

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

**NPDES PERMIT FACT SHEET
ADDENDUM**

Application No. PA0000906
APS ID 1138386
Authorization ID 1528981

Applicant and Facility Information

Applicant Name	<u>Westinghouse Electric Company, LLC</u>	Facility Name	<u>Waltz Mill Service Center</u>
Applicant Address	<u>PO Box 158 Waltz Mill Site Madison, PA 15663-0158</u>	Facility Address	<u>680 Waltz Mill Road Madison, PA 15663-0410</u>
Applicant Contact	<u>William Hardy</u>	Facility Contact	<u>Logan Lowanse</u>
Applicant Phone	<u>(724) 722-5913</u>	Facility Phone	<u>(724) 771-3865</u>
Applicant email	<u>hardywc@westinghouse.com</u>	Facility email	<u>logan.lowanse@westinghouse.com</u>
Client ID	<u>133865</u>	Site ID	<u>462028</u>
SIC Code	<u>8731</u>	Municipality	<u>Sewickley Township</u>
SIC Description	<u>Services - Commercial Physical Research</u>	County	<u>Westmoreland</u>
Date Published in PA Bulletin	<u>December 6, 2025</u>	EPA Waived?	<u>Yes</u>
Comment Period End Date	<u>January 5, 2026</u>	If No, Reason	<u></u>
Purpose of Application	<u>Renewal NPDES Permit Coverage</u>		

Internal Review and Recommendations

Notice of the Draft NPDES Permit was published in the Pennsylvania Bulletin on December 6, 2025. The Department received comments from Westinghouse Electric Company, LLC. during the draft permit comment period. A summary of these comments and the Department's responses is provided below. In response to these comments, the Department is redrafting the permit to incorporate the necessary changes.

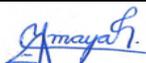
Westinghouse's Comments and the Department's Response

Westinghouse's Comment One:

On December 3, 2025, the Department held a phone call with Westinghouse during which the facility raised questions regarding the newly proposed limits—specifically the temperature and TRC limits for Outfalls 002, 003, 006, 008, and 009—and requested a review of those limits.

The Department's Response to Westinghouse's Comment One:

Following this conversation, an error was identified in the discharge flow inputs used in the Thermal Discharge Limit Calculation Spreadsheet, the Total Residual Chlorine Spreadsheet, and the Toxic Management Spreadsheet. The calculations incorrectly relied on the total discharge flow reported in the DMRs, which included stormwater contributions. However, only the discharges contributing to thermal loading and potential water quality impairments, as identified in the permit application and associated flow diagram, should have been used in the analyses.

Approve	Deny	Signatures	Date
X		 Angela Rohrer / Environmental Engineering Specialist	January 8, 2026
X		 Michael E. Fifth, P.E. / Environmental Engineer Manager	January 12, 2026

Internal Review and Recommendations

The discharge flow was updated and presented below:

- Outfall 002: 0.0003 MGD
- Outfall 003: 0.0002 MGD
- Outfall 006: 0.0002 MGD
- Outfall 008: 0.0000025 MGD
- Outfall 009: 0.0000025 MGD

As a result of the updated discharge flow, a revised analysis for outfalls 002, 003, 006, 008, and 009 was performed and is presented on the following pages.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0.0003
Latitude 40° 13' 5.6028" **Longitude** -79° 39' 48.3012"
Wastewater Description: Boiler Blowdown, cooling tower blowdown, compressor condensate, groundwater and stormwater

Water Quality-Based Limitations

Thermal WQBELs for Heated Discharges

The previous permit evaluated all heated discharges collectively as a single discharge to ensure that instream temperature criteria were met, and the same approach was applied during this review. For modeling purposes, the flow represents the combined total from Outfalls 002, 006, 008, and 009. The flow rate used for modeling is that summation of the discharge from all of the outfalls, 0.000505 MGD. The results of the thermal analysis, included in Attachment A, indicate that WQBELs for temperature is required at Outfalls 002, 006, 008 and 009 and are displayed below in Table 1.

Table 1: Thermal Limitations – Outfall 002

Monitoring Period	Instantaneous Maximum Temperature Limits (°F)
Jan 1 -31	87.1
Feb 1-29	91.5
Mar 1-31	110
Apr 1-30	110.0
May 1-31	110.0
Jun 1-30	110.0
Jul 1-31	110.0
Aug 1-31	110.0
Sep 1-30	110.0
Oct 1-15	110.0
Oct 16-31	108.4
Nov 1-15	105.1
Nov 16-30	87.7
Dec 1-31	77.3

Total Residual Chlorine

The results of the modeling, included in Attachment B, indicate that no WQBELs are required for TRC.

