Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0005746**
Facility Type	**Industrial**	APS ID	**1115048**
Major / Minor	**Minor**	Authorization ID	**1487432**

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

Applicant and Facility Information

Applicant Name	**Corelle Brands, LLC**	Facility Name	**Corelle Brands, LLC - Charleroi Facility**
Applicant Address	100 8th Street Charleroi, PA 15022-1619	Facility Address	100 8th Street Charleroi, PA 15022-1619
Applicant Contact	Anthony Pane	Facility Contact	Same as Applicant
Applicant Phone	(724) 489-2255	Facility Phone	Same as Applicant
Applicant email	Anthony.pane@corellebrands.com	Facility email	Same as Applicant
Client ID	63121	Site ID	242083
SIC Code	3229	Municipality	Charleroi Borough
SIC Description	Manufacturing - Pressed and Blown Glass, NEC	County	Washington
Date Application Received	May 30, 2024	EPA Waived?	Yes
Date Application Accepted		If No, Reason	
Purpose of Application	Renewal NPDES Permit Coverage		

Summary of Review

On May 30, 2024, on behalf of Corelle Brands, SE Technologies submitted an application to renew the NPDES Permit PA0005746 for glass manufacturing facility. The Facility has a SIC Code of 3229 (Pressed and blown glass, NEC) and North American Industry Classification System Code of 327212 (Other pressed and blown glass and glassware manufacturing).

The Federal Effluent Limitations Guidelines (ELG) under 40 CFR Subpart H apply to the Glass Container Manufacturing Subcategory (SIC Code 3221). Previous technical reviews determined that the facility does not manufacture glass containers and instead falls under 40 CFR Subpart I – Machine Pressed Glass Manufacturing, which is currently reserved.

Notably, the permit issued in 2019, removed the BPJ-based BPT concentration limits for Oil and Grease at Outfall 001, replacing them with technology-based limits from 25 Pa. Code Chapter 95.2(2)(ii).

The permittee requested a name change as part of this permit renewal. The permittee name will be changed from Instant Brands, LLC to Corelle Brands, LLC.

The facility was last inspected by James Stewart, on September 13, 2022, with one violation noted. Failure to meet effluent limits set in Part A of the NPDES permit 92A.44 25 Pa. Code 92a.44.This violation was resolved on January 26, 2024.

The facility has no open violations.

Approve	Deny	Signatures	Date
X		Angela Rohrer / Environmental Engineering Specialist	September 9, 2024
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	September 27, 2024

Summary of Review

The facility manufactures various consumer-type glassware products such as tableware and kitchenware. The glassware products are manufactured through a continuous operation involving the mixing of glass batch materials, feeding of batch materials into melt furnaces, controlled melting of batch material to molten glass, and final finishing and decorating of the products.

During the manufacturing process, municipal water is used for contact and non-contact cooling of products and machinery. Non-contact cooling water is drawn directly from the municipal supply for once-through cooling and collected in the "L-Pit". Contact cooling waters are drawn from the L-Pit and returned to the L-Pit after use. Water chemicals are added to the cooling waters to control biological growth and prevent corrosion. Wastewater treatment methods employed at the L-Pit are oil skimming and solids settling permitted under WQM Permit Nos. 6371202 and 6380203.

All materials, except for glass cullet and some off-spec materials, which are inert, are stored indoors to prevent exposure to storm water. Material loading and unloading activities are primarily carried out in tractor-trailer loading docks, minimizing potential storm water contact with incoming/outgoing materials.

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)	0.081
Latitude	40º 08' 40"	Longitude	-79º 53' 57"
Quad Name	Monongahela	Quad Code	1706
Wastewater Description:	Non-contact cooling water, contact cooling water, intermittent compressor blowdown and stormwater.		
Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99409762	RMI	41.9
Drainage Area	5,210 mi^2	Yield (cfs/mi^2)	0.105
Q_{7-10} Flow (cfs)	550	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	741	Slope (ft/ft)	0.0001
Watershed No.	19-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Polychlorinated Biphenyls (PCBS)		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final	Name	Monongahela River TMDL
Nearest Downstream Public Water Supply Intake	PA American Water Co-Pittsburgh (100,800 MGD)		
PWS Waters	Monongahela River	Flow at Intake (cfs)	550
PWS RMI	25.65	Distance from Outfall (mi)	16.4

Changes Since Last Permit Issuance:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002 - 006	Design Flow (MGD)	0
Latitude	See table 1	Longitude	See Table 1
Quad Name	Monongahela	Quad Code	1706
Wastewater Description:	Stormwater		
Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99409762	RMI	See Table 1
Drainage Area	5,210	Yield (cfs/mi^2)	0.105
Q_{7-10} Flow (cfs)	550 mi^2	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	See Table 1	Slope (ft/ft)	0.0001
Watershed No.	19-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Polychlorinated Biphenyls (PCBS)		
Source(s) of Impairment	Source Unknown		
TMDL Status	Final	Name	Monongahela River TMDL
Nearest Downstream Public Water Supply Intake	PA American Water Co-Pittsburgh (100,800 MGD)		
PWS Waters	Monongahela River	Flow at Intake (cfs)	550
PWS RMI	25.65	Distance from Outfall (mi)	16.4

