pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0093181**
Facility Type	**Industrial**	APS ID	**1080028**
Major / Minor	**Minor**	Authorization ID	**1425378**

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

Applicant and Facility Information

Applicant Name	**Industrial Wastes, LLC**	Facility Name	**Darlington Plant**
Applicant Address	333 N. Summit Street, P.O. Box 10086	Facility Address	Darlington Facility
	Toledo, OH 43699-0086		Darlington, PA 16115
Applicant Contact	Steven Sares	Facility Contact	Robert Casacchia
Applicant Phone	(419) 252-5500	Facility Phone	724-827-8135
Client ID	84799	Site ID	3446
SIC Code	4953	Municipality	Darlington Township
SIC Description	Trans. & Utilities - Refuse Systems	County	Beaver
Date Application Received	January 27, 2023	EPA Waived?	Yes
Date Application Accepted		If No, Reason	
Purpose of Application	Renewal NPDES Permit Application		

Summary of Review

The Department received a timely renewal NPDES permit application from Industrial Wastes, LLC for their Darlington facility located in Darlington Township of Beaver County on January 27, 2023. The site was formerly the location of an industrial waste treatment and disposal operation. The treatment process involved the neutralization of large volumes of waste pickle liquor (acid) through the addition of lime slurry. The resultant neutralized sludge was disposed onsite in various 'sludge ponds' situated within abandoned coal strip cuts which are underlain by abandoned deep coal mines. The disposal operations began sometime in 1960 and were terminated on November 30, 1981. The disposal area was subsequently covered with a low permeability cap, vegetated, and closed on June 30, 1982. Mine water seepage and leachate from the disposal unit continue to drain from the area requiring perpetual treatment prior to discharge.

The original treatment system was constructed in accordance with Water Quality Management, Part II Permit 0483202. The leachate collection system consists of various size perforated and non-perforated PVC pipes and four pump stations. The collected leachate flows into a lined 1,000,000-gallon equalization basin. The equalization basin has three drawdown pipes located at different elevations which draw the wastewater into the on-site treatment plant. The treatment plant influent is split flow (parallel flow) with a design flow of 100 gpm. The treatment system consists of a hydrated lime, flash-mixing tank, two parallel sludge settling tanks, chlorination and dechlorination. Settled sludges are collected in a holding tank with decanted wastewater flowing back into the sludge settling tanks.

The first addendum to the treatment system was constructed in accordance with Water Quality Management, Part II Permit 0483202 A-1 issued December 12, 2000. Addendum A-1 modified the existing chlorine contact tank to include a sulfonation process. The sulfonation process consists of sulfur dioxide gas injection and sparging system for TRC removal.

The second addendum to the treatment system was constructed in accordance with Water Quality Management, Part II Permit 0483202 A-2 issued October 5, 2020. Addendum A-2 modified the existing leachate treatment plant to enhance operations

Approve	Deny	Signatures	Date
X		Jamie Ley Jamie Ley / Environmental Engineering Trainee	April 27, 2023
X		Michael E. Fifth Michael E. Fifth, P.E. / Environmental Engineer Manager	June 12, 2023

Summary of Review

and to meet reduced effluent limitations that went into effect in 2021. The modifications were: 1.) change the ammonia treatment process from use of gaseous chlorine to liquid sodium hypochlorite; 2.) change the residual chlorine treatment process from use of gaseous sulfur dioxide to liquid sodium metabisulfite; 3.) addition of a granulated activated carbon (GAC) treatment process as a polishing step for further reduction of residual chlorine in order to meet lower effluent limits; 4.) addition of flow straighteners in existing settling tanks to enhance settling of solids; and 5.) addition of manually operated electric sludge transfer pump (VANCS Series C 5- HP pump) at each settling tank, to move settled material from settling tanks to a sludge holding tank.

The effluent from the wastewater treatment plant is discharged through a series of three surface impoundments before flowing into State Line Creek; a High-Quality, Cold Water Fishery. All treated wastewater discharges from the Darlington facility are via Outfall 001.

Four (4) violations were found for the facility. All four violations occurred on May 15, 2018. The first and second violations noted an unauthorized, unpermitted discharge/bypass of industrial wastes to waters of the Commonwealth. The third violation noted a violation of effluent limits in Part A of NPDES permit. The fourth violation was described as a failure to utilize approved analytical methods. All violations were resolved on October 19, 2018.

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)	0.6 (Average Flow: 0.31 MGD)
Latitude	40º 49' 0"	Longitude	-80º 31' 0"
Quad Name	East Palestine	Quad Code	1201
Wastewater Description:	IW Process Effluent without ELG – leachate from a closed industrial waste landfill		
Receiving Waters	East Fork Stateline Creek (HQ-CWF)	Stream Code	33384
NHD Com ID	99676870	RMI	1.54
Drainage Area	0.9 mi^2	Yield (cfs/mi^2)	0.00774
Q_{7-10} Flow (cfs)	0.00697	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	965	Slope (ft/ft)	0.01
Watershed No.	20-B	Chapter 93 Class.	HQ-CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	**N/A**		
Source(s) of Impairment	**N/A**		
TMDL Status	**N/A**	Name	
Nearest Downstream Public Water Supply Intake	East Liverpool Ohio		
PWS Waters	Ohio River	Flow at Intake (cfs)	5,880
PWS RMI	940	Distance from Outfall (mi)	20

Changes Since Last Permit Issuance:

Other Comments: Drainage area and Q7-10 differ from the previous permit renewal due to updates to StreamStats.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.6
Latitude	40º 49' 00"	**Longitude**	-80º 31' 00"

Wastewater Description: IW Process Effluent without ELG

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

EPA has not promulgated Effluent Limitation Guidelines (ELG's) for this category of discharges.

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 Total Residual Chlorine (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	Monitor	Monitor	----
pH	6-9 at all times		----
TRC	0.5 mg/l	----	1.6 mg/l

Water Quality-Based 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 2.