Proposed Effluent Limitations for outfall 002

Table 2 outlines the proposed effluent limitations and monitoring requirements for outfall 002, reflecting the most stringent values from the limitation analysis.

Table 2: Proposed Final Effluent Limitations for outfall 002

Parameter	Mass Units (lb/day)		Concentrations (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Flow (MGD)	Report	Report	-	-	-	-	2/month	Measured
pH (S.U.)	-	-	6.0	-	-	9.0	2/month	Grab
Total Residual Chlorine (TRC)	-	-	-	0.5	1.0	-	2/month	Grab

Parameter	Mass Units (lb/day)		Concentrations (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Free Available Chlorine	-	-	-	0.2	0.5	-	2/month	Grab
Temperature (°F) Jan 1 – 31	-	-	-	-	-	87.1	2/month	I-S
Temperature (°F) Feb 1 - 29	-	-	-	-	-	91.5	2/month	I-S
Temperature (°F) Mar 1 - Sep 30	-	-	-	-	-	110.0	2/month	I-S
Temperature (°F) Oct 1 - 15	-	-	-	-	-	110.0	2/month	I-S
Temperature (°F) Oct 16 - 31	-	-	-	-	-	108.4	2/month	I-S
Temperature (°F) Nov 1 - 15	-	-	-	-	-	105.1	2/month	I-S
Temperature (°F) Nov 16 - 30	-	-	-	-	-	87.7	2/month	I-S
Temperature (°F) Dec 1 - 31	-	-	-	-	-	77.3	2/month	I-S
Total Suspended Solids	-	-	-	30.0	-	60.0	2/month	Grab
Oil and Grease	-	-	-	15.0	20.0	-	2/month	Grab
Cadmium, Total (ug/L)	-	-	-	0.78	1.21	-	2/month	Grab
Chromium, Hexavalent	-	-	-	Report	Report	-	2/month	Grab
Total Silver	-	-	-	Report	Report	-	2/month	Grab
Total Strontium	-	-	-	Report	Report	-	2/month	Grab

Development of Effluent Limitations

Outfall No. 003 Design Flow (MGD) 0.0002
 Latitude 40° 12' 59.5116" Longitude -79° 39' 53.97"
 Wastewater Description: Tool Test Tank Wastewater, Small Test Tank wastewater, stormwater and groundwater

Water Quality-Based Limitations

Toxics Management Spread Sheet

Reasonable Potential Analysis and WQBEL Development for outfall 003

Discharges from outfall 003 are evaluated using concentration data reported in the permit application and DMRs, which are entered into the Toxics Management Spreadsheet. The spreadsheet is run using the discharge and receiving stream characteristics presented in Table 3. The resulting WQBELs, along with WQBEL and monitoring recommendations, are provided in Attachment C of this Fact Sheet.

Table 3: TMS Inputs

Parameter	Value
River Mile Index	0.86
Discharge Flow (MGD)	0.0002
Basin/Stream Characteristics	
Parameter	Value
Area in Square Miles	0.37
Q ₇₋₁₀ (cfs)	0.0023
Low-flow yield (cfs/mi ²)	0.0062
Elevation (ft)	947
Slope	0.013

According to the Toxics Management Spreadsheet, new Water Quality-Based Effluent Limits (WQBELs) are required for Hexavalent Chromium. Additionally, reporting requirement are needed for Dissolved Iron.

Table 4. Water Quality Based Effluent Limitation (WQBELs) at outfall 003

Parameter	Concentration Limits		Discharge Concentrations (µg/L)	Target QLs (µg/L)
	Average Monthly (µg/L)	Maximum Daily (µg/L)		
Chromium, Hexavalent	87.7	137.0	750.0	1.0
Iron, Dissolved	Report	Report	298.0	20.0

Total Residual Chlorine

The results of the modeling, included in Attachment D, indicate that no WQBELs are required for TRC.

Proposed Effluent Limitations for outfall 003

Table 5 outlines the proposed effluent limitations and monitoring requirements for Outfall 003, reflecting the most stringent values from the limitation analysis.

