Table 4: 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	Daily*	Metered
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	75.0	1/Week	24-Hr Composite
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.6	1/Week	Grab
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10	1/Week	24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0	1/Week	24-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5	1/Week	24-Hr Composite
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily*	Grab

*because the discharge is a batch discharge and not continuous the monitoring frequency is daily when discharging

Final Effluent Limitations

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 5. The limits are the most stringent values from the above limitation analysis. Because 24-hour composite sampling is being imposed on some of the parameters, a footnote has been added to Part A of the Draft permit indicating that the Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee is not required to monitoring for the instantaneous maximum limitation when conducting 24-hour composite sampling. However, if grab samples are collected by the permittee, the results must be reported.

Table 5: Proposed 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	Daily*	Metered
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	75.0**	1/Week	24-Hr Composite
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.0	1.6	1/Week	Grab
Total Aluminum	XXX	XXX	XXX	4.0	8.0	10**	1/Week	24-Hr Composite
Total Iron	XXX	XXX	XXX	2.0	4.0	5.0**	1/Week	24-Hr Composite
Total Manganese	XXX	XXX	XXX	1.0	2.0	2.5**	1/Week	24-Hr Composite
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily*	Grab

*because the discharge is a batch discharge and not continuous the monitoring frequency is daily when discharging

**These Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee is not required to monitoring for the instantaneous maximum limitation. However, if grab samples are collected by the permittee, the results must be reported.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment **C**)
☒	TRC Model Spreadsheet (see Attachment **D**)
☐	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