Table 2: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	1.54
Discharge Flow (MGD)	0.31
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	0.9
$Q_{7\text{-}10}$ (cfs)	0.00697
Low-flow yield (cfs/mi^2)	0.00774
Elevation (ft)	965
Slope	0.01

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 recommended multiple WQBELs for Outfall 001.

Table 3: TMS Recommended WQBELs & Monitoring Requirements for Outfall 001

Parameter	**AML**	**MDL**	**IMAX**	**Units**	**Reported QL**	**Target QL**
Total Arsenic	Report	Report	Report	ug/L	1.9	3
Total Cadmium	1.19	1.85	2.97	ug/L	1	0.2
Hexavalent Chromium	Report	Report	Report	ug/L	**3**	**1**
Total Cobalt	Report	Report	Report	ug/L	1	1
Total Iron	Report	Report	Report	ug/L	100	20
Total Manganese	1015	1583	2536	ug/L	160	2
Total Nickel	Report	Report	Report	ug/L	2	4
Acrylamide	0.084	0.13	0.21	ug/L	**50**	**0.1**
Chloroform	5.78	9.02	14.5	ug/L	1	0.5
1,2,4-Trichlorobenzene	0.071	0.11	0.18	ug/L	**0.54**	**0.5**

Based on the results shown in Table 3, for the parameters of hexavalent chromium, acrylamide, and 1,2,4-trichlorobenzene, the results were reported as less than analytical reporting limits, but those reporting limits were too high to rule out the

possibility that discharges will result in excursion above Pennsylvania's water quality criteria. During the 30-day public comment period, Industrial Wastes, LLC may resample these parameters at the Department's QL to verify that they are not present in the discharge. If it is determined that the parameters are not present in the discharge at the Department's QLs, they may be removed from the Final Permit.

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, recommend the imposition of 0.015 mg/L average monthly and 0.035 instantaneous maximum limits.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(I). The previous limitations for Outfall 001 are displayed below in Table 4.

Table 4: Current Effluent Limitations 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	Continuous	Measured
Total Suspended Solids	XXX	XXX	XXX	Report	Report	XXX	2/Month	24-Hr Composite
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.011	0.026	XXX	2/Month	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	2,350	4,700	XXX	2/Month	24-Hr Composite
Nitrate-Nitrite as N	XXX	XXX	XXX	20.0	40.0	XXX	2/Month	24-Hr Composite
Ammonia-Nitrogen Oct 1 – Apr 30	XXX	XXX	XXX	4.5	9.0	XXX	2/Month	24-Hr Composite
Ammonia-Nitrogen May 1 – Sep 30	XXX	XXX	XXX	3.0	6.0	XXX	2/Month	24-Hr Composite
Cadmium, Total	XXX	XXX	XXX	0.001	0.002	XXX	2/Month	24-Hr Composite
Copper, Total	XXX	XXX	XXX	0.012	0.024	XXX	2/Month	24-Hr Composite
Iron, Total	XXX	XXX	XXX	1.5	3.0	XXX	2/Month	24-Hr Composite
Manganese, Total	XXX	XXX	XXX	1.0	2.0	XXX	2/Month	24-Hr Composite
Nickel, Total	XXX	XXX	XXX	0.1	0.2	XXX	2/Month	24-Hr Composite
Sulfate, Total	XXX	XXX	XXX	600	1200	XXX	2/Month	24-Hr Composite
Zinc, Total	XXX	XXX	XXX	0.08	0.16	XXX	2/Month	24-Hr Composite
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

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.

Table 5: Proposed Effluent Limitations 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	Continuous	Measured
Total Suspended Solids	XXX	XXX	XXX	Report	Report	XXX	2/Month	24-Hr Composite
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.011	0.026	XXX	2/Month	24-Hr Composite
Total Dissolved Solids	XXX	XXX	XXX	2,350	4,700	XXX	2/Month	24-Hr Composite
Nitrate-Nitrite as N	XXX	XXX	XXX	20.0	40.0	XXX	2/Month	24-Hr Composite
Ammonia-Nitrogen Oct 1 – Apr 30	XXX	XXX	XXX	4.5	9.0	XXX	2/Month	24-Hr Composite
Ammonia-Nitrogen May 1 – Sep 30	XXX	XXX	XXX	3.0	6.0	XXX	2/Month	24-Hr Composite
Arsenic, Total	XXX	XXX	XXX	Report	Report	XXX	2/Month	24-Hr Composite
Cadmium, Total	XXX	XXX	XXX	0.001	0.002	XXX	2/Month	24-Hr Composite
Copper, Total	XXX	XXX	XXX	0.012	0.024	XXX	2/Month	24-Hr Composite
Cobalt, Total	XXX	XXX	XXX	Report	Report	XXX	2/Month	24-Hr Composite
Hexavalent Chromium	XXX	XXX	XXX	Report	Report	XXX	2/Month	24-Hr Composite
Iron, Total	XXX	XXX	XXX	1.5	3.0	XXX	2/Month	24-Hr Composite
Manganese, Total	XXX	XXX	XXX	1.0	1.58	XXX	2/Month	24-Hr Composite
Nickel, Total	XXX	XXX	XXX	0.1	0.2	XXX	2/Month	24-Hr Composite
Sulfate, Total	XXX	XXX	XXX	600	1200	XXX	2/Month	24-Hr Composite
Zinc, Total	XXX	XXX	XXX	0.08	0.16	XXX	2/Month	24-Hr Composite
Acrylamide (ug/L)	XXX	XXX	XXX	0.08	0.13	XXX	2/Month	24-Hr Composite
Chloroform (ug/L)	XXX	XXX	XXX	5.78	9.0	XXX	2/Month	24-Hr Composite
1,2,4-Trichlorobenzene (ug/L)	XXX	XXX	XXX	0.07	0.11	XXX	2/Month	24-Hr Composite
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