- The recommended requirement reporting for Dissolved Iron is less stringent than the current limit for this parameter. Therefore, the current limit will be retained in the permit.
- The recommended WQBEL for Hexavalent Chromium is more stringent than the reporting requirement currently in place, therefore, the recommended WQBEL will be imposed. It should be noted that even though the maximum concentration reported for this parameter was 750.0 µg/L in April 2024, during the last two years, the permittee has demonstrated its ability to comply by meeting the proposed limit at least 80% of the time considering performance data. Therefore, the Hexavalent Chromium effluent limitation will take effect on the permit’s effective date.

Table 5: Proposed Final Effluent Limitations for outfall 003

Parameter	Mass Units (lb/day)		Concentrations (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Flow (MGD)	Report	Report	-	-	-	-	2/month	Measured
pH (S.U.)	-	-	6.0	-	-	9.0	2/month	Grab
Total Residual Chlorine (mg/L)	-	-	-	0.5	1.0	-	2/month	Grab
Oil and Grease	-	-	-	15.0	30.0	-	2/month	Grab
Chromium, Hexavalent (µg/L)	-	-	-	87.7	137.0	-	2/month	Grab
Iron, Dissolved	-	-	-	-	-	7.0	2/month	Grab
PFOA (ng/L)	-	-	-	-	Report	-	1/year	Grab
PFOS (ng/L)	-	-	-	-	Report	-	1/year	Grab
PFBS (ng/L)	-	-	-	-	Report	-	1/year	Grab
HFPO-DA (ng/L)	-	-	-	-	Report	-	1/year	Grab

Development of Effluent Limitations

Outfall No. 006 **Design Flow (MGD)** 0.0002
Latitude 40° 12' 59.54" **Longitude** -79° 39' 53.82"

Wastewater Description: Noncontact Cooling Water (NCCW), compressor condensate, cooling tower blowdown, and Stormwater

Outfall No. 008 **Design Flow (MGD)** 0.0000025
Latitude 40° 13' 01.28" **Longitude** -79° 39' 52.04"

Wastewater Description: Condensate, non-contact cooling water, cooling tower blow down, stormwater runoff and uncontaminated ground water infiltration.

Water Quality-Based Limitations

Total Residual Chlorine

The results of the modeling, included in Attachment E, indicate that no WQBELs are required for TRC.

Thermal WQBELs for Heated Discharges

The previous permit evaluated all heated discharges collectively as a single discharge to ensure that instream temperature criteria were met, and the same approach was applied during this review. For modeling purposes, the flow represents the combined total from Outfalls 002, 006, 008, and 009. The flow rate used for modeling is that summation of the discharge from all of the outfalls, 0.000505 MGD. The results of the thermal analysis, included in Attachment A, indicate that WQBELs for temperature is required at Outfalls 002, 006, 008 and 009 and are displayed below in Table 6.

Table 6: Thermal Limitations – Outfalls 006 and 008

Monitoring Period	Instantaneous Maximum Temperature Limits (°F)
Jan 1 -31	87.1
Feb 1-29	91.5
Mar 1-31	110
Apr 1-30	110.0
May 1-31	110.0
Jun 1-30	110.0
Jul 1-31	110.0
Aug 1-31	110.0
Sep 1-30	110.0
Oct 1-15	110.0
Oct 16-31	108.4
Nov 1-15	105.1
Nov 16-30	87.7
Dec 1-31	77.3

Proposed Effluent Limitations for outfalls 006 and 008

Table 7 outlines the proposed effluent limitations and monitoring requirements for outfalls 006 and 008. The limits are the most stringent values from the above limitation analysis.

Table 7: Proposed Final Effluent Limitations for outfalls 006 and 008.

Parameter	Mass Units (lb/day)		Concentrations (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Flow (MGD)	Report	Report	-	-	-	-	2/month	Measured
pH (S.U.)	-	-	6.0	-	-	9.0	2/month	Grab
Total Residual Chlorine (TRC)	-	-	-	0.5	1.0	-	2/month	Grab
Free Available Chlorine	-	-	-	0.2	0.5	-	2/month	Grab
Temperature (°F) Jan 1 – 31	-	-	-	-	-	87.1	2/month	I-S
Temperature (°F) Feb 1 - 29	-	-	-	-	-	91.5	2/month	I-S
Temperature (°F) Mar 1 - Sep 30	-	-	-	-	-	110.0	2/month	I-S
Temperature (°F) Oct 1 - 15	-	-	-	-	-	110.0	2/month	I-S
Temperature (°F) Oct 16 - 31	-	-	-	-	-	108.4	2/month	I-S
Temperature (°F) Nov 1 - 15	-	-	-	-	-	105.1	2/month	I-S
Temperature (°F) Nov 16 - 30	-	-	-	-	-	87.7	2/month	I-S
Temperature (°F) Dec 1 - 31	-	-	-	-	-	77.3	2/month	I-S

