

Application Type Renewal
 Facility Type Industrial
 Major / Minor Major

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

Application No. PA0006254
 APS ID 1116436
 Authorization ID 1489819

Applicant and Facility Information

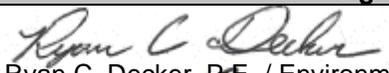
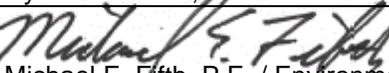
Applicant Name	<u>BVPV Styrenics LLC</u>	Facility Name	<u>Beaver Valley Site</u>
Applicant Address	<u>400 Frankfort Road</u> <u>Monaca, PA 15061-2212</u>	Facility Address	<u>400 Frankfort Road</u> <u>Monaca, PA 15061-2212</u>
Applicant Contact	<u>Timothy Ford</u>	Facility Contact	<u>***same as applicant***</u>
Applicant Phone	<u>(724) 770-2468</u>	Facility Phone	<u>***same as applicant***</u>
Applicant Email	<u>tim.ford@styropek.com</u>	Facility Email	<u>***same as applicant***</u>
Client ID	<u>357935</u>	Site ID	<u>241397</u>
SIC Code	<u>2821</u>	Municipality	<u>Potter Township</u>
SIC Description	<u>Manufacturing - Plastics Materials and Resins</u>	County	<u>Beaver</u>
Date Application Received	<u>June 16, 2024</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u>June 25, 2024</u>	If No, Reason	<u>Major Facility</u>
Purpose of Application	<u>Renewal of an NPDES permit for discharges from an organic chemical manufacturing facility.</u>		

Summary of Review

On June 16, 2024, BVPV Styrenics, LLC (BVPV) submitted an application to renew NPDES Permit PA0006254 for discharges from BVPV's Beaver Valley Site. The NPDES permit currently in effect was issued on July 16, 2019 with an effective date of August 1, 2019 and an expiration date of July 31, 2024. The permit renewal application was due by February 2, 2024 (180 days before expiration). However, on November 28, 2023, DEP approved an extension of time to submit the NPDES permit renewal application until June 16, 2024 in response to a November 15, 2023 request for extension submitted to DEP by Langan Engineering & Environmental Services, Inc. on behalf of BVPV. The application was submitted by the extended due date, so the application is considered timely. DEP did not renew the NPDES permit before the expiration date due, in part, to a request from BVPV to delay review of the application in anticipation of planned changes at the site. Therefore, the terms and conditions of the 2019 permit were automatically continued upon expiration pursuant 25 Pa. Code § 92a.7(b).

The current permit was amended three times during its term. Amendment No. 1 was a minor amendment issued on October 17, 2019 to change the required sample types for 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, and 1,2-Dichloropropane at Outfall 002 from "24-Hr Composite" to "4 Grabs/24 Hours". Amendment No. 2 was issued on September 29, 2020 to transfer the NPDES permit from NOVA Chemicals, Inc. to BVPV Styrenics, LLC following the acquisition of the Beaver Valley Site by Styropek USA, Inc. (a subsidiary of Alpek, S.A.B. de C.V.). Amendment No. 3 was issued on July 30, 2021 to add a monitoring requirement for ultraviolet (UV) light dosing consistent with the installation of a UV light disinfection system at the Beaver Valley Site's sewage treatment plant (replacing an existing sodium hypochlorite disinfection system).

In August 2024, Styropek announced plans to decrease production at the Beaver Valley Site and, on or about September 18, 2024, BVPV notified DEP that it intended to modify its NPDES permit renewal application to reflect the idling of production operations at the Beaver Valley Site. DEP received the revised NPDES permit renewal application on February 27, 2025, which states that all production is anticipated to be idled in the first half of 2025. By letter dated May 15, 2025, BVPV subsequently notified DEP of its intent to completely stop all manufacturing operations at the facility and the production and

Approve	Deny	Signatures	Date
✓		 Ryan C. Decker, P.E. / Environmental Engineer	June 2, 2025
X		 Michael E. Fifth, P.E. / Environmental Engineer Manager	June 10, 2025

Summary of Review

discharge of industrial process wastewater through Outfall 002 by June 30, 2025. BVPV did request to maintain authorization to discharge process wastewaters if operations resume from idling. If the facility resumes operations, then DEP must be notified so that any changes to the NPDES permit can be made at that time.