As previously stated, for the parameters of hexavalent chromium, acrylamide, and 1,2,4-trichlorobenzene, the results were reported as less than analytical reporting limits, but those reporting limits were too high to rule out the possibility that discharges will result in excursion above Pennsylvania's water quality criteria. During the 30-day public comment period, Industrial Wastes, LLC may resample these parameters at the Department's QL to verify that they are not present in the discharge. If it is determined that the parameters are not present in the discharge at the Department's QLs, they may be removed from the Final Permit. However, if the parameters are not removed from the draft permit, Industrial Wastes, LLC may not have the necessary controls in place to ensure compliance with the new WQBELs upon permit issuance; therefore, the permit will include a Schedule of Compliance, in accordance with 25 Pa. Code § 92a.51(a) of DEP's regulations, which grants the permittee three years to come into compliance with the new WQBELs. Because the WQBELs will not be effective upon permit issuance, the permit will be tiered to have interim and final monitoring requirements and effluent limits. For the first three years, a reporting requirement will be imposed. After three years, the WQBELs will take effect. A Part C condition will be included in the Draft NPDES Permit outlining a compliance schedule for these parameters.

Anti-Degradation Considerations

The NPDES permit application requires permittees to consider anti-degradation impacts only for new or increased discharges to High Quality or Exceptional Value waters. Industrial Wastes dischargers are not new or increasing. The hazardous waste disposal activities commenced around the year 1960 and formally ceased on November 30, 1981. Coal mining and abandoned mine discharges existed at this location for many years prior to 1960. East Fork of State Line Creek was formally designated a High-Quality water on October 8, 1979. Therefore, the discharges existing at the site at that time were already part of the water quality profile. Subsequent installation of the onsite treatment system only served to further enhance the quality of the receiving water. Accordingly, anti-degradation effluent limitations are not appropriate for this facility.

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: BPNPSM-PMT-001; BCW-PMT-032; BCW-PMT-037
☐	Other:

Attachments

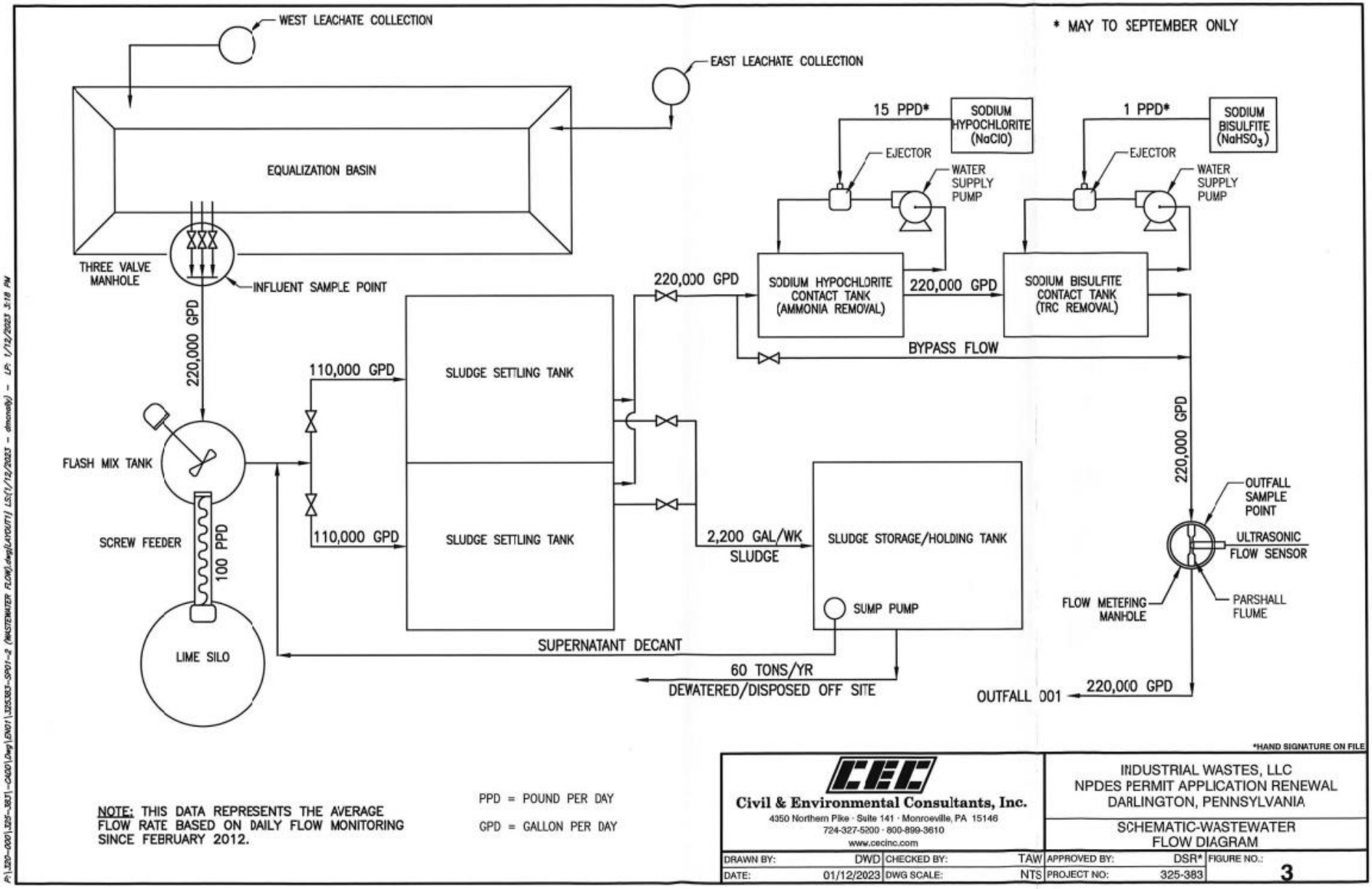
Attachment A: Process Flow Diagram

Attachment B: StreamStats Report

Attachment C: Toxic Management Spreadsheet for Outfall 001

Attachment D: TRC Modeling Results for Outfall 001

ATTACHMENT A:
Process Flow Diagram


WEST LEACHATE COLLECTION
EAST LEACHATE COLLECTION
* MAY TO SEPTEMBER ONLY
EQUALIZATION BASIN
15 PPD*
SODIUM HYPOCHLORITE (NaClO)
1 PPD*
SODIUM BISULFITE ($NaHSO_3$)
EJECTOR
WATER SUPPLY PUMP
THREE VALVE MANHOLE
INFLUENT SAMPLE POINT
220,000 GPD
SODIUM HYPOCHLORITE CONTACT TANK (AMMONIA REMOVAL)
SODIUM BISULFITE CONTACT TANK (TRC REMOVAL)
BYPASS FLOW
110,000 GPD
SLUDGE SETTLING TANK
FLASH MIX TANK
SCREW FEEDER
100 PPD
2,200 GAL/WK SLUDGE
SLUDGE STORAGE/HOLDING TANK
SUMP PUMP
OUTFALL SAMPLE POINT
ULTRASONIC FLOW SENSOR
FLOW METERING MANHOLE
PARSHALL FLUME
LIME SILO
SUPERNATANT DECANT
60 TONS/YR
DEWATERED/DISPOSED OFF SITE
OUTFALL 001
NOTE: THIS DATA REPRESENTS THE AVERAGE FLOW RATE BASED ON DAILY FLOW MONITORING SINCE FEBRUARY 2012.
PPD = POUND PER DAY
GPD = GALLON PER DAY
*HAND SIGNATURE ON FILE
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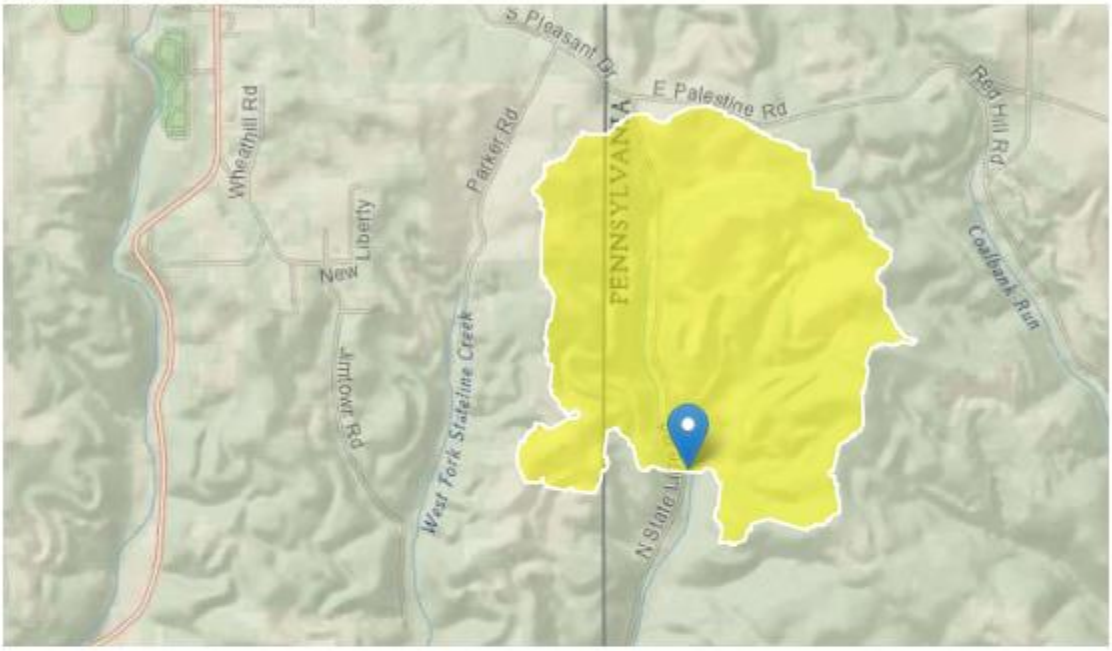
INDUSTRIAL WASTES, LLC
NPDES PERMIT APPLICATION RENEWAL
DARLINGTON, PENNSYLVANIA
SCHEMATIC-WASTEWATER FLOW DIAGRAM
DRAWN BY: DWD
CHECKED BY: TAW
APPROVED BY: DSR*
FIGURE NO.: 3
DATE: 01/12/2023
DWG SCALE: NTS
PROJECT NO: 325-383

ATTACHMENT B:
StreamStats Report

StreamStats Report

Region ID: PA
Workspace ID: PA20230209184850568000
Clicked Point (Latitude, Longitude): 40.81168, -80.51458
Time: 2023-02-09 13:49:12 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.9	square miles
ELEV	Mean Basin Elevation	1130	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.9	square miles	2.26	1400
ELEV	Mean Basin Elevation	1130	feet	1050	2580

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0237	ft^3/s
30 Day 2 Year Low Flow	0.0457	ft^3/s
7 Day 10 Year Low Flow	0.00697	ft^3/s
30 Day 10 Year Low Flow	0.015	ft^3/s
90 Day 10 Year Low Flow	0.0304	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/)

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ATTACHMENT C:
Toxic Management Spreadsheet for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Industrial Wastes LLC Darlington Plant, NPDES Permit No. PA0093181, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: UNT to East Fork State Line 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	033384	1.54	965	0.9	0.01		Yes
End of Reach 1	033384	0.54	879	1.47	0.01		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	1.54	0.00774	0.00697									100	7		
End of Reach 1	0.54	0.00857	0.0126												

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	1.54														
End of Reach 1	0.54														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Industrial Wastes LLC Darlington Plant** NPDES Permit No.: **PA0093181** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated landfill leachate & AMD**