Development of Effluent Limitations

Outfall No. 009 **Design Flow (MGD)** 0.0000025
Latitude 40° 13' 01.84" **Longitude** -79° 39' 51.90"
Wastewater Description: Noncontact Cooling Water, Compressor condensate, groundwater and Stormwater

Water Quality-Based Limitations

Total Residual Chlorine

The results of the modeling, included in Attachment F, indicate that no QBELs are required for TRC.

Thermal QBELs for Heated Discharges

The previous permit evaluated all heated discharges collectively as a single discharge to ensure that instream temperature criteria were met, and the same approach was applied during this review. For modeling purposes, the flow represents the combined total from Outfalls 002, 006, 008, and 009. The flow rate used for modeling is that summation of the discharge from all of the outfalls, 0.000505 MGD. The results of the thermal analysis, included in Attachment A, indicate that QBELs for temperature is required at Outfalls 002, 006, 008 and 009 and are displayed below in Table 8.

Table 8: Thermal Limitations – Outfall 009

Monitoring Period	Instantaneous Maximum Temperature Limits (°F)
Jan 1 -31	87.1
Feb 1-29	91.5
Mar 1-31	110
Apr 1-30	110.0
May 1-31	110.0
Jun 1-30	110.0
Jul 1-31	110.0
Aug 1-31	110.0
Sep 1-30	110.0
Oct 1-15	110.0
Oct 16-31	108.4
Nov 1-15	105.1
Nov 16-30	87.7
Dec 1-31	77.3

Proposed Effluent Limitations for outfall 009

The proposed effluent limitations and monitoring requirements for outfall 009 are shown below in Table 9. The limits are the most stringent values from the above limitation analysis.

Table 9: Proposed Final Effluent Limitations for outfall 009

Parameter	Mass Units (lb/day)		Concentrations (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Flow (MGD)	Report	Report	-	-	-	-	2/month	Measured
pH (S.U.)	-	-	6.0	-	-	9.0	2/month	Grab

Parameter	Mass Units (lb/day)		Concentrations (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Total Residual Chlorine (TRC)	-	-	-	0.5	1.0	-	2/month	Grab
Temperature (°F) Jan 1 – 31	-	-	-	-	-	87.1	2/month	I-S
Temperature (°F) Feb 1 - 29	-	-	-	-	-	91.5	2/month	I-S
Temperature (°F) Mar 1 - Sep 30	-	-	-	-	-	110.0	2/month	I-S
Temperature (°F) Oct 1 - 15	-	-	-	-	-	110.0	2/month	I-S
Temperature (°F) Oct 16 - 31	-	-	-	-	-	108.4	2/month	I-S
Temperature (°F) Nov 1 - 15	-	-	-	-	-	105.1	2/month	I-S
Temperature (°F) Nov 16 - 30	-	-	-	-	-	87.7	2/month	I-S
Temperature (°F) Dec 1 - 31	-	-	-	-	-	77.3	2/month	I-S
Total Nitrogen (mg/L)	-	-	-	-	Report	-	1/6 months	Grab
Total Phosphorus (mg/L)	-	-	-	-	Report	-	1/6 months	Grab
Total Suspended Solids (TSS) (mg/L)	-	-	-	-	Report	-	1/6 months	Grab
Oil and Grease (mg/L)	-	-	-	-	Report	-	1/6 months	Grab
Chemical Oxygen Demand (COD) (mg/L)	-	-	-	-	Report	-	1/6 months	Grab

Westinghouse's Comment Two:

The facility requested information regarding where the benchmark values for total nitrogen and total phosphorus may be found.

The Department's Response to Westinghouse's Comment Two:

The benchmark values included in the Draft Permit are based on the PAG-03 General Stormwater Permit. Because the PAG-03 does not establish benchmarks for Total Nitrogen or Total Phosphorus, none are included in the Draft Permit. There were no modifications made to the Draft permit in response to this comment.