Renewed NPDES Permit Requirements

Existing NPDES monitoring points will remain in the permit including Outfalls 001, 002, 004, 005, 006, 007, 020, 021, and 025, and Internal Monitoring Point (IMP) 102. Outfall 001 is authorized to discharge non-contact cooling water, miscellaneous non-process wastewaters, excess intake water, and storm water runoff. Outfall 002 is authorized to discharge process and non-process wastewaters, cooling tower blowdown, storm water, and sanitary wastewaters regulated at IMP 102. Outfalls 004 and 005 are authorized to discharge river water from piping and equipment leaks at the cooling water intake structure and Outfall 005 is additionally authorized to discharge pump seal water. Outfalls 006 and 007 are authorized to discharge river water used to clean the screens at the cooling water intake structure. Outfalls 020, 021, and 025 are authorized to discharge storm water associated with industrial activities.

The renewed permit generally maintains existing effluent limits at Outfalls 001 and 002 and IMP 102 with limits for pollutants regulated by 40 CFR Part 414 – Organic Chemicals, Plastics, and Synthetic Fibers Point Source Category Federal Effluent Limitations Guidelines remaining at Outfall 002 notwithstanding the cessation of the discharge of wastewaters from manufacturing activities subject to those regulations. Outfall 002's effluent limits include some revisions for new and relaxed water quality-based effluent limits, and changes to mass limits based on an updated discharge flow rate. The renewed permit adds monitoring requirements for four per- and polyfluoroalkyl substances (PFAS) to Outfalls 001 and 002 and IMP 102 consistent with a statewide monitoring initiative for those substances. BVPV also must develop a PFAS reduction plan to identify and reduce/eliminate sources of PFAS detected in the effluent and implement BMPs to address PFAS from aqueous film forming foam. Also, quarterly monitoring for *E. coli* is added to IMP 102 and Outfalls 004 and 005 are now subject to effluent limits for TSS and Oil & Grease.

Pursuant to DEP's and BVPV's observation of fugitive plastic beads at various locations in and around the Beaver Valley Site in 2022 and 2023 (the subject of a citizen enforcement suit against BVPV by PennEnvironment and Three Rivers Waterkeeper), BVPV is currently implementing a Sitewide Stormwater Investigation Plan to continue investigating the sources of plastic beads and to control and clean up those sources. The permit incorporates additional BMPs to control plastic beads.

Cooling Water Intake Structures

This permit renewal imposes requirements pertaining to BVPV's cooling water intake structure in accordance with section 316(b) of the Clean Water Act (33 U.S.C. § 1326(b)), which requires the location, design, construction, and capacity of cooling water intake structures to reflect the best technology available (BTA) for minimizing adverse environmental impact.

Based on regulations implementing section 316(b) for existing facilities (40 CFR part 125, Subpart J) and the characteristics of BVPV's intake, BVPV is not subject to the specific requirements listed in 40 CFR §§ 125.94 through 125.99. Therefore, pursuant to 40 CFR § 125.90(b), BVPV must meet BTA requirements under section 316(b) of the CWA established by the Director (DEP) on a case-by-case, best professional judgment basis.

In accordance with DEP's "Standard Operating Procedure (SOP) for Clean Water Program, Establishing Best Technology Available (BTA) Using Best Professional Judgement (BPJ) for Cooling Water Intake Structures at Existing NPDES Facilities" [SOP No. BCW-PMT-038], the permit identifies the intake's <0.5 foot per second through-screen actual velocity as the BTA for impingement and the minimal actual intake flow compared to the mean annual flow of the Ohio River as BTA for entrainment.

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.	<u>001</u>	Design Flow (MGD)	<u>19.69 (avg.); 37.41 (max.)</u>
Latitude	<u>40° 39' 29.75"</u>	Longitude	<u>-80° 21' 26.75"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description:	<u>Non-contact cooling water, miscellaneous non-process wastewaters, excess intake water, and storm water runoff</u>		
Receiving Waters	<u>Ohio River</u>	Stream Code	<u>32317</u>
NHD Com ID	<u>99680324</u>	RMI	<u>951.4</u>
Drainage Area	<u>22,961</u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u>4,730</u>	Q ₇₋₁₀ Basis	<u>ORSANCO Pollution Control Standards</u>
Elevation (ft)	<u>682 (normal pool)</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u>Add Navigation</u>	Exceptions to Criteria	<u>See ORSANCO P.C.S.</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Pathogens, PCB, Dioxins</u>		
Source(s) of Impairment	<u>Source Unknown</u>		
TMDL Status	<u>Final, 04/09/2001</u>	Name	<u>Ohio River TMDL</u>
Background/Ambient Data		Data Source	
pH (SU)	<u>7.33</u>	Mean pH; USGS Gage 03086000 (2000 – 2013)	<u></u>
Temperature (°F)	<u>66.2</u>	Mean temp; USGS Gage 03086000 (2000 – 2013)	<u></u>
Hardness (mg/L)	<u>98</u>	Mean hardness; USGS Gage 03086000 (2000 – 2013)	<u></u>
Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>002</u>	Design Flow (MGD)	<u>1.36</u>
Latitude	<u>40° 39' 34.65"</u>	Longitude	<u>-80° 21' 0.34"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>