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
0.31	730	7.2						

					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		1525									
	Chloride (PWS)	mg/L		220									
	Bromide	mg/L		5.1									
	Sulfate (PWS)	mg/L		570									
	Fluoride (PWS)	mg/L		0.3									
Group 2	Total Aluminum	µg/L	<	50									
	Total Antimony	µg/L	<	2									
	Total Arsenic	µg/L		4.12									
	Total Barium	µg/L		8.9									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		86									
	Total Cadmium	µg/L	<	1									
	Total Chromium (III)	µg/L	<	5									
	Hexavalent Chromium	µg/L	<	3									
	Total Cobalt	µg/L		6.47									
	Total Copper	µg/L		4									
	Free Cyanide	µg/L	<	0.544									
	Total Cyanide	mg/L	<	0.01									
	Dissolved Iron	µg/L		11.3									
	Total Iron	µg/L		300									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		950									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	100									
	Total Phenols (Phenolics) (PWS)	mg/L		0.01									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	1									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		30									
	Total Molybdenum	µg/L	<	5									
	Acrolein	µg/L	<	1.8									
	Acrylamide	µg/L	<	50									
	Acrylonitrile	µg/L	<	0.33									
	Benzene	µg/L	<	0.38									
	Bromoform	µg/L	<	1									

Group 3	Carbon Tetrachloride	µg/L	<	0.24									
	Chlorobenzene	µg/L	<	1									
	Chlorodibromomethane	µg/L	<	0.27									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	2									
	Chloroform	µg/L		4.7									
	Dichlorobromomethane	µg/L	<	0.28									
	1,1-Dichloroethane	µg/L	<	1									
	1,2-Dichloroethane	µg/L	<	1									
	1,1-Dichloroethylene	µg/L	<	1									
	1,2-Dichloropropane	µg/L	<	0.46									
	1,3-Dichloropropylene	µg/L	<	0.31									
	1,4-Dioxane	µg/L	<	2									
	Ethylbenzene	µg/L	<	1									
	Methyl Bromide	µg/L	<	1									
	Methyl Chloride	µg/L	<	1									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.2									
	Tetrachloroethylene	µg/L	<	1									
	Toluene	µg/L	<	1									
	1,2-trans-Dichloroethylene	µg/L	<	1									
	1,1,1-Trichloroethane	µg/L	<	1									
	1,1,2-Trichloroethane	µg/L	<	0.34									
	Trichloroethylene	µg/L	<	0.33									
	Vinyl Chloride	µg/L	<	0.38									
Group 4	2-Chlorophenol	µg/L	<	1									
	2,4-Dichlorophenol	µg/L	<	0.2									
	2,4-Dimethylphenol	µg/L	<	1									
	4,6-Dinitro-o-Cresol	µg/L	<	5									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	1									
	4-Nitrophenol	µg/L	<	5									
	p-Chloro-m-Cresol	µg/L	<	1									
	Pentachlorophenol	µg/L	<	5									
	Phenol	µg/L	<	1									
	2,4,6-Trichlorophenol	µg/L	<	1									
Group 5	Acenaphthene	µg/L	<	0.19									
	Acenaphthylene	µg/L	<	0.19									
	Anthracene	µg/L	<	0.19									
	Benzidine	µg/L	<	20									
	Benzo(a)Anthracene	µg/L	<	0.19									
	Benzo(a)Pyrene	µg/L	<	0.19									
	3,4-Benzofluoranthene	µg/L	<	0.19									
	Benzo(ghi)Perylene	µg/L	<	0.19									
	Benzo(k)Fluoranthene	µg/L	<	0.19									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.19									
	Bis(2-Chloroethyl)Ether	µg/L	<	1									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.19									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.2									
	4-Bromophenyl Phenyl Ether	µg/L	<	1									
	Butyl Benzyl Phthalate	µg/L	<	1									
	2-Chloronaphthalene	µg/L	<	0.19									
	4-Chlorophenyl Phenyl Ether	µg/L	<	1									
	Chrysene	µg/L	<	0.19									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.19									
	1,2-Dichlorobenzene	µg/L	<	1									
	1,3-Dichlorobenzene	µg/L	<	1									
	1,4-Dichlorobenzene	µg/L	<	1									
	3,3-Dichlorobenzidine	µg/L	<	1									
	Diethyl Phthalate	µg/L	<	1									
	Dimethyl Phthalate	µg/L	<	1									
	Di-n-Butyl Phthalate	µg/L	<	1									
	2,4-Dinitrotoluene	µg/L	<	1									

	2,6-Dinitrotoluene	µg/L	<	1									
	Di-n-Octyl Phthalate	µg/L	<	1									
	1,2-Diphenylhydrazine	µg/L	<	1									
	Fluoranthene	µg/L	<	0.19									
	Fluorene	µg/L	<	0.19									
	Hexachlorobenzene	µg/L	<	0.19									
	Hexachlorobutadiene	µg/L	<	0.19									
	Hexachlorocyclopentadiene	µg/L	<	1									
	Hexachloroethane	µg/L	<	1									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.19									
	Isophorone	µg/L	<	1									
	Naphthalene	µg/L	<	0.19									
	Nitrobenzene	µg/L	<	2									
	n-Nitrosodimethylamine	µg/L	<	1									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.19									
	n-Nitrosodiphenylamine	µg/L	<	1									
	Phenanthrene	µg/L	<	0.19									
	Pyrene	µg/L	<	0.19									
	1,2,4-Trichlorobenzene	µg/L	<	0.54									
Group 6	Aldrin	µg/L	<	0.0013									
	alpha-BHC	µg/L	<	0.0013									
	beta-BHC	µg/L	<	0.0013									
	gamma-BHC	µg/L	<	0.0013									
	delta BHC	µg/L	<	0.0013									
	Chlordane	µg/L	<	0.013									
	4,4-DDT	µg/L	<	0.0013									
	4,4-DDE	µg/L	<	0.0013									
	4,4-DDD	µg/L	<	0.0013									
	Dieldrin	µg/L	<	0.0013									
	alpha-Endosulfan	µg/L	<	0.0013									
	beta-Endosulfan	µg/L	<	0.0013									
	Endosulfan Sulfate	µg/L	<	0.0013									
	Endrin	µg/L	<	0.0013									
	Endrin Aldehyde	µg/L	<	0.0013									
	Heptachlor	µg/L	<	0.0013									
	Heptachlor Epoxide	µg/L	<	0.0013									
	PCB-1016	µg/L	<	0.01									
	PCB-1221	µg/L	<	0.01									
	PCB-1232	µg/L	<	0.01									
	PCB-1242	µg/L	<	0.01									
	PCB-1248	µg/L	<	0.01									
	PCB-1254	µg/L	<	0.01									
	PCB-1260	µg/L	<	0.01									
	PCBs, Total	µg/L											
	Toxaphene	µg/L	<	0.1									
	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 1.3, March 2021