Summary and Recommendations:

1. The proposed limits for Total Residual Chloride and Temperature included in the Draft Permit for outfalls 002, 006, 008, and 009 have been removed, and the limits established in the permit issued in 2020 remain in effect.
2. The proposed limits for Total Residual Chloride included in the Draft Permit for outfall 003 have been removed, and the limits established in the permit issued in 2020 remain in effect.
3. The Toxics Management Spreadsheet was updated with a revised discharge flow of 0.0002 MGD, with the following results:
 - The proposed reporting requirement for Total Aluminum, Total, Copper and Total Iron have been removed from the Draft Permit.
 - This reevaluation confirms that new WQBELs are needed for Hexavalent Chromium, however, the resulting effluent limitations are less stringent than those proposed in the Draft Permit.
 - The concentration limit of 7mg/L for Dissolved Iron will remain in effect.
4. Part C. II. Schedule of compliance has been removed from the Draft Permit.

Attachments

Attachment A: Temperature Modeling Results for outfalls 002, 006,008 and 009

Attachment B: TRC Modeling Results for outfall 002

Attachment C: Toxic Management Spreadsheet for outfall 003

Attachment D: TRC Modeling Results for outfall 003

Attachment E: TRC Modeling Results for outfalls 006 and 008

Attachment F: TRC Modeling Results for outfall 009

Attachment G: Flow Diagram



Attachment A: Temperature Modeling Results for outfalls 002, 006,008 and 009



Instructions

Inputs

Facility: **Waltz Mill Service Center**

Permit No.: **PA0000906**

Stream Name: **Unnamed Tributary to Sewickley Creek**

Analyst/Engineer: **Angela Rohrer**

Stream Q7-10 (cfs)*: **0.0** Outfall No.: _____

Analysis Type*: **WWF**

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31	0	0.000505		0.000505
Feb 1-29	0	0.000505		0.000505
Mar 1-31	0	0.000505		0.000505
Apr 1-15	0	0.000505		0.000505
Apr 16-30	0	0.000505		0.000505
May 1-15	0	0.000505		0.000505
May 16-31	0	0.000505		0.000505
Jun 1-15	0	0.000505		0.000505
Jun 16-30	0	0.000505		0.000505
Jul 1-31	0	0.000505		0.000505
Aug 1-15	0	0.000505		0.000505
Aug 16-31	0	0.000505		0.000505
Sep 1-15	0	0.000505		0.000505
Sep 16-30	0	0.000505		0.000505
Oct 1-15	0	0.000505		0.000505
Oct 16-31	0	0.000505		0.000505
Nov 1-15	0	0.000505		0.000505
Nov 16-30	0	0.000505		0.000505
Dec 1-31	0	0.000505		0.000505

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	0.01	0.01
3.5	1.00	0.01	0.01
7	1.00	0.02	0.02
9.3	1.00	0.02	0.02
9.3	1.00	0.02	0.02
5.1	1.00	0.01	0.01
5.1	1.00	0.01	0.01
3	1.00	0.01	0.01
3	1.00	0.01	0.01
1.7	1.00	0.00	0.00
1.4	1.00	0.00	0.00
1.4	1.00	0.00	0.00
1.1	1.00	0.00	0.00
1.1	1.00	0.00	0.00
1.1	1.00	0.00	0.00
1.2	1.00	0.00	0.00
1.2	1.00	0.00	0.00
1.6	1.00	0.00	0.00
1.6	1.00	0.00	0.00
2.4	1.00	0.01	0.01



Instructions **Inputs** Reference

Semi-Monthly Increment	WWF Criteria (°F)	CWF Criteria (°F)	TSF Criteria (°F)
Jan 1-31	40	38	40
Feb 1-29	40	38	40
Mar 1-31	46	42	46
Apr 1-15	52	48	52
Apr 16-30	58	52	58
May 1-15	64	54	64
May 16-31	72	58	68
Jun 1-15	80	60	70
Jun 16-30	84	64	72
Jul 1-31	87	66	74
Aug 1-15	87	66	80
Aug 16-31	87	66	87
Sep 1-15	84	64	84
Sep 16-30	78	60	78
Oct 1-15	72	54	72
Oct 16-31	66	50	66
Nov 1-15	58	46	58
Nov 16-30	50	42	50
Dec 1-31	42	40	42