Wastewater Description: Treated wastewaters from maintenance activities, facility idling activities, sewer line jetting; condensate; boiler house blowdown; precipitator blowdown; filter plant cooling tower blowdown and gravity filter blowdown; filter backwash water from the Potable Water Plant; Belt Filter Press wash water; D2, D3, and D4 cooling tower blowdown; storm water; and treated sanitary wastewaters monitored at IMP 102

Receiving Waters	<u>Raccoon Creek</u>	Stream Code	<u>33564</u>
NHD Com ID	<u>99680646</u>	RMI	<u>0.24</u>
Drainage Area	<u>184</u>	Yield (cfs/mi ²)	<u>0.044</u>
Q ₇₋₁₀ Flow (cfs)	<u>8.17</u>	Q ₇₋₁₀ Basis	<u>USGS Gage 03108000</u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u>0.0017</u>
Watershed No.	<u>20-B</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>

Assessment Status Attaining Use(s)

Cause(s) of Impairment

Source(s) of Impairment

TMDL Status Final, 04/07/2005 Name Raccoon Creek Watershed TMDL

Background/Ambient Data		Data Source	
pH (SU)	<u>8.04</u>	Mean pH; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Temperature (°F)	<u>55</u>	Mean temp; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Hardness (mg/L)	<u>380</u>	Mean hardness; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>

Nearest Downstream Public Water Supply Intake Midland Borough Municipal Authority

PWS Waters Ohio River Flow at Intake (cfs) 4,730

PWS RMI 945.38 Distance from Outfall (mi) 7.32

Discharge, Receiving Waters and Water Supply Information

IMP No.	<u>102</u>	Design Flow (MGD)	<u>0.066 (avg.); 0.10 (design)</u>
Latitude	<u>40° 39' 35.80"</u>	Longitude	<u>-80° 21' 13.50"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>

Wastewater Description: Treated sanitary wastewaters

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>004</u>	Design Flow (MGD)	<u>0.001</u>
Latitude	<u>40° 39' 51.44"</u>	Longitude	<u>-80° 21' 1.07"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>

Wastewater Description: River Pump House discharge of river water from piping and equipment leaks to sump

Receiving Waters	<u>Ohio River</u>	Stream Code	<u>32317</u>
NHD Com ID	<u>99680026</u>	RMI	<u>951.0</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u>4,730</u>	Q ₇₋₁₀ Basis	<u>ORSANCO Pollution Control Standards</u>
Elevation (ft)	<u>682 (normal pool)</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u>Add Navigation</u>	Exceptions to Criteria	<u>See ORSANCO P.C.S.</u>

Assessment Status	<u>Impaired</u>
Cause(s) of Impairment	<u>Pathogens, PCB, Dioxins</u>
Source(s) of Impairment	<u>Source Unknown</u>
TMDL Status	<u>Final, 04/09/2001</u> Name <u>Ohio River TMDL</u>

Background/Ambient Data		Data Source	
pH (SU)	<u>7.33</u>	Mean pH; USGS Gage 03086000 (2000 – 2013)	
Temperature (°F)	<u>66.2</u>	Mean temp; USGS Gage 03086000 (2000 – 2013)	
Hardness (mg/L)	<u>98</u>	Mean hardness; USGS Gage 03086000 (2000 – 2013)	

Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>005</u>	Design Flow (MGD)	<u>0.01</u>
Latitude	<u>40° 39' 50.43"</u>	Longitude	<u>-80° 21' 2.06"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description:	<u>River Pump House discharge of river water from piping and equipment leaks to sump and from pump seal water</u>		
Receiving Waters	<u>Ohio River</u>	Stream Code	<u>32317</u>
NHD Com ID	<u>99680026</u>	RMI	<u>951.0</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u>4,730</u>	Q ₇₋₁₀ Basis	<u>ORSANCO Pollution Control Standards</u>
Elevation (ft)	<u>682 (normal pool)</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u>Add Navigation</u>	Exceptions to Criteria	<u>See ORSANCO P.C.S.</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Pathogens, PCB, Dioxins</u>		
Source(s) of Impairment	<u>Source Unknown</u>		
TMDL Status	<u>Final, 04/09/2001</u>	Name	<u>Ohio River TMDL</u>
Background/Ambient Data		Data Source	
pH (SU)	<u>7.33</u>	Mean pH; USGS Gage 03086000 (2000 – 2013)	<u></u>
Temperature (°F)	<u>66.2</u>	Mean temp; USGS Gage 03086000 (2000 – 2013)	<u></u>
Hardness (mg/L)	<u>98</u>	Mean hardness; USGS Gage 03086000 (2000 – 2013)	<u></u>
Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>006</u>	Design Flow (MGD)	<u>1.05</u>
Latitude	<u>40° 39' 51.44"</u>	Longitude	<u>-80° 21' 1.07"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description: <u>River water used to clean the river intake screens</u>			