Table 1: Outfalls Locations

OUTFALL	LONGITUDE	LATITUDE	RMI
002	40º 08' 41"	-79º 53' 59"	41.89
003	40º 08' 46"	-79º 54' 06"	41.76
004	40º 08' 36"	-79º 53' 53"	42.01
005	40º 08' 38"	-79º 53' 55"	41.96
006	40º 08' 40"	-79º 53' 57"	41.9

Figure 1. Corelle Brands – Charleroi Plant

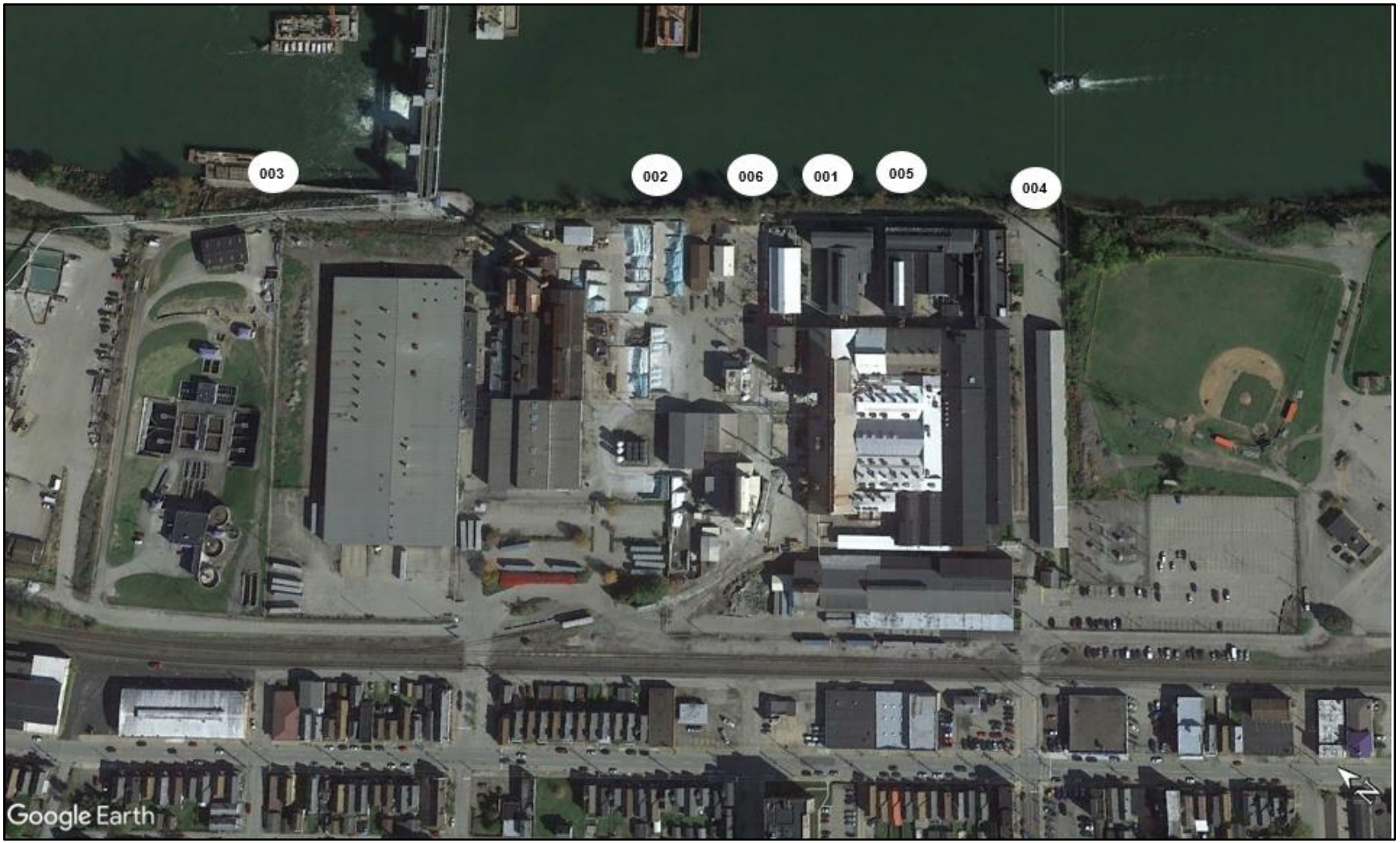


Image Source: Google Earth Pro. Annotations by DEP.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.081
Latitude	40º 08' 40"	**Longitude**	-79º 53' 57"
Wastewater Description:	Non-contact cooling water, contact cooling water, intermittent compressor blowdown and stormwater.		

Technology-Based Effluent Limitations (TBELs)

The facility falls under 40 CFR 426 Subpart I, which is reserved.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1).

Temperature limits will be imposed per the Department's "*Implementation Guidance for Temperature Criteria*." As a policy, DEP normally imposes a maximum temperature limit of 110°F on discharges that contain residual heat. The limit is intended as a safety measure to protect sampling personnel or anyone who may come into contact with the heated discharge where it enters the receiving water.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation. Despite not using chlorine for disinfection, the facility's municipal supply source water contains TRC. Total residual chlorine levels were detected in the effluent at 0.34 mg/L. This concentration will be evaluated for water quality concerns later in the Fact Sheet but do not support imposition of TRC limits under 92a.48(b) at this time.

Given that the facility uses Bromine in its process, monitoring of Total Residual Halogens will be required, in accordance with Section I.1 of DEP's "Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits" [SOP No. BCW-PMT-032].

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code § 95.2(1) as indicated in Table 2.