Q7-10 Multipliers (Default Values)
3.2
3.5
7
9.3
9.3
5.1
5.1
3
3
1.7
1.4
1.4
1.1
1.1
1.2
1.2
1.6
1.6
2.4

Default Ambient Stream Temperature (°F)		
WWF	CWF	TSF
35	34	34
35	35	35
40	39	39
47	46	46
53	52	52
58	55	56
62	59	60
67	63	65
71	67	69
75	71	73
74	70	72
74	70	70
71	66	68
65	60	62
60	55	57
54	51	53
48	46	47
42	40	41
37	35	36

NOTES:

- WWF= Warm water fishes
- CWF= Cold water fishes
- TSF= Trout stocking
- Default PMF = 1



Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions WWF Results

Recommended Limits for Case 1 or Case 2

Semi-Monthly Increment	WWF Target Maximum Stream Temp. (°F)	Case 1 Daily WLA (Million BTUs/day)	Case 2 Daily WLA (°F)
Jan 1-31	40	N/A -- Case 2	87.1
Feb 1-29	40	N/A -- Case 2	91.5
Mar 1-31	46	N/A -- Case 2	110.0
Apr 1-15	52	N/A -- Case 2	110.0
Apr 16-30	58	N/A -- Case 2	110.0
May 1-15	64	N/A -- Case 2	110.0
May 16-31	72	N/A -- Case 2	110.0
Jun 1-15	80	N/A -- Case 2	110.0
Jun 16-30	84	N/A -- Case 2	110.0
Jul 1-31	87	N/A -- Case 2	110.0
Aug 1-15	87	N/A -- Case 2	110.0
Aug 16-31	87	N/A -- Case 2	110.0
Sep 1-15	84	N/A -- Case 2	110.0
Sep 16-30	78	N/A -- Case 2	110.0
Oct 1-15	72	N/A -- Case 2	110.0
Oct 16-31	66	N/A -- Case 2	108.4
Nov 1-15	58	N/A -- Case 2	105.1
Nov 16-30	50	N/A -- Case 2	87.7
Dec 1-31	42	N/A -- Case 2	77.3



Attachment B: TRC Modeling Results for Outfall 002

TRC EVALUATION - Outfall 002

0.0023	= Q stream (cfs)	0.5	= CV Daily	
0.0003	= 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 = 1.600	1.3.2.iii	WLA_cfc = 1.552
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 0.596	5.1d	LTA_cfc = 0.902
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	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$			
LTA_afc	wla_afc * LTAMULT_afc			
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$			
LTA_cfc	wla_cfc * LTAMULT_cfc			
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$			
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)			

$$(0.011 / EXP(-K \cdot CFC_tc / 1440)) + (((CFC_Yc \cdot Qs \cdot 0.011) / (1.547 \cdot Qd)) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / 1.547 \cdot Qd)) \cdot (1 - FOS / 100)$$

Attachment C: Toxic Management Spreadsheet for outfall 003



Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions Discharge Stream

Facility: Waltz Mill Service Center NPDES Permit No.: PA0000906 Outfall No.: 003
 Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Tool Testing Tank, groundwater and sotrm

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
0.0002	428	9						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
			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	2560									
Chloride (PWS)	mg/L	1440									
Bromide	mg/L	< 0.4									
Sulfate (PWS)	mg/L	53.7									
Fluoride (PWS)	mg/L	0.67									
Group 2											
Total Aluminum	µg/L	231									
Total Antimony	µg/L	0.261									
Total Arsenic	µg/L	< 2.5									
Total Barium	µg/L	132									
Total Beryllium	µg/L	< 0.5									
Total Boron	µg/L	< 100									
Total Cadmium	µg/L	< 0.114									
Total Chromium (III)	µg/L	< 5									
Hexavalent Chromium	µg/L	750									
Total Cobalt	µg/L	0.229									
Total Copper	µg/L	4.79									
Free Cyanide	µg/L										
Total Cyanide	µg/L	19									
Dissolved Iron	µg/L	298									
Total Iron	µg/L	276									
Total Lead	µg/L	0.418									
Total Manganese	µg/L	11.2									
Total Mercury	µg/L	< 0.2									
Total Nickel	µg/L	7.26									
Total Phenols (Phenolics) (PWS)	µg/L	< 5									
Total Selenium	µg/L	< 2.5									
Total Silver	µg/L	< 0.5									
Total Thallium	µg/L	< 0.1									
Total Zinc	µg/L	34.4									
Total Molybdenum	µg/L	1.13									
Acrolein	µg/L	<									
Acrylamide	µg/L	<									
Acrylonitrile	µg/L	<									
Benzene	µg/L	<									
Bromoform	µg/L	<									
Carbon Tetrachloride	µg/L	<									
Chlorobenzene	µg/L	<									
Chlorodibromomethane	µg/L	<									
Chloroethane	µg/L	<									
2-Chloroethyl Vinyl Ether	µg/L	<									