Receiving Waters	<u>Ohio River</u>	Stream Code	<u>32317</u>
NHD Com ID	<u>99680026</u>	RMI	<u>951.0</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u>4,730</u>	Q ₇₋₁₀ Basis	<u>ORSANCO Pollution Control Standards</u>
Elevation (ft)	<u>682 (normal pool)</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u>Add Navigation</u>	Exceptions to Criteria	<u>See ORSANCO P.C.S.</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Pathogens, PCB, Dioxins</u>		
Source(s) of Impairment	<u>Source Unknown</u>		
TMDL Status	<u>Final, 04/09/2001</u>	Name	<u>Ohio River TMDL</u>

Background/Ambient Data		Data Source	
pH (SU)	<u>7.33</u>	Mean pH; USGS Gage 03086000 (2000 – 2013)	<u></u>
Temperature (°F)	<u>66.2</u>	Mean temp; USGS Gage 03086000 (2000 – 2013)	<u></u>
Hardness (mg/L)	<u>98</u>	Mean hardness; USGS Gage 03086000 (2000 – 2013)	<u></u>

Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>007</u>	Design Flow (MGD)	<u>1.05</u>
Latitude	<u>40° 39' 50.43"</u>	Longitude	<u>-80° 21' 2.06"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description: <u>River water used to clean the river intake screens</u>			

Receiving Waters	<u>Ohio River</u>	Stream Code	<u>32317</u>
NHD Com ID	<u>99680026</u>	RMI	<u>951.0</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u>4,730</u>	Q ₇₋₁₀ Basis	<u>ORSANCO Pollution Control Standards</u>
Elevation (ft)	<u>682 (normal pool)</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u>Add Navigation</u>	Exceptions to Criteria	<u>See ORSANCO P.C.S.</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Pathogens, PCB, Dioxins</u>		
Source(s) of Impairment	<u>Source Unknown</u>		
TMDL Status	<u>Final, 04/09/2001</u>	Name	<u>Ohio River TMDL</u>

Background/Ambient Data		Data Source	
pH (SU)	<u>7.33</u>	Mean pH; USGS Gage 03086000 (2000 – 2013)	<u></u>
Temperature (°F)	<u>66.2</u>	Mean temp; USGS Gage 03086000 (2000 – 2013)	<u></u>
Hardness (mg/L)	<u>98</u>	Mean hardness; USGS Gage 03086000 (2000 – 2013)	<u></u>

Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>020</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 39' 15.66"</u>	Longitude	<u>-80° 21' 2.74"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description: <u>Storm water</u>			

Receiving Waters	<u>Raccoon Creek (WWF)</u>	Stream Code	<u>33564</u>
NHD Com ID	<u>99680646</u>	RMI	<u>0.6100</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>

Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Raccoon Creek Watershed</u>

Background/Ambient Data		Data Source	
pH (SU)	<u>8.04</u>	Mean pH; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Temperature (°F)	<u>55</u>	Mean temp; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Hardness (mg/L)	<u>380</u>	Mean hardness; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>

Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>021</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 39' 17.47"</u>	Longitude	<u>-80° 21' 4.86"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description: <u>Storm water</u>			

Receiving Waters	<u>Raccoon Creek (WWF)</u>	Stream Code	<u>33564</u>
NHD Com ID	<u>99680646</u>	RMI	<u>0.5800</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>

Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Raccoon Creek Watershed</u>

Background/Ambient Data		Data Source	
pH (SU)	<u>8.04</u>	Mean pH; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Temperature (°F)	<u>55</u>	Mean temp; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Hardness (mg/L)	<u>380</u>	Mean hardness; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>

Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>025</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 39' 22.49"</u>	Longitude	<u>-80° 21' 2.94"</u>
Quad Name	<u>Beaver</u>	Quad Code	<u>1303</u>
Wastewater Description: <u>Storm water</u>			

Receiving Waters	<u>Raccoon Creek (WWF)</u>	Stream Code	<u>33564</u>
NHD Com ID	<u>99680646</u>	RMI	<u>0.4800</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>

Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Raccoon Creek Watershed</u>

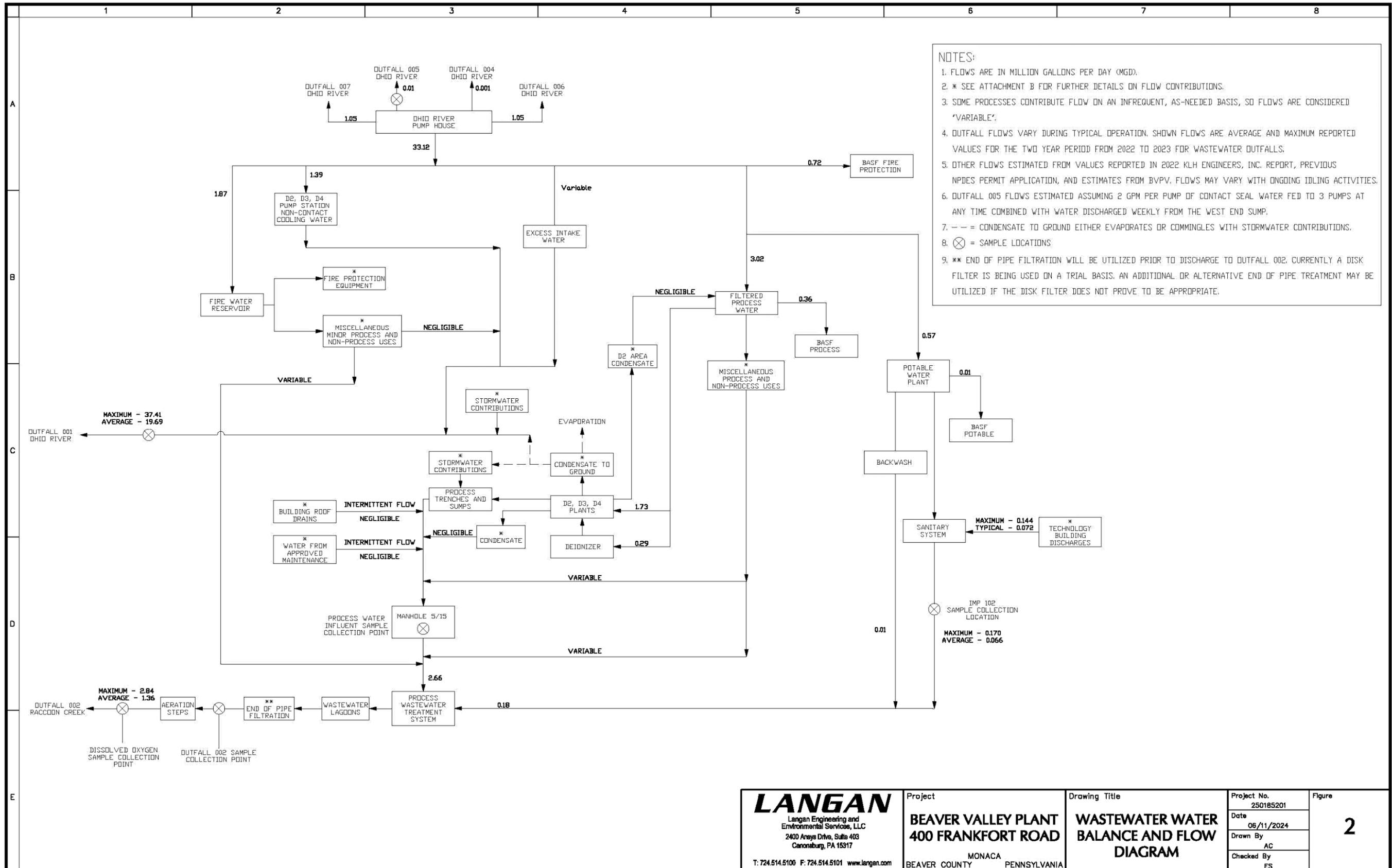
Background/Ambient Data		Data Source	
pH (SU)	<u>8.04</u>	Mean pH; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Temperature (°F)	<u>55</u>	Mean temp; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>
Hardness (mg/L)	<u>380</u>	Mean hardness; WQN 903 (Jan. 2006 – Dec. 2016)	<u></u>

Nearest Downstream Public Water Supply Intake	<u>Midland Borough Municipal Authority</u>		
PWS Waters	<u>Ohio River</u>	Flow at Intake (cfs)	<u>4,730</u>
PWS RMI	<u>945.38</u>	Distance from Outfall (mi)	<u>6.02</u>

Changes Since Last Permit Issuance: Facility idling.