Table 2: Regulatory Effluent Standards and Monitoring Requirements for Outfall 001

Parameter	Monthly Average	Daily Maximum	IMAX	Units
Flow	Monitor and Report		XXX	MGD
Temperature	XXX	XXX	110	°F
Total Residual Halogens	Report	Report	XXX	mg/L
pH	Not less than 6.0 nor greater than 9.0			S.U.

Per- and Polyfluoroalkyl Substances (PFAS)

In February 2024, DEP implemented a new monitoring initiative for PFAS consistent with an EPA memorandum that provides guidance to states for addressing PFAS discharges. PFAS are a family of thousands of synthetic organic chemicals that contain a chain of strong carbon-fluorine bonds. Many PFAS are highly stable, water- and oil-resistant, and exhibit other properties that make them useful in a variety of consumer products and industrial processes. PFAS are resistant to biodegradation, photooxidation, direct photolysis, and hydrolysis and do not readily degrade naturally; thus, many PFAS accumulate over time. According to the United States Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), the environmental persistence and mobility of some PFAS, combined with decades of widespread use, have resulted in their presence in surface water, groundwater, drinking water, rainwater, soil, sediment, ice caps, outdoor and indoor air, plants, animal tissue, and human blood serum across the globe. ATSDR also reported that exposure to certain PFAS can lead to adverse human health impacts Due to their durability, toxicity, persistence, and pervasiveness, PFAS have emerged as potentially significant pollutants of concern.

In accordance with Section II.I of DEP's "Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits" [SOP No. BCW-PMT-032] and under the authority of 25 Pa. Code § 92a.61(b), DEP has determined that monitoring for a subset of common/well-studied PFAS including Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer

acid (HFPO-DA) is necessary to help understand the extent of environmental contamination by PFAS in the Commonwealth and the extent to which point source dischargers are contributors. SOP BCW-PMT-032 directs permit writers to consider special monitoring requirements for PFOA, PFOS, PFBS, and HFPO-DA in the following instances:

a. If sampling that is completed as part of the permit renewal application reveals a detection of PFOA, PFOS, HFPO-DA or PFBS (any of these compounds), the application manager will establish a quarterly monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds) in the permit.

b. If sampling that is completed as part of the permit renewal application demonstrates non-detect values at or below the Target QLs for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds in a minimum of 3 samples), the application manager will establish an annual monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS in the permit.

c. In all cases the application manager will include a condition in the permit that the permittee may cease monitoring for PFOA, PFOS, HFPO-DA and PFBS when the permittee reports non-detect values at or below the Target QL for four consecutive monitoring periods for each PFAS parameter that is analyzed. Use the following language: The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detects at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees should enter a No Discharge Indicator (NODI) Code of “GG” on DMRs.

Corelle Brands’ application was submitted after the NPDES permit application forms were updated to require sampling for PFOA, PFOS, PFBS, and HFPO-DA, however, the Department provided 6-month grace period for use of the old application forms. According to EPA’s guidance, Corelle Brands does not operate in one of the industries EPA expects to be a source for PFAS. Therefore, annual reporting of PFOA, PFOS, PFBS, and HFPO-DA will be required consistent with Section II.I.b of SOP BCW-PMT-032.

As stated in Section II.I.c of the SOP, if non-detect values at or below DEP’s Target QLs are reported for four consecutive monitoring periods, then the monitoring may be discontinued.

Water Quality-Based Effluent Limitations

Total Maximum Daily Load TMDL

Discharges from Corelle Brands are located within the Monongahela River Watershed, for which the Department has developed a TMDL. The Monongahela River Watershed TMDL was finalized on March 1, 1999 to address impairments resulting from PCBs and Chlordane. Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency’s (“EPA’s”) Water Quality Planning and Management Regulations (codified at Title 40 of the Code of Federal Regulations Part 130) require states to develop a TMDL for impaired water bodies. A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and non-point sources to restore and maintain the quality of the state’s water resources (USEPA 1991).

The Monongahela River Watershed TMDL does not include a waste load allocation for Corelle Brands.

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

Table 3: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	41.9
Discharge Flow (MGD)	0.081
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	5,210
Q_{7-10} (cfs)	550
Low-flow yield (cfs/mi^2)	0.105
Elevation (ft)	741
Slope	0.0001

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and discharge chlorine demands for the receiving stream, 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 then proposed. The results of the modeling, included in Attachment D, indicate that no WQBELs are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 4. These limitations are currently imposed on Outfall 001. The Total Suspended Solids limitations were previously imposed as Best Professional Judgment. The Oil and Grease limits that were imposed are effluent standards for oil and grease from 25 Pa. Code § 95.2(2)(ii).

Table 4: Current Limitations at Outfall 001

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
Temperature (°F)	-	-	-	Report	-	110[a]	2/month	I-S
Total Suspended Solids (TSS)	70	140	-	25	50	-	2/month	Grab
Oil and Grease	28	56	-	15.0	-	30.0	2/month	Grab

[a]*The temperature is associated with the maximum design flow 0.081 MGD. The temperature must be kept at or below 110°F at all time.*

Proposed Effluent Limitations and Monitoring Requirements

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. Note that the pH value was incorrectly labeled as Daily Max in the previous permit when it should have been label as IMAX value, this has been changed to reflect existing permitting practices.