Stream / Surface Water Information

Waltz Mill Service Center, NPDES Permit No. PA0000906, Outfall 003

Instructions Discharge **Stream**

Receiving Surface Water Name: Unnamed Tributary to Sewickley 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	037648	0.86	947	0.37			Yes
End of Reach 1	037648	0.1	894	0.81			Yes

Q₇₋₁₀

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	0.86	0.1	0.0023									130	7		
End of Reach 1	0.1	0.1	0.059												

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	0.86														
End of Reach 1	0.1														



Model Results

Waltz Mill Service Center, NPDES Permit No. PA0000906, Outfall 003

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Wasteload Allocations

AFC

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

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	6,325	
Total Antimony	0	0		0	1,100	1,100	9,277	
Total Arsenic	0	0		0	340	340	2,867	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	177,109	
Total Boron	0	0		0	8,100	8,100	68,313	
Total Cadmium	0	0		0	3.282	3.56	30.0	Chem Translator of 0.923 applied
Total Chromium (III)	0	0		0	860.070	2,722	22,954	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	137	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	801	
Total Copper	0	0		0	21.583	22.5	190	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	111.140	155	1,306	Chem Translator of 0.718 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	13.9	Chem Translator of 0.85 applied
Total Nickel	0	0		0	716.473	718	6,055	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	7.638	8.99	75.8	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	548	
Total Zinc	0	0		0	179.421	183	1,547	Chem Translator of 0.978 applied
PFOA	0	0		0	3,100	3,100	26,145	
PFOS	0	0		0	71	71.0	599	

CFC

CCT (min): **0.205**

PMF: **1**

Analysis Hardness (mg/l): **165.33**

Analysis pH: **7.05**

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	1,855	
Total Arsenic	0	0		0	150	150	1,265	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	34,578	
Total Boron	0	0		0	1,600	1,600	13,494	
Total Cadmium	0	0		0	0.349	0.39	3.31	Chem Translator of 0.888 applied
Total Chromium (III)	0	0		0	111.877	130	1,097	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	87.7	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	160	
Total Copper	0	0		0	13.762	14.3	121	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	12,651	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.331	6.03	50.9	Chem Translator of 0.718 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	7.64	Chem Translator of 0.85 applied
Total Nickel	0	0		0	79.578	79.8	673	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	42.1	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	110	
Total Zinc	0	0		0	180.889	183	1,547	Chem Translator of 0.986 applied
PFOA	0	0		0	100	100.0	843	
PFOS	0	0		0	0.25	0.25	2.11	

THH

CCT (min): **0.205**

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	47.2	
Total Arsenic	0	0		0	10	10.0	84.3	
Total Barium	0	0		0	2,400	2,400	20,241	
Total Boron	0	0		0	3,100	3,100	26,145	
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
Dissolved Iron	0	0		0	300	300	2,530
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	8,434
Total Mercury	0	0		0	0.050	0.05	0.42
Total Nickel	0	0		0	610	610	5,145
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	2.02
Total Zinc	0	0		0	N/A	N/A	N/A
PFOA	0	0		0	N/A	N/A	N/A
PFOS	0	0		0	N/A	N/A	N/A

CRL

CCT (min):

PMF:

Analysis Hardness (mg/l):

Analysis pH:

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	
PFOA	0	0		0	N/A	N/A	N/A	
PFOS	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: **4**

Pollutants	Mass Limits		Concentration Limits			Units	Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX				
Hexavalent Chromium	0.0001	0.0002	87.7	137	219	µg/L	87.7	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	2,530	THH	Discharge Conc > 10% WQBEL (no 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	4,054	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	47.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	20,241	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	13,494	µg/L	Discharge Conc < TQL
Total Cadmium	3.31	µg/L	Discharge Conc < TQL
Total Chromium (III)	1,097	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	160	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	121	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Iron	12,651	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	50.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	8,434	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.42	µg/L	Discharge Conc < TQL
Total Nickel	673	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	42.1	µg/L	Discharge Conc < TQL
Total Silver	48.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	2.02	µg/L	Discharge Conc < TQL
Total Zinc	992	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
PFOA	843,374	ng/L	Discharge Conc < TQL
PFOS	2,108	ng/L	Discharge Conc ≤ 25% WQBEL