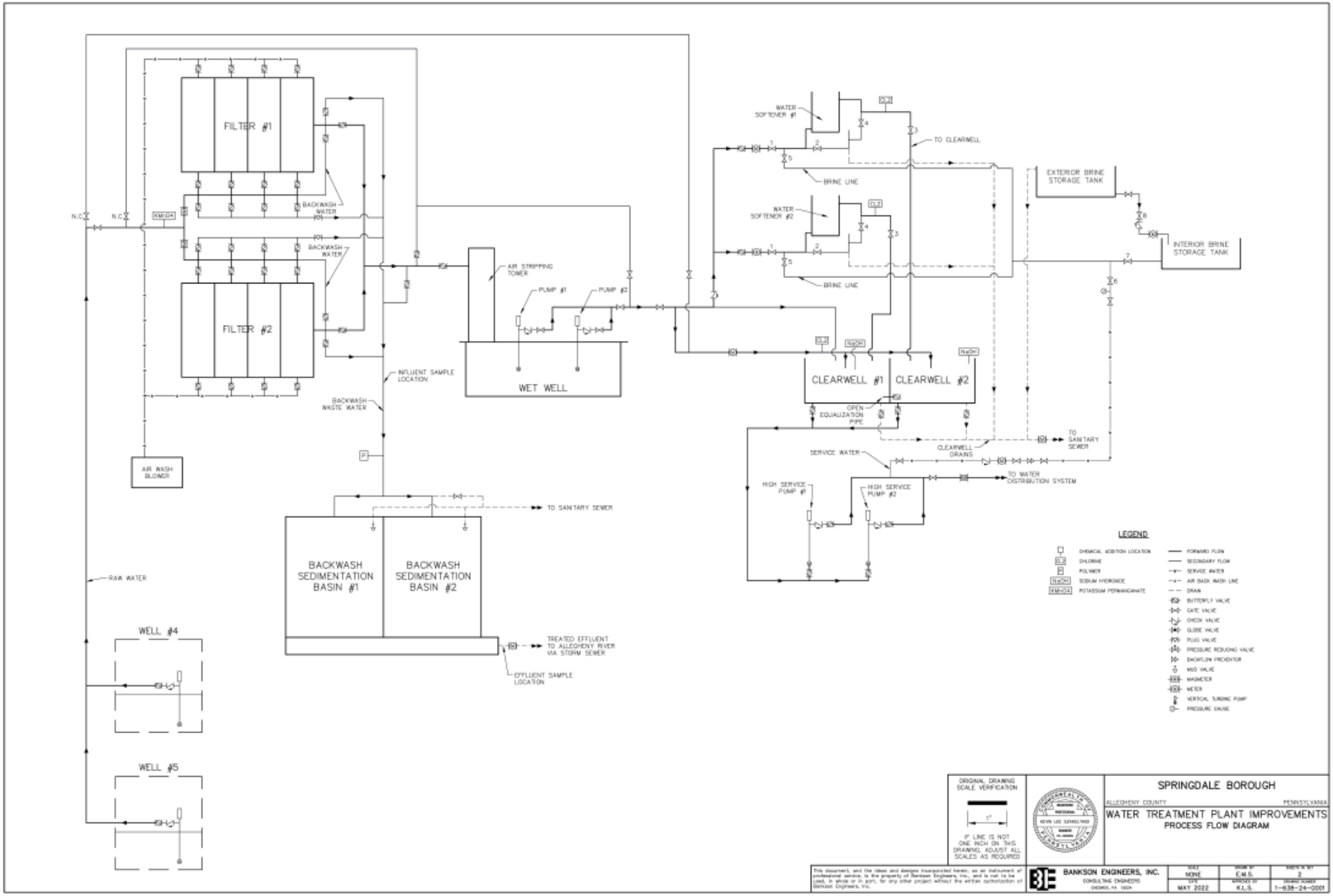
Attachment A: Site Line Diagram

Attachment B: StreamStats Report

Attachment C: Toxic Management Spreadsheet for Outfall 001

Attachment D: TRC Modeling Results for Outfall 001

ATTACHMENT A:
Site Line Diagram


FILTER #1
FILTER #2
BACKWASH WATER
BACKWASH WATER
AIR STRIPPING TOWER
PUMP #1
PUMP #2
WET WELL
INFLUENT SAMPLE LOCATION
BACKWASH WASTE WATER
AIR WASH BLOWER
TO SANITARY SEWER
BACKWASH SEDIMENTATION BASIN #1
BACKWASH SEDIMENTATION BASIN #2
TREATED EFFLUENT TO ALLEGHENY RIVER VIA STORM SEWER
EFFLUENT SAMPLE LOCATION
RAW WATER
WELL #4
WELL #5
WATER SOFTENER #1
WATER SOFTENER #2
TO CLEARWELL
BRINE LINE
BRINE LINE
EXTERIOR BRINE STORAGE TANK
INTERIOR BRINE STORAGE TANK
CLEARWELL #1
CLEARWELL #2
OPEN EQUALIZATION PIPE
CLEARWELL DRAINS
TO SANITARY SEWER
SERVICE WATER
TO WATER DISTRIBUTION SYSTEM
HIGH SERVICE PUMP #1
HIGH SERVICE PUMP #2
LEGEND
SPRINGDALE BOROUGH
ALLEGHENY COUNTY
PENNSYLVANIA
WATER TREATMENT PLANT IMPROVEMENTS
PROCESS FLOW DIAGRAM
BANKSON ENGINEERS, INC.
CONSULTING ENGINEERS
MAY 2022

ATTACHMENT B:
StreamStats Report

Outfall 001 StreamStats Report

Region ID: PA
Workspace ID: PA20220701130345448000
Clicked Point (Latitude, Longitude): 40.53443, -79.78357
Time: 2022-07-01 09:04:12 -0400

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	11500	square miles
ELEV	Mean Basin Elevation	1598	feet
PRECIP	Mean Annual Precipitation	44	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [97.4 Percent (11200 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11500	square miles	2.33	1720
ELEV	Mean Basin Elevation	1598	feet	898	2700
PRECIP	Mean Annual Precipitation	44	inches	38.7	47.9

Low-Flow Statistics Parameters [2.6 Percent (296 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11500	square miles	2.26	1400
ELEV	Mean Basin Elevation	1598	feet	1050	2580

Low-Flow Statistics Disclaimers [97.4 Percent (11200 square miles) Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [97.4 Percent (11200 square miles) Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1510	ft^3/s
30 Day 2 Year Low Flow	1910	ft^3/s
7 Day 10 Year Low Flow	1000	ft^3/s
30 Day 10 Year Low Flow	1200	ft^3/s
90 Day 10 Year Low Flow	1610	ft^3/s

Low-Flow Statistics Disclaimers [2.6 Percent (296 square miles) Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [2.6 Percent (296 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1510	ft^3/s
30 Day 2 Year Low Flow	1910	ft^3/s
7 Day 10 Year Low Flow	984	ft^3/s
30 Day 10 Year Low Flow	1070	ft^3/s
90 Day 10 Year Low Flow	1480	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1510	ft^3/s
30 Day 2 Year Low Flow	1910	ft^3/s
7 Day 10 Year Low Flow	999	ft^3/s
30 Day 10 Year Low Flow	1200	ft^3/s
90 Day 10 Year Low Flow	1610	ft^3/s

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/)

Application Version: 4.10.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

ATTACHMENT C:
Toxics Management Spreadsheet for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Springdale Boro WTP** NPDES Permit No.: **PA0255301** 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
0.0242	227	8.1						