Table 5: Proposed Effluent Limitations at Outfall 001

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 Halogens	-	-	-	Report	Report	-	2/month	Grab
Temperature (°F)	-	-	-	Report	-	110[a]	2/month	I-S
Total Suspended Solids (TSS)	70	140	-	25	50	-	2/month	Grab
Oil and Grease	28	56	-	15.0	-	30.0	2/month	Grab
PFOA (ng/L)	-	-	-	-	Report	-	1/year	Grab
PFOS (ng/L)	-	-	-	-	Report	-	1/year	Grab
HFPO-DA (ng/L)	-	-	-	-	Report	-	1/year	Grab
PFBS (ng/L)	-	-	-	-	Report	-	1/year	Grab

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0.0
Latitude	40º 08' 41"	**Longitude**	-79º 53' 59"
Wastewater Description:	Stormwater.		

Outfall No.	003	**Design Flow (MGD)**	0.0
Latitude	40º 08' 46"	**Longitude**	-79º 54' 06"
Wastewater Description:	Stormwater.		

Outfall No.	004	**Design Flow (MGD)**	0.0
Latitude	40º 08' 36"	**Longitude**	-79º 53' 53"
Wastewater Description:	Stormwater.		

Outfall No.	005	**Design Flow (MGD)**	0.0
Latitude	40º 08' 38"	**Longitude**	-79º 53' 55"
Wastewater Description:	Stormwater.		

Outfall No.	006	**Design Flow (MGD)**	0.0
Latitude	40º 08' 40"	**Longitude**	-79º 53' 57"
Wastewater Description:	Stormwater.		

Outfall 002 was designated as the representative Outfall for Outfalls 003, 004, 005, and 006 in the previous permit. Therefore, effluent monitoring will not be required for Outfall's 003-006 but any corrective actions required at Outfall 002 shall also be implemented at Outfall's 003-006.

Technology-Based Effluent limitations:

Outfalls 002-006 will be subject to PAG-03 General Stormwater Permit conditions as a minimum requirement because they discharge stormwater associated with industrial activity. Based on the site's SIC code, the corresponding appendix that would apply to the facility is Appendix N of the PAG-03. The proposed monitoring requirements are shown in Table 6 below. The benchmark values listed below are not effluent limitations, and exceedances do not constitute permit violations. However, if the permittee's sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, the permittee shall submit a Corrective Action Plan. This requirement will be included in Part C of the permit.

Table 6: PAG-03 Appendix (N) Monitoring Requirements

Parameters	Monitoring Requirements		Benchmark Values
	Minimum Measurement Frequency	Sample Type	
Total Nitrogen (mg/L)	1 / 6 Months	Calculation	XXX
Total Phosphorus (mg/L)	1 / 6 Months	Grab	XXX
pH (S.U)	1 / 6 Months	Grab	9.0
Total Suspended Solids (TSS) (mg/L)	1 / 6 Months	Grab	100
Total Aluminum (mg/L)	1 / 6 Months	Grab	XXX
Total Iron (mg/L)	1 / 6 Months	Grab	XXX

Water Quality-Based Effluent limitations:

Water quality analyses are typically performed under low-flow (Q7-10) conditions. Stormwater discharges occur at variable rates and frequencies but not however during Q7-10 conditions. Since the discharges from Outfalls 002 - 006 are composed entirely of stormwater, a formal water quality analysis cannot be accurately conducted. Accordingly, water quality-based effluent limitations are not proposed.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 7. Monitoring for lead was previously imposed because it was identified as a potential pollutant due to it being historically used at the facility (not used anymore). Nickel-oxide was identified by the permittee as being utilized in the process for coloring glass.

Table 7: Current Limitations at Outfall 002

Parameter	Daily Maximum	Benchmark Value (mg/L)	Sample Frequency	Sample Type
pH (S.U.)	Report	-	1/6 months	Grab
TSS	Report	100	1/6 months	Grab
Total Aluminum	Report	-	1/6 months	Grab
Total Iron	Report	-	1/6 months	Grab
Total Lead	Report	-	1/6 months	Grab
Total Nickel	Report	-	1/6 months	Grab

Proposed Final Effluent Limitations

The proposed effluent monitoring requirements are outlined in table 8, which show the requirements for Outfalls 002-006. They are the most stringent values from the above effluent limitation development. The flow monitoring requirement has been removed from the permit because flow monitoring on stormwater discharges is generally not practical. The Draft Permit requires a Corrective Action Plan when there are two consecutive exceedances of the benchmark values, listed in Part C of the draft permit. The benchmark values are displayed below in Table 8. These values are not effluent limitations, an exceedance of the benchmark value is not a violation. As described above, if there are two consecutive exceedances of the benchmark value, a Corrective Action Plan must be developed and submitted to evaluate site's stormwater controls and BMPs. Benchmark monitoring is a feedback tool, along with routine inspections and visual assessments, for assessing the effectiveness of stormwater controls and BMPs. An exceedance of the benchmark provides permittees with an indication that the facility's controls may not be sufficiently controlling pollutants in stormwater.