Model Results

Industrial Wastes LLC Darlington Plant, NPDES Permit No. PA0093181, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): 720.97 Analysis pH: 7.20

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	761	
Total Antimony	0	0		0	1,100	1,100	1,116	
Total Arsenic	0	0		0	340	340	345	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	21,305	
Total Boron	0	0		0	8,100	8,100	8,218	
Total Cadmium	0	0		0	13.689	15.9	16.1	Chem Translator of 0.861 applied
Total Chromium (III)	0	0		0	2872.971	9,092	9,224	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	16.5	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	96.4	
Total Copper	0	0		0	86.438	90.0	91.3	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	22.3	
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	507.886	1,009	1,024	Chem Translator of 0.503 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.67	Chem Translator of 0.85 applied
Total Nickel	0	0		0	2490.377	2,495	2,532	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	96.170	113	115	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	65.9	
Total Zinc	0	0		0	624.843	639	648	Chem Translator of 0.978 applied

Acrolein	0	0		0	3	3.0	3.04	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	659	
Benzene	0	0		0	640	640	649	
Bromoform	0	0		0	1,800	1,800	1,826	
Carbon Tetrachloride	0	0		0	2,800	2,800	2,841	
Chlorobenzene	0	0		0	1,200	1,200	1,217	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	18,262	
Chloroform	0	0		0	1,900	1,900	1,928	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	15,218	
1,1-Dichloroethylene	0	0		0	7,500	7,500	7,609	
1,2-Dichloropropane	0	0		0	11,000	11,000	11,160	
1,3-Dichloropropylene	0	0		0	310	310	315	
Ethylbenzene	0	0		0	2,900	2,900	2,942	
Methyl Bromide	0	0		0	550	550	558	
Methyl Chloride	0	0		0	28,000	28,000	28,407	
Methylene Chloride	0	0		0	12,000	12,000	12,174	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,015	
Tetrachloroethylene	0	0		0	700	700	710	
Toluene	0	0		0	1,700	1,700	1,725	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	6,899	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,044	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	3,449	
Trichloroethylene	0	0		0	2,300	2,300	2,333	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	568	
2,4-Dichlorophenol	0	0		0	1,700	1,700	1,725	
2,4-Dimethylphenol	0	0		0	660	660	670	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	81.2	
2,4-Dinitrophenol	0	0		0	660	660	670	
2-Nitrophenol	0	0		0	8,000	8,000	8,116	
4-Nitrophenol	0	0		0	2,300	2,300	2,333	
p-Chloro-m-Cresol	0	0		0	160	160	162	
Pentachlorophenol	0	0		0	10.627	10.6	10.8	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	467	
Acenaphthene	0	0		0	83	83.0	84.2	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	304	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.51	
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	30,436	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	4,565	

4-Bromophenyl Phenyl Ether	0	0		0	270	270	274	
Butyl Benzyl Phthalate	0	0		0	140	140	142	
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	832	
1,3-Dichlorobenzene	0	0		0	350	350	355	
1,4-Dichlorobenzene	0	0		0	730	730	741	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	4,058	
Dimethyl Phthalate	0	0		0	2,500	2,500	2,536	
Di-n-Butyl Phthalate	0	0		0	110	110	112	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,623	
2,6-Dinitrotoluene	0	0		0	990	990	1,004	
1,2-Diphenylhydrazine	0	0		0	15	15.0	15.2	
Fluoranthene	0	0		0	200	200	203	
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	10.1	
Hexachlorocyclopentadiene	0	0		0	5	5.0	5.07	
Hexachloroethane	0	0		0	60	60.0	60.9	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	10,145	
Naphthalene	0	0		0	140	140	142	
Nitrobenzene	0	0		0	4,000	4,000	4,058	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	17,247	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	304	
Phenanthrene	0	0		0	5	5.0	5.07	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	132	
Aldrin	0	0		0	3	3.0	3.04	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	0.96	
Chlordane	0	0		0	2.4	2.4	2.43	
4,4-DDT	0	0		0	1.1	1.1	1.12	
4,4-DDE	0	0		0	1.1	1.1	1.12	
4,4-DDD	0	0		0	1.1	1.1	1.12	
Dieldrin	0	0		0	0.24	0.24	0.24	
alpha-Endosulfan	0	0		0	0.22	0.22	0.22	
beta-Endosulfan	0	0		0	0.22	0.22	0.22	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.087	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	0.53	
Heptachlor Epoxide	0	0		0	0.5	0.5	0.51	
Toxaphene	0	0		0	0.73	0.73	0.74	

☑ *CFC* CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): 720.97 Analysis pH: 7.20

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	223	
Total Arsenic	0	0		0	150	150	152	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,160	
Total Boron	0	0		0	1,600	1,600	1,623	
Total Cadmium	0	0		0	0.966	1.17	1.19	Chem Translator of 0.826 applied
Total Chromium (III)	0	0		0	373.714	435	441	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	10.5	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	19.3	
Total Copper	0	0		0	48.439	50.5	51.2	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	5.28	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,522	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	19.792	39.3	39.9	Chem Translator of 0.503 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	0.92	Chem Translator of 0.85 applied
Total Nickel	0	0		0	276.604	277	281	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	5.06	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	13.2	
Total Zinc	0	0		0	629.954	639	648	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	3.04	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	132	
Benzene	0	0		0	130	130	132	
Bromoform	0	0		0	370	370	375	
Carbon Tetrachloride	0	0		0	560	560	568	
Chlorobenzene	0	0		0	240	240	243	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	3,551	
Chloroform	0	0		0	390	390	396	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	3,145	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,522	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,232	