Attachment D: TRC Modeling Results for outfall 003

TRC EVALUATION - Outfall 003

0.0023	= Q stream (cfs)	0.5	= CV Daily	
0.0002	= 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 = 2.390	1.3.2.iii	WLA_cfc = 2.323
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 0.891	5.1d	LTA_cfc = 1.350
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			

$$(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)).... \\*EXP(-K*CFC_tc/1440))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd)]*(1-FOS/100)$$

Attachment E: TRC Modeling Results for outfalls 006 and 008

TRC EVALUATION - Outfall 006

<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">0.0023 = Q stream (cfs)</td><td style="width: 50%;">0.5 = CV Daily</td></tr> <tr><td>0.0002 = Q discharge (MGD)</td><td>0.5 = CV Hourly</td></tr> <tr><td>4 = no. samples</td><td>1 = AFC_Partial Mix Factor</td></tr> <tr><td>0.3 = Chlorine Demand of Stream</td><td>1 = CFC_Partial Mix Factor</td></tr> <tr><td>0 = Chlorine Demand of Discharge</td><td>15 = AFC_Criteria Compliance Time (min)</td></tr> <tr><td>0.5 = BAT/BPJ Value</td><td>720 = CFC_Criteria Compliance Time (min)</td></tr> <tr><td>= % Factor of Safety (FOS)</td><td>= Decay Coefficient (K)</td></tr> </table>	0.0023 = Q stream (cfs)	0.5 = CV Daily	0.0002 = 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)	
0.0023 = Q stream (cfs)	0.5 = CV Daily														
0.0002 = 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 = 2.390	1.3.2.iii	WLA_cfc = 2.323											
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581											
PENTOXSD TRG	5.1b	LTA_afc = 0.891	5.1d	LTA_cfc = 1.350											
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)														

$$(0.011/\text{EXP}(-K*\text{CFC_tc}/1440))+(((\text{CFC_Yc}*\text{Qs}*.011)/(1.547*\text{Qd}))....$$

$$....*\text{EXP}(-K*\text{CFC_tc}/1440)))+\text{Xd}+(\text{CFC_Yc}*\text{Qs}*\text{Xs}/1.547*\text{Qd}))* (1-\text{FOS}/100)$$

TRC EVALUATION - Outfall 008

0.0023	= Q stream (cfs)	0.5	= CV Daily
0.0000025	= 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 = 189.728	1.3.2.iii WLA_cfc = 184.963
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 70.697	5.1d LTA_cfc = 107.529
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	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot 0.019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots$ $\dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$		
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$		
LTA_afc	wla_afc * LTAMULT_afc		
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot 0.011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots$ $\dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$		
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$		
LTA_cfc	wla_cfc * LTAMULT_cfc		
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$		
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)		

$$(0.011 / EXP(-K \cdot CFC_tc / 1440)) + (((CFC_Yc \cdot Qs \cdot 0.011) / (1.547 \cdot Qd)) \dots$$

$$\dots \cdot EXP(-K \cdot CFC_tc / 1440)) + Xd + (CFC_Yc \cdot Qs \cdot Xs / 1.547 \cdot Qd) \cdot (1 - FOS / 100)$$

Attachment F: TRC Modeling Results for Outfall 009

TRC EVALUATION - Outfall 009

0.0023	= Q stream (cfs)	0.5	= CV Daily	
0.0000025	= 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 = 189.728	1.3.2.iii	WLA_cfc = 184.963
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 70.697	5.1d	LTA_cfc = 107.529
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	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$			
LTA_afc	wla_afc * LTAMULT_afc			
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$			
LTA_cfc	wla_cfc * LTAMULT_cfc			
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$			
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)			

$$(0.011 / EXP(-K \cdot CFC_tc / 1440)) + (((CFC_Yc \cdot Qs \cdot 0.011) / (1.547 \cdot Qd)) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / 1.547 \cdot Qd)) \cdot (1 - FOS / 100)$$