					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		360									
	Chloride (PWS)	mg/L		63.9									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		67.4									
	Fluoride (PWS)	mg/L	<	0.2									
Group 2	Total Aluminum	µg/L	<	10									
	Total Antimony	µg/L	<	2									
	Total Arsenic	µg/L	<	2									
	Total Barium	µg/L		63									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		0.15									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	2									
	Hexavalent Chromium	µg/L		0.13									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L	<	2									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		11									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		20									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		176									
	Total Mercury	µg/L	<	0.09									
	Total Nickel	µg/L	<	2									
	Total Phenols (Phenolics) (PWS)	µg/L		50									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L		2									
	Total Zinc	µg/L	<	5									
	Total Molybdenum	µg/L	<	2									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Springdale Boro WTP, NPDES Permit No. PA0255301, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Allegheny**

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	042122	16.43	740	11500			Yes
End of Reach 1	042122	13.47	728	5331		9.2	Yes

Q_{7-10}

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	16.43	0.1	2390			750	20					100	7		
End of Reach 1	13.47	0.1	2390			1300	20								

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	16.43														
End of Reach 1	13.47														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Springdale Boro WTP, NPDES Permit No. PA0255301, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.220 Analysis Hardness (mg/l): 100.01 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	10,514,733	
Total Antimony	0	0		0	1,100	1,100	15,421,608	
Total Arsenic	0	0		0	340	340	4,766,679	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	#########	
Total Boron	0	0		0	8,100	8,100	#########	
Total Cadmium	0	0		0	2.014	2.13	29,909	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	569.806	1,803	25,279,979	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	228,426	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,331,866	
Total Copper	0	0		0	13.440	14.0	196,279	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	64.588	81.7	1,144,767	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	23,091	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.272	469	6,578,158	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	3.217	3.79	53,064	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	911,277	
Total Zinc	0	0		0	117.189	120	1,679,912	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100 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	14,044,999	
Total Arsenic	0	0		0	150	150	9,576,136	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	#########	
Total Boron	0	0		0	1,600	1,600	#########	
Total Cadmium	0	0		0	0.246	0.27	17,277	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.116	86.2	5,501,878	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	663,627	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	1,212,977	
Total Copper	0	0		0	8.956	9.33	595,576	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	95,761,355	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	203,121	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	57,832	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.007	52.2	3,330,191	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	318,512	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	829,932	
Total Zinc	0	0		0	118.141	120	7,649,317	Chem Translator of 0.986 applied

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	#########	WQC applied at RMI 13.47 with a design stream flow of 2390 cfs
Chloride (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 13.47 with a design stream flow of 2390 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 13.47 with a design stream flow of 2390 cfs
Fluoride (PWS)	0	0		0	2,000	2,000	#########	WQC applied at RMI 13.47 with a design stream flow of 2390 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	357,509	
Total Arsenic	0	0		0	10	10.0	638,409	
Total Barium	0	0		0	2,400	2,400	#########	
Total Boron	0	0		0	3,100	3,100	#########	
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	19,152,271	
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	63,840,903	
Total Mercury	0	0		0	0.050	0.05	3,192	
Total Nickel	0	0		0	610	610	38,942,951	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	319,205	WQC applied at RMI 13.47 with a design stream flow of 2390 cfs
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	15,322	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***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	

☑ ***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

☑ ***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)	31,920,452	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	15,960,226	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	15,960,226	mg/L	Discharge Conc ≤ 10% WQBEL
Fluoride (PWS)	N/A	N/A	Discharge Conc < TQL
Total Aluminum	N/A	N/A	Discharge Conc < TQL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	#########	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	72,786,806	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	17,277	µg/L	Discharge Conc < TQL
Total Chromium (III)	5,501,878	µg/L	Discharge Conc < TQL
Hexavalent Chromium	146,412	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	853,672	µg/L	Discharge Conc < TQL
Total Copper	125,807	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	19,152,271	µg/L	Discharge Conc < TQL
Total Iron	95,761,355	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	203,121	µg/L	Discharge Conc < TQL
Total Manganese	63,840,903	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	3,192	µg/L	Discharge Conc < TQL
Total Nickel	3,330,191	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)	319,205	µg/L	Discharge Conc ≤ 10% WQBEL
Total Selenium	318,512	µg/L	Discharge Conc < TQL
Total Silver	34,012	µg/L	Discharge Conc < TQL
Total Thallium	15,322	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1,076,756	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS

ATTACHMENT D:
TRC Modeling Results for Outfall 001

TRC EVALUATION

2390	= Q stream (cfs)	0.5	= CV Daily
0.0242	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.25	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.25	= 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 =	5091.251	**1.3.2.iii**	WLA cfc =	4963.563
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	1897.122	**5.1d**		2885.583

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**