1,3-Dichloropropylene	0	0		0	61	61.0	61.9	
Ethylbenzene	0	0		0	580	580	588	
Methyl Bromide	0	0		0	110	110	112	
Methyl Chloride	0	0		0	5,500	5,500	5,580	
Methylene Chloride	0	0		0	2,400	2,400	2,435	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	213	
Tetrachloroethylene	0	0		0	140	140	142	
Toluene	0	0		0	330	330	335	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,420	
1,1,1-Trichloroethane	0	0		0	610	610	619	
1,1,2-Trichloroethane	0	0		0	680	680	690	
Trichloroethylene	0	0		0	450	450	457	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	112	
2,4-Dichlorophenol	0	0		0	340	340	345	
2,4-Dimethylphenol	0	0		0	130	130	132	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	16.2	
2,4-Dinitrophenol	0	0		0	130	130	132	
2-Nitrophenol	0	0		0	1,600	1,600	1,623	
4-Nitrophenol	0	0		0	470	470	477	
p-Chloro-m-Cresol	0	0		0	500	500	507	
Pentachlorophenol	0	0		0	8.153	8.15	8.27	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	92.3	
Acenaphthene	0	0		0	17	17.0	17.2	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	59.9	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.1	
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	6,087	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	923	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	54.8	
Butyl Benzyl Phthalate	0	0		0	35	35.0	35.5	
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	162	
1,3-Dichlorobenzene	0	0		0	69	69.0	70.0	
1,4-Dichlorobenzene	0	0		0	150	150	152	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	812	
Dimethyl Phthalate	0	0		0	500	500	507	

Di-n-Butyl Phthalate	0	0		0	21	21.0	21.3	
2,4-Dinitrotoluene	0	0		0	320	320	325	
2,6-Dinitrotoluene	0	0		0	200	200	203	
1,2-Diphenylhydrazine	0	0		0	3	3.0	3.04	
Fluoranthene	0	0		0	40	40.0	40.6	
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	2.03	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.01	
Hexachloroethane	0	0		0	12	12.0	12.2	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	2,131	
Naphthalene	0	0		0	43	43.0	43.6	
Nitrobenzene	0	0		0	810	810	822	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	3,449	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	59.9	
Phenanthrene	0	0		0	1	1.0	1.01	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	26.4	
Aldrin	0	0		0	0.1	0.1	0.1	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.004	
4,4-DDT	0	0		0	0.001	0.001	0.001	
4,4-DDE	0	0		0	0.001	0.001	0.001	
4,4-DDD	0	0		0	0.001	0.001	0.001	
Dieldrin	0	0		0	0.056	0.056	0.057	
alpha-Endosulfan	0	0		0	0.056	0.056	0.057	
beta-Endosulfan	0	0		0	0.056	0.056	0.057	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.037	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.004	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.004	
Toxaphene	0	0		0	0.0002	0.0002	0.0002	

☑ ***THH*** CCT (min): 0.000 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	5.68	
Total Arsenic	0	0		0	10	10.0	10.1	
Total Barium	0	0		0	2,400	2,400	2,435	
Total Boron	0	0		0	3,100	3,100	3,145	
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	
Free Cyanide	0	0		0	4	4.0	4.06	
Dissolved Iron	0	0		0	300	300	304	
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	1,015	
Total Mercury	0	0		0	0.050	0.05	0.051	
Total Nickel	0	0		0	610	610	619	
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	0.24	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	3.04	
Acrylamide	0	0		0	N/A	N/A	N/A	
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	101	
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	5.78	
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	33.5	
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	69.0	
Methyl Bromide	0	0		0	100	100.0	101	
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	57.8	

1,2-trans-Dichloroethylene	0	0		0	100	100.0	101	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	10,145	
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	30.4	
2,4-Dichlorophenol	0	0		0	10	10.0	10.1	
2,4-Dimethylphenol	0	0		0	100	100.0	101	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.03	
2,4-Dinitrophenol	0	0		0	10	10.0	10.1	
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	4,058	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	71.0	
Anthracene	0	0		0	300	300	304	
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	203	
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	0.1	
2-Chloronaphthalene	0	0		0	800	800	812	
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	1,015	
1,3-Dichlorobenzene	0	0		0	7	7.0	7.1	
1,4-Dichlorobenzene	0	0		0	300	300	304	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	609	
Dimethyl Phthalate	0	0		0	2,000	2,000	2,029	
Di-n-Butyl Phthalate	0	0		0	20	20.0	20.3	
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	20.3	
Fluorene	0	0		0	50	50.0	50.7	
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	4.06	
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	34.5	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	10.1	
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	20.3	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.071	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	4.26	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	20.3	
beta-Endosulfan	0	0		0	20	20.0	20.3	
Endosulfan Sulfate	0	0		0	20	20.0	20.3	
Endrin	0	0		0	0.03	0.03	0.03	
Endrin Aldehyde	0	0		0	1	1.0	1.01	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 0.057 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	
Free Cyanide	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	
Acrylamide	0	0		0	0.07	0.07	0.084	
Acrylonitrile	0	0		0	0.06	0.06	0.072	
Benzene	0	0		0	0.58	0.58	0.7	
Bromoform	0	0		0	7	7.0	8.41	
Carbon Tetrachloride	0	0		0	0.4	0.4	0.48	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	0.96	
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	1.14	
1,2-Dichloroethane	0	0		0	9.9	9.9	11.9	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	1.08	
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.32	
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	24.0	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.24	
Tetrachloroethylene	0	0		0	10	10.0	12.0	
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	0.66	
Trichloroethylene	0	0		0	0.6	0.6	0.72	
Vinyl Chloride	0	0		0	0.02	0.02	0.024	
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	0.036	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	1.8	
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	0.0001	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.001	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0001	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.001	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.012	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.036	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	0.38	
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	0.14	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0001	
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	0.06	
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	0.06	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.06	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.036	
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	0.0001	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.012	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.12	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.001	
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	0.0008	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.006	

n-Nitrosodiphenylamine	0	0		0	3.3	3.3	3.97	
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	
Aldrin	0	0		0	0.0000008	8.00E-07	9.62E-07	
alpha-BHC	0	0		0	0.0004	0.0004	0.0005	
beta-BHC	0	0		0	0.008	0.008	0.01	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.0004	
4,4-DDT	0	0		0	0.00003	0.00003	0.00004	
4,4-DDE	0	0		0	0.00002	0.00002	0.00002	
4,4-DDD	0	0		0	0.0001	0.0001	0.0001	
Dieldrin	0	0		0	0.000001	0.000001	0.000001	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.000007	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.00004	
Toxaphene	0	0		0	0.0007	0.0007	0.0008	