Image Source and Date: Google Earth Pro; 4/17/2016



NOTES:

1. FLOWS ARE IN MILLION GALLONS PER DAY (MGD).
2. * SEE ATTACHMENT B FOR FURTHER DETAILS ON FLOW CONTRIBUTIONS.
3. SOME PROCESSES CONTRIBUTE FLOW ON AN INFREQUENT, AS-NEEDED BASIS, SO FLOWS ARE CONSIDERED "VARIABLE".
4. OUTFALL FLOWS VARY DURING TYPICAL OPERATION. SHOWN FLOWS ARE AVERAGE AND MAXIMUM REPORTED VALUES FOR THE TWO YEAR PERIOD FROM 2022 TO 2023 FOR WASTEWATER OUTFALLS.
5. OTHER FLOWS ESTIMATED FROM VALUES REPORTED IN 2022 KLH ENGINEERS, INC. REPORT, PREVIOUS NPDES PERMIT APPLICATION, AND ESTIMATES FROM BVPV. FLOWS MAY VARY WITH ONGOING IDLING ACTIVITIES.
6. OUTFALL 005 FLOWS ESTIMATED ASSUMING 2 GPM PER PUMP OF CONTACT SEAL WATER FED TO 3 PUMPS AT ANY TIME COMBINED WITH WATER DISCHARGED WEEKLY FROM THE WEST END SUMP.
7. - - = CONDENSATE TO GROUND EITHER EVAPORATES OR COMMINGLES WITH STORMWATER CONTRIBUTIONS.
8. ⊗ = SAMPLE LOCATIONS.
9. ** END OF PIPE FILTRATION WILL BE UTILIZED PRIOR TO DISCHARGE TO OUTFALL 002; CURRENTLY A DISK FILTER IS BEING USED ON A TRIAL BASIS. AN ADDITIONAL OR ALTERNATIVE END OF PIPE TREATMENT MAY BE UTILIZED IF THE DISK FILTER DOES NOT PROVE TO BE APPROPRIATE.

<p>LANGAN Langan Engineering and Environmental Services, LLC 2400 Ansys Drive, Suite 403 Canonburg, PA 15317 T: 724.514.5100 F: 724.514.5101 www.langan.com</p>	<p>Project BEAVER VALLEY PLANT 400 FRANKFORT ROAD MONACA PENNSYLVANIA BEAVER COUNTY</p>	<p>Drawing Title WASTEWATER WATER BALANCE AND FLOW DIAGRAM</p>	<p>Project No. 250185201</p>	<p>Figure 2</p>
	<p>Date 06/11/2024</p> <p>Drawn By AC</p> <p>Checked By ES</p>			

Date: 2/21/2025 Time: 14:38 User: emsmith Style Table: Langan.stb Layout: FIG 2 Document Code: FG02-250185201-0201-NI601-0101

Treatment Facility Summary				
Treatment Facility: BVPV Styrenics LLC WWTP				
WQM Permit No.	Issuance Date	Purpose		
0471208	03/29/1972	Operation of existing industrial waste facilities (lagoon-based treatment system) and sewage treatment facilities (Imhoff tanks). This permit replaced the following permits: 0469206, 78-T1, 365I014, 6442-T1, and 364S005		
0471208-T1	10/04/1974	Transfer from Sinclair-Koppers Company to ARCO Polymers, Inc. (ARCO Chemical Company). Notification about name change received by letter dated March 13, 1974; no permit files available for this 1974 T1 permit transfer.		
0471208-A1	07/16/1990	Pretreatment for certain process waste streams including carbon filters for the removal of 2,4,6-tribromophenyl allyl ether		
0471208-T1-A2	08/23/1996	Changes to treatment since 1972 including new clarifier, sludge thickener, belt filter press, chemical substitution (MgO replacing lime slurry), and elimination of sulfuric acid for pH adjustment		
0471208-T2	12/24/1996	Transfer from ARCO Chemical Company to NOVA Chemicals, Inc.		
0471208-A3	08/07/1997	Mix pit repairs, liquid CO ₂ (acid) storage tanks and feed system for pH adjustment before the aeration lagoon; conversion from MgO-slaker to bulk lime slaking system for pH adjustment		
0471208-T3	09/29/2023	Transfer from NOVA Chemicals, Inc. to BVPV Styrenics, LLC		
0471209	04/13/1972	Replaced permit 364115 authorizing construction of the industrial wastewater treatment system (e.g., primary lagoon piping)		
0471209-T1	10/04/1974	Permit Transfer – Sinclair-Koppers Company to ARCO Polymers, Inc. (ARCO Chemical Company). Notification about name change received by letter dated March 13, 1974; no permit files available for this 1974 T1 permit transfer.		
0471209-T2	12/24/1996	Transfer from ARCO Chemical Company to NOVA Chemicals, Inc.		
0471209-A1	05/26/2021	Amendment issued to BVPV Styrenics LLC for the construction and operation of one (1) UV disinfection system (Trojan UV 3000-PTP) with a flow capacity of 0.224 MGD.		
0471209-T3	09/29/2023	Transfer from NOVA Chemicals, Inc. to BVPV Styrenics, LLC		
0472204	08/03/1972	For discharge of untreated once-through cooling water		
0472204-T1	10/04/1974	Transfer from Sinclair-Koppers Company to ARCO Polymers, Inc. (ARCO Chemical Company). Notification about name change received by letter dated March 13, 1974.		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary and Secondary	1) In-plant carbon adsorption for wastewaters from certain production lines; 2) lime addition; 3) a mix pit; 4) cationic coagulant addition; 5) anionic polymer addition; 6) clarifier; 7) sedimentation basin; 8) aeration lagoon; 9) quiescent lagoon; 10) anti-foam addition; and 11) step aerator	None	1.543
Sewage	Primary and Secondary	Imhoff tanks	Sodium Hypochlorite	0.05
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
—	N/A	N/A	N/A	N/A