Table 8: Proposed Effluent Monitoring Requirements for Outfall 002 - 006

Parameter	Max Daily Concentration	Benchmark Values (mg/L)	Measurement Frequency	Sample Type
pH (S.U)	Report	9.0	1/6 Months	Grab
Total Suspended Solids (TSS) (mg/L)	Report	100	1/6 Months	Grab
Total Nitrogen (mg/L)	Report	XXX	1/6 months	Calculation
Total Phosphorus (mg/L)	Report	XXX	1/6 Months	Grab
Total Aluminum (mg/L)	Report	XXX	1/6 Months	Grab
Total Iron (mg/L)	Report	XXX	1/6 Months	Grab
Total Lead (mg/L)	Report	XXX	1/6 Months	Grab
Total Nickel	Report	XXX	1/6 Months	Grab

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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments

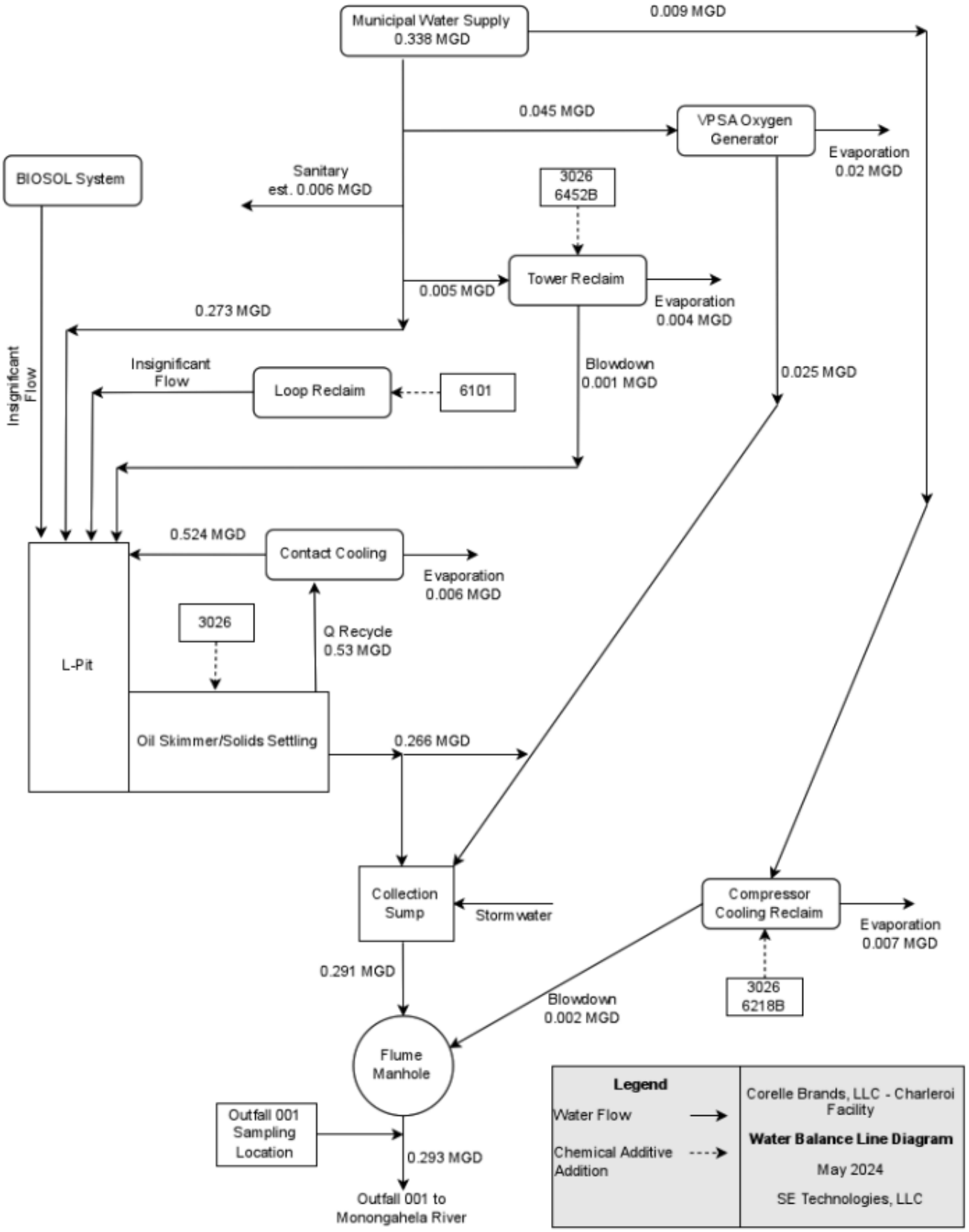
Attachment A: Water Balance Line Diagram