☑ ***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 Arsenic	Report	Report	Report	Report	Report	µg/L	10.1	THH	Discharge Conc > 10% WQBEL (no RP)
Total Cadmium	0.003	0.005	1.19	1.85	2.97	µg/L	1.19	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	10.5	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Cobalt	Report	Report	Report	Report	Report	µg/L	19.3	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	1,522	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	2.62	4.09	1,015	1,583	2,536	µg/L	1,015	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Nickel	Report	Report	Report	Report	Report	µg/L	281	CFC	Discharge Conc > 10% WQBEL (no RP)
Acrylamide	0.0002	0.0003	0.084	0.13	0.21	µg/L	0.084	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chloroform	0.015	0.023	5.78	9.02	14.5	µg/L	5.78	THH	Discharge Conc ≥ 50% WQBEL (RP)
1,2,4-Trichlorobenzene	0.0002	0.0003	0.071	0.11	0.18	µg/L	0.071	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	PWS Not Applicable
Total Aluminum	750	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Barium	2,435	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,623	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	441	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	51.2	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	4.06	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	304	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	39.9	µg/L	Discharge Conc < TQL
Total Mercury	0.051	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		mg/L	PWS Not Applicable
Total Selenium	5.06	µg/L	Discharge Conc < TQL
Total Silver	113	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.24	µg/L	Discharge Conc < TQL
Total Zinc	639	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.072	µg/L	Discharge Conc < TQL
Benzene	0.7	µg/L	Discharge Conc < TQL
Bromoform	8.41	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	0.48	µg/L	Discharge Conc < TQL
Chlorobenzene	101	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	0.96	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	3,551	µg/L	Discharge Conc < TQL
Dichlorobromomethane	1.14	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	11.9	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	33.5	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	1.08	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	0.32	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS

Ethylbenzene	69.0	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	101	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	5,580	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	24.0	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	0.24	µg/L	Discharge Conc < TQL
Tetrachloroethylene	12.0	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	57.8	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	101	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	619	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	0.66	µg/L	Discharge Conc < TQL
Trichloroethylene	0.72	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.024	µg/L	Discharge Conc < TQL
2-Chlorophenol	30.4	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	10.1	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	101	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	2.03	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	10.1	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,623	µg/L	Discharge Conc < TQL
4-Nitrophenol	477	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.036	µg/L	Discharge Conc < TQL
Phenol	4,058	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	1.8	µg/L	Discharge Conc < TQL
Acenaphthene	17.2	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	304	µg/L	Discharge Conc < TQL
Benzidine	0.0001	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.001	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0001	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.001	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.012	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.036	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	203	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.38	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	54.8	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.1	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	812	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.14	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0001	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	162	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	7.1	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	152	µg/L	Discharge Conc ≤ 25% WQBEL

3,3-Dichlorobenzidine	0.06	µg/L	Discharge Conc < TQL
Diethyl Phthalate	609	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	507	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	20.3	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.06	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.06	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.036	µg/L	Discharge Conc < TQL
Fluoranthene	20.3	µg/L	Discharge Conc < TQL
Fluorene	50.7	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0001	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.012	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.01	µg/L	Discharge Conc < TQL
Hexachloroethane	0.12	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.001	µg/L	Discharge Conc < TQL
Isophorone	34.5	µg/L	Discharge Conc < TQL
Naphthalene	43.6	µg/L	Discharge Conc < TQL
Nitrobenzene	10.1	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.0008	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.006	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	3.97	µg/L	Discharge Conc < TQL
Phenanthrene	1.01	µg/L	Discharge Conc < TQL
Pyrene	20.3	µg/L	Discharge Conc < TQL
Aldrin	9.62E-07	µg/L	Discharge Conc < TQL
alpha-BHC	0.0005	µg/L	Discharge Conc < TQL
beta-BHC	0.01	µg/L	Discharge Conc < TQL
gamma-BHC	0.95	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.0004	µg/L	Discharge Conc < TQL
4,4-DDT	0.00004	µg/L	Discharge Conc < TQL
4,4-DDE	0.00002	µg/L	Discharge Conc < TQL
4,4-DDD	0.0001	µg/L	Discharge Conc < TQL
Dieldrin	0.000001	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.057	µg/L	Discharge Conc < TQL
beta-Endosulfan	0.057	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	20.3	µg/L	Discharge Conc < TQL
Endrin	0.03	µg/L	Discharge Conc < TQL
Endrin Aldehyde	1.01	µg/L	Discharge Conc < TQL
Heptachlor	0.000007	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.00004	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
PCB-1221	N/A	N/A	No WQS
PCB-1232	N/A	N/A	No WQS
PCB-1242	N/A	N/A	No WQS
PCB-1248	N/A	N/A	No WQS

PCB-1254	N/A	N/A	No WQS
PCB-1260	N/A	N/A	No WQS
Toxaphene	0.0002	µg/L	Discharge Conc < TQL

ATTACHMENT D:
TRC Modeling Results for Outfall 001

TRC EVALUATION

0.00697	= Q stream (cfs)	0.5	= CV Daily
0.31	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= 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 =	0.024	1.3.2.iii	WLA cfc =	0.016
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.009	5.1d	LTA_cfc =	0.009

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.015	AFC
		INST MAX LIMIT (mg/l) =	0.035	

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)**