Compliance History

DMR Data for Outfall 001 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	30.0049 78	35.8527 1	34.6064 95	35.8527 1	35.1036 39	32.8707 13	24.1688 58	32.388	34.0090 16	34.53	34.72	35.13
Flow (MGD) Daily Maximum	52	35.8527 1	34.6064 95	36.7519 49	35.5514 98	36.2237 13	34.4986 69	36.45	35.0080 26	35.57	35.26	37.36
pH (S.U.) Instantaneous Minimum	7.1	7.8	7.64	7.3	7.72	7.5	7.42	7.65	7.52	7.62	7.53	7.26
pH (S.U.) Instantaneous Maximum	7.92	8.12	8.21	7.7	7.93	7.76	7.8	7.84	7.99	8.03	7.95	7.89
TRC (mg/L) Average Monthly	0.1	0.2	0.2	0.2	0.05	0.1	0.2	0.2	0.2	0.1	0.2	0.3
TRC (mg/L) Daily Maximum	0.26	0.24	0.21	0.24	0.11	0.12	0.42	0.21	0.39	0.16	0.33	0.29
Temperature (°F) Daily Maximum	51.6	46.9	46.9	55.4	71.8	73.0	82.6	83.1	85.8	74.5	70.2	57.02
Total Dissolved Solids (mg/L) Daily Maximum	110			230			250			170.0		
Total Copper (mg/L) Average Monthly	0.0044	0.0047	< 0.0036	0.0034	0.0043	< 0.006	0.0133	0.0078	0.0096	0.0024	0.0037	0.0072
Total Copper (mg/L) Daily Maximum	0.0062	0.006	0.0051	0.0045	0.0053	0.01	0.02	0.009	0.017	0.0026	0.0048	0.012
Sulfate (mg/L) Daily Maximum	31			73			78			44.0		
Chloride (mg/L) Daily Maximum	29			32			29			19.0		
Bromide (mg/L) Daily Maximum	< 0.1			< 0.1			< 0.053			< 0.053		
Styrene (mg/L) Average Monthly	< 0.001	< 0.001	< 0.001	< 0.001	0.00086	< 0.006	0.00047	0.00047	0.00047	0.00047	0.00047	0.00047
Styrene (mg/L) Daily Maximum	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	0.00047	0.00047	0.00047	0.00047	0.00047	0.00047

DMR Data for Outfall 002 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	0.08843 3	0.48911 8	0.04369 41	1.18959 12	1.41	1.24125 4	1.46895	1.41025 05	1.36515 42	0.72743 6	1.21	1.45