Attachment B: StreamStats Report

Attachment C: Toxic Management Spreadsheet for Outfall 001

Attachment D: TRC Modeling Results for Outfall 001

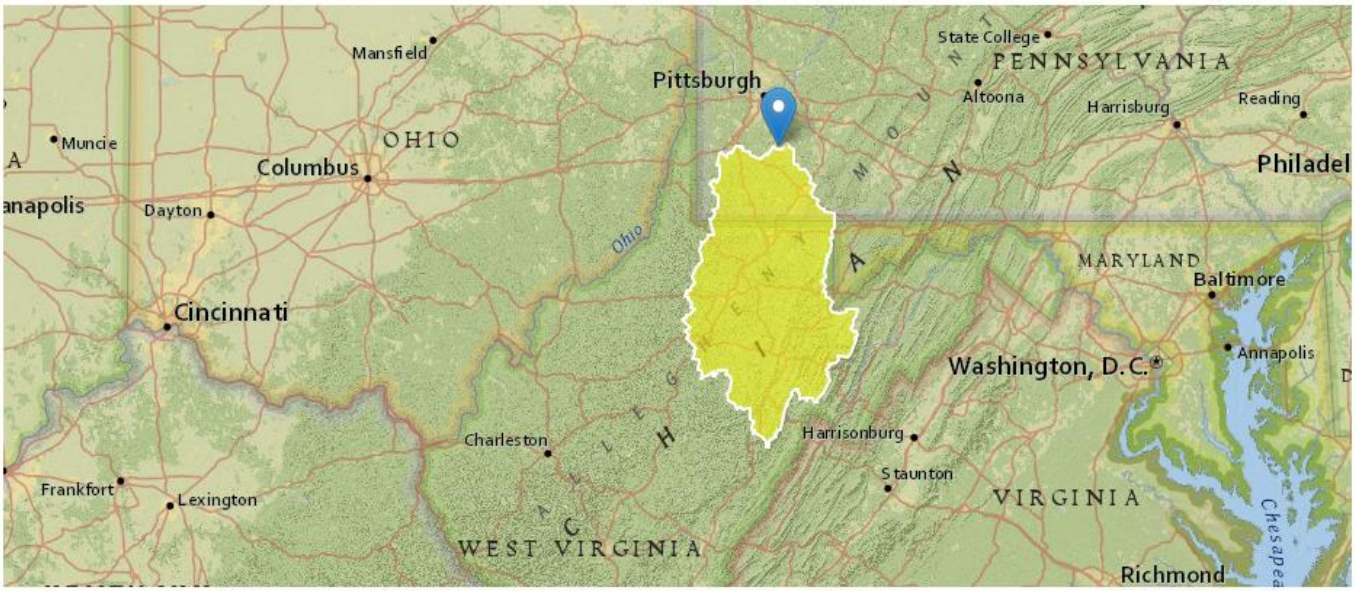
ATTACHMENT A.
Water Balance Line Diagram


Municipal Water Supply
0.338 MGD
0.009 MGD
0.045 MGD
VPSA Oxygen Generator
Evaporation
0.02 MGD
BIOSOL System
Sanitary
est. 0.006 MGD
3026
6452B
Tower Reclaim
0.005 MGD
Evaporation
0.004 MGD
0.273 MGD
Insignificant Flow
Insignificant Flow
Loop Reclaim
6101
Blowdown
0.001 MGD
0.025 MGD
0.524 MGD
Contact Cooling
Evaporation
0.006 MGD
3026
Q Recycle
0.53 MGD
L-Pit
Oil Skimmer/Solids Settling
0.266 MGD
Collection Sump
Stormwater
Compressor Cooling Reclaim
Evaporation
0.007 MGD
0.291 MGD
3026
6218B
Blowdown
0.002 MGD
Flume Manhole
Outfall 001 Sampling Location
0.293 MGD
Outfall 001 to Monongahela River
Legend
Water Flow
Chemical Additive Addition
Corelle Brands, LLC - Charleroi Facility
Water Balance Line Diagram
May 2024
SE Technologies, LLC

Attachment B: StreamStats Report

PA0005746 - Corelle randas - StreamStats Report

Region ID: PA
Workspace ID: PA20240911133758241000
Clicked Point (Latitude, Longitude): 40.14481, -79.89856
Time: 2024-09-11 09:38:58 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5210	square miles
ELEV	Mean Basin Elevation	1842	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	5210	square miles	2.26	1400
ELEV	Mean Basin Elevation	1842	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	689	ft^3/s
30 Day 2 Year Low Flow	914	ft^3/s
7 Day 10 Year Low Flow	401	ft^3/s
30 Day 10 Year Low Flow	470	ft^3/s

Attachment C: Toxic Management Spreadsheet for Outfall 001

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Corelle Brands - Charleroi Facility** NPDES Permit No.: **PA0005746** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Noncontact coolong water**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.081	85	9						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		170									
	Chloride (PWS)	mg/L		48									
	Bromide	mg/L		0.29									
	Sulfate (PWS)	mg/L		62									
	Fluoride (PWS)	mg/L		0.13									
Group 2	Total Aluminum	µg/L		57									
	Total Antimony	µg/L		5.1									
	Total Arsenic	µg/L		13									
	Total Barium	µg/L		39									
	Total Beryllium	µg/L	<	0.25									
	Total Boron	µg/L	<	63									
	Total Cadmium	µg/L		0.27									
	Total Chromium (III)	µg/L	<	0.58									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.15									
	Total Copper	µg/L		2.9									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	8									
	Dissolved Iron	µg/L	<	41									
	Total Iron	µg/L		88									
	Total Lead	µg/L		0.77									
	Total Manganese	µg/L		14									
	Total Mercury	µg/L	<	0.13									
	Total Nickel	µg/L		1.6									
	Total Phenols (Phenolics) (PWS)	µg/L		120									
	Total Selenium	µg/L		2.9									
	Total Silver	µg/L	<	0.79									
	Total Thallium	µg/L	<	0.38									
	Total Zinc	µg/L		24									
	Total Molybdenum	µg/L	<	0.7									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<	11									
	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	<										