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Daily Maximum	0.64725	1.73817 8	0.23685 5	1.39807 6	1.64	1.74301 6	2.42934 2	1.73381 2	1.68216 6	1.51572 6	2.79	2.51
pH (S.U.) Instantaneous Minimum	6.98	7.63	7.72	7.43	7.6	7.09	7.59	7.53	7.6	7.69	7.63	7.4
pH (S.U.) Instantaneous Maximum	7.84	7.99	8.02	7.79	7.81	7.8	7.94	7.83	7.88	7.92	7.93	7.6
DO (mg/L) Instantaneous Minimum	10.36	12.01	11.1	8.92	9.1	8.13	7.89	7.04	6.44	6.99	8.64	11.1
TRC (mg/L) Average Monthly	0.04	0.02	0.02	0.01	0.02	< 0.04	0.07	0.03	0.03	0.02	0.02	0.02
TRC (mg/L) Daily Maximum	0.10	0.02	0.06	0.02	0.03	0.06	0.08	0.03	0.06	0.03	0.04	0.02
BOD5 (lbs/day) Average Monthly	23.0	116.0	5.0	217.0	189.0	231.0	147.0	136.0	175.0	102.0	124.0	180.0
BOD5 (lbs/day) Daily Maximum	52.0	256.0	15.0	262.0	235.0	564.0	219.0	217.0	199.0	172.0	177.0	209.0
BOD5 (mg/L) Average Monthly	11.0	19.0	17.0	22.0	16.0	23.0	13.0	12.0	16.0	17.0	13.0	14.0
BOD5 (mg/L) Daily Maximum	12.0	26.0	26.0	30.0	19.0	55.0	19.0	17.0	19.0	22.0	21.0	16.0
TSS (lbs/day) Average Monthly	16.0	41.0	5.0	311.0	192.0	111.0	155.0	140.0	210.0	148.0	142.0	227.0
TSS (lbs/day) Daily Maximum	36.0	88.0	21.0	400.0	274.0	189.0	175.0	192.0	259.0	251.0	279.0	440.0
TSS (mg/L) Average Monthly	9.0	7.0	10.0	31.0	16.0	11.0	13.0	13.0	19.0	24.0	13.0	16.0
TSS (mg/L) Daily Maximum	12.0	8.9	15.0	40.0	20.0	13.0	14.0	15.0	22.0	27.0	16.0	21.0
Oil and Grease (mg/L) Average Quarterly	< 7.8			< 5.2			< 4.5			< 4.7		
Oil and Grease (mg/L) Daily Maximum	10.6			< 5.3			< 4.5			< 4.8		
Total Chromium (lbs/day) Annual Average				< 0.02								
Total Chromium (lbs/day) Daily Maximum				< 0.03								
Total Chromium (mg/L) Annual Average				< 0.001								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Total Chromium (mg/L) Daily Maximum				< 0.0012								
Total Copper (lbs/day) Average Monthly	< 0.02	< 0.01	< 0.0008	< 0.04	< 0.03	< 0.05	< 0.02	< 0.08	< 0.02	< 0.04	< 0.02	< 0.05
Total Copper (lbs/day) Daily Maximum	0.04	0.02	0.003	0.09	0.04	0.20	0.03	0.20	0.02	0.10	< 0.04	0.10
Total Copper (mg/L) Average Monthly	< 0.010	< 0.002	< 0.002	< 0.004	< 0.002	< 0.005	< 0.002	< 0.007	< 0.002	< 0.005	< 0.002	< 0.003
Total Copper (mg/L) Daily Maximum	0.024	0.004	0.0026	0.0092	0.0037	0.019	0.0029	0.012	0.0022	0.014	0.0035	0.006
Total Cyanide (lbs/day) Annual Average				< 0.10								
Total Cyanide (lbs/day) Daily Maximum				< 0.2								
Total Cyanide (mg/L) Annual Average				< 0.008								
Total Cyanide (mg/L) Daily Maximum				< 0.008								
Total Lead (lbs/day) Average Monthly	< 0.002	< 0.005	< 0.0004	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005	< 0.004	< 0.006	< 0.05
Total Lead (lbs/day) Daily Maximum	< 0.004	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01	< 0.007	< 0.007	< 0.006	0.009	< 0.01	< 0.01
Total Lead (mg/L) Average Monthly	< 0.001	< 0.0009	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0006
Total Lead (mg/L) Daily Maximum	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.00045	< 0.00045	< 0.00061	0.001	< 0.00061	< 0.0006
Total Nickel (lbs/day) Average Monthly	0.007	0.02	0.001	0.03	0.04	0.04	0.04	0.03	0.04	0.02	0.05	0.06
Total Nickel (lbs/day) Daily Maximum	0.01	0.04	0.005	0.03	0.05	0.06	0.05	0.04	0.04	0.03	0.08	0.08
Total Nickel (mg/L) Average Monthly	0.003	0.003	0.003	0.003	0.004	0.004	0.003	0.003	0.003	0.003	0.004	0.005
Total Nickel (mg/L) Daily Maximum	0.0036	0.0038	0.0036	0.0034	0.0042	0.0059	0.0033	0.003	0.0041	0.0039	0.0051	0.005
Total Zinc (lbs/day) Average Monthly