Group 3	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<	0.07									
	Acenaphthylene	µg/L	<	0.07									
	Anthracene	µg/L	<	0.05									
	Benzidine	µg/L	<	9.1									
	Benzo(a)Anthracene	µg/L	<	0.08									
	Benzo(a)Pyrene	µg/L	<	0.05									
	3,4-Benzofluoranthene	µg/L	<	0.1									
	Benzo(ghi)Perylene	µg/L	<	0.07									
	Benzo(k)Fluoranthene	µg/L	<	0.09									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.2									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.04									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.06									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	6.2									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.3									
	Butyl Benzyl Phthalate	µg/L	<	0.5									
	2-Chloronaphthalene	µg/L	<	0.06									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.2									
	Chrysene	µg/L	<	0.08									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.07									
	1,2-Dichlorobenzene	µg/L	<	0.095									
	1,3-Dichlorobenzene	µg/L	<	0.099									
	1,4-Dichlorobenzene	µg/L	<	0.061									
	3,3-Dichlorobenzidine	µg/L	<	0.6									
	Diethyl Phthalate	µg/L	<	0.6									
	Dimethyl Phthalate	µg/L	<	0.2									
	Di-n-Butyl Phthalate	µg/L	<	0.7									
	2,4-Dinitrotoluene	µg/L	<	0.4									
	2,6-Dinitrotoluene	µg/L	<	0.2									
	Di-n-Octyl Phthalate	µg/L	<	0.7									
	1,2-Diphenylhydrazine	µg/L	<	0.2									
	Fluoranthene	µg/L	<	0.06									
	Fluorene	µg/L	<	0.07									
	Hexachlorobenzene	µg/L	<	0.06									
	Hexachlorobutadiene	µg/L	<	0.07									
	Hexachlorocyclopentadiene	µg/L	<	0.5									
	Hexachloroethane	µg/L	<	0.1									

	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.09										
	Isophorone	µg/L	<	0.2										
	Naphthalene	µg/L	<	0.06										
	Nitrobenzene	µg/L	<	0.5										
	n-Nitrosodimethylamine	µg/L	<	0.1										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.07										
	n-Nitrosodiphenylamine	µg/L	<	0.1										
	Phenanthrene	µg/L	<	0.06										
	Pyrene	µg/L	<	0.05										
	1,2,4-Trichlorobenzene	µg/L	<	0.13										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Corelle Brands - Charleroi Facility, NPDES Permit No. PA0005746, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Monongahela River**

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	037185	41.9	741	5,210			Yes
End of Reach 1	037185	25.65	730	5,330			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	41.9	0.1	550			794	18					154	7		
End of Reach 1	25.65	0.1	550			1,012	18								

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	41.9														
End of Reach 1	25.65														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Corelle Brands - Charleroi Facility, NPDES Permit No. PA0005746, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (•) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.123 Analysis Hardness (mg/l): 153.87 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	404,153	
Total Antimony	0	0		0	1,100	1,100	592,758	
Total Arsenic	0	0		0	340	340	183,216	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	11,316,297	
Total Boron	0	0		0	8,100	8,100	4,364,857	
Total Cadmium	0	0		0	3.061	3.31	1,781	Chem Translator of 0.926 applied
Total Chromium (III)	0	0		0	810.920	2,566	1,382,853	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	8,780	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	51,193	
Total Copper	0	0		0	20.170	21.0	11,322	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	102.906	141	76,150	Chem Translator of 0.728 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	888	Chem Translator of 0.85 applied
Total Nickel	0	0		0	674.220	676	364,046	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	6.750	7.94	4,280	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	35,027	
Total Zinc	0	0		0	168.824	173	93,021	Chem Translator of 0.978 applied
Acrylamide	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	83	83.0	44,726	
Anthracene	0	0		0	N/A	N/A	N/A	

Benzidine	0	0		0	300	300	161,661	
Benzo(a)Anthracene	0	0		0	0.5	0.5	269	
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	16,166,138	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	2,424,921	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	145,495	
Butyl Benzyl Phthalate	0	0		0	140	140	75,442	
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	441,874	
1,3-Dichlorobenzene	0	0		0	350	350	188,605	
1,4-Dichlorobenzene	0	0		0	730	730	393,376	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	2,155,485	
Dimethyl Phthalate	0	0		0	2,500	2,500	1,347,178	
Di-n-Butyl Phthalate	0	0		0	110	110	59,276	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	862,194	
2,6-Dinitrotoluene	0	0		0	990	990	533,483	
1,2-Diphenylhydrazine	0	0		0	15	15.0	8,083	
Fluoranthene	0	0		0	200	200	107,774	
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	5,389	
Hexachlorocyclopentadiene	0	0		0	5	5.0	2,694	
Hexachloroethane	0	0		0	60	60.0	32,332	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	5,388,713	
Naphthalene	0	0		0	140	140	75,442	
Nitrobenzene	0	0		0	4,000	4,000	2,155,485	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	9,160,812	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	161,661	
Phenanthrene	0	0		0	5	5.0	2,694	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	70,053	

☑ ***CFC*** CCT (min): 720 PMF: 0.849 Analysis Hardness (mg/l): 153.98 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	

Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	820,046	
Total Arsenic	0	0		0	150	150	559,122	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	15,282,674	
Total Boron	0	0		0	1,600	1,600	5,963,970	
Total Cadmium	0	0		0	0.332	0.37	1,389	Chem Translator of 0.891 applied
Total Chromium (III)	0	0		0	105.546	123	457,464	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	38,747	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	70,822	
Total Copper	0	0		0	12.951	13.5	50,285	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	6,585,330	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.013	5.51	20,545	Chem Translator of 0.728 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	3,377	Chem Translator of 0.85 applied
Total Nickel	0	0		0	74.930	75.2	280,141	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	18,597	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	48,457	
Total Zinc	0	0		0	170.308	173	643,834	Chem Translator of 0.986 applied
Acrylamide	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	17	17.0	63,367	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	219,921	
Benzo(a)Anthracene	0	0		0	0.1	0.1	373	
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	22,364,889	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	3,392,008	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	201,284	
Butyl Benzyl Phthalate	0	0		0	35	35.0	130,462	
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	596,397	
1,3-Dichlorobenzene	0	0		0	69	69.0	257,196	
1,4-Dichlorobenzene	0	0		0	150	150	559,122	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	2,981,985	
Dimethyl Phthalate	0	0		0	500	500	1,863,741	
Di-n-Butyl Phthalate	0	0		0	21	21.0	78,277	
2,4-Dinitrotoluene	0	0		0	320	320	1,192,794	
2,6-Dinitrotoluene	0	0		0	200	200	745,496	
1,2-Diphenylhydrazine	0	0		0	3	3.0	11,182	
Fluoranthene	0	0		0	40	40.0	149,099	
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	7,455	
Hexachlorocyclopentadiene	0	0		0	1	1.0	3,727	
Hexachloroethane	0	0		0	12	12.0	44,730	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	7,827,711	
Naphthalene	0	0		0	43	43.0	160,282	
Nitrobenzene	0	0		0	810	810	3,019,260	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	12,673,437	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	219,921	
Phenanthrene	0	0		0	1	1.0	3,727	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	96,915	

☑ ***THH*** CCT (min): 720 PMF: 0.849 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	20,874	
Total Arsenic	0	0		0	10	10.0	37,275	
Total Barium	0	0		0	2,400	2,400	8,945,956	
Total Boron	0	0		0	3,100	3,100	11,555,193	
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	1,118,244	
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	3,727,481	
Total Mercury	0	0		0	0.050	0.05	186	
Total Nickel	0	0		0	610	610	2,273,764	
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	895	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	260,924	
Anthracene	0	0		0	300	300	1,118,244	
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	745,496	
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	373	
2-Chloronaphthalene	0	0		0	800	800	2,981,985	
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	3,727,481	
1,3-Dichlorobenzene	0	0		0	7	7.0	26,092	
1,4-Dichlorobenzene	0	0		0	300	300	1,118,244	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	2,236,489	
Dimethyl Phthalate	0	0		0	2,000	2,000	7,454,963	
Di-n-Butyl Phthalate	0	0		0	20	20.0	74,550	
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	74,550	
Fluorene	0	0		0	50	50.0	186,374	
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	14,910	
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	126,734	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	37,275	
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	74,550	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	261	

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

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	

Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrylamide	0	0		0	0.07	0.07	1,031	
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	1.47	
Benzo(a)Anthracene	0	0		0	0.001	0.001	14.7	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	1.47	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	14.7	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	147	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	442	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	4,713	
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	1,767	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	1.47	
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	736	
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	736	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	736	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	442	
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	1.18	
Hexachlorobutadiene	0	0		0	0.01	0.01	147	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	

Hexachloroethane	0	0		0	0.1	0.1	1,473	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	14.7	
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	10.3	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	73.6	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	48,600	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments

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	259,046	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	20,874	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	37,275	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	7,253,289	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	2,797,697	µg/L	Discharge Conc < TQL
Total Cadmium	1,142	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	457,464	µg/L	Discharge Conc < TQL
Hexavalent Chromium	5,628	µg/L	Discharge Conc < TQL
Total Cobalt	32,812	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	7,257	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,118,244	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	6,585,330	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	20,545	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	3,727,481	µg/L	Discharge Conc ≤ 10% WQBEL

Total Mercury	186	µg/L	Discharge Conc < TQL
Total Nickel	233,339	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	18,597	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	2,743	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	895	µg/L	Discharge Conc < TQL
Total Zinc	59,623	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrylamide	1,031	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthene	28,668	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	1,118,244	µg/L	Discharge Conc < TQL
Benzidine	1.47	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	14.7	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	1.47	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	14.7	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	147	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	442	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	745,496	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	4,713	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	93,257	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	373	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	2,981,985	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	1,767	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	1.47	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	283,224	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	26,092	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	252,138	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	736	µg/L	Discharge Conc < TQL
Diethyl Phthalate	1,381,579	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	863,487	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	37,993	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	736	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	736	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	442	µg/L	Discharge Conc < TQL
Fluoranthene	69,079	µg/L	Discharge Conc < TQL
Fluorene	186,374	µg/L	Discharge Conc < TQL
Hexachlorobenzene	1.18	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	147	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1,727	µg/L	Discharge Conc < TQL
Hexachloroethane	1,473	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	14.7	µg/L	Discharge Conc < TQL
Isophorone	126,734	µg/L	Discharge Conc < TQL
Naphthalene	48,355	µg/L	Discharge Conc < TQL
Nitrobenzene	37,275	µg/L	Discharge Conc < TQL

n-Nitrosodimethylamine	10.3	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	73.6	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	48,600	µg/L	Discharge Conc < TQL
Phenanthrene	1,727	µg/L	Discharge Conc < TQL
Pyrene	74,550	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	261	µg/L	Discharge Conc < TQL

Attachment D: TRC Modeling Results for Outfall 001

TRC EVALUATION - Outfall 001

550	= Q stream (cfs)	0.5	= CV Daily
0.081	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.123	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.849	= 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 =	172.239	**1.3.2.iii**	WLA cfc =	1158.936
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	64.180	**5.1d**	LTA_cfc =	673.751

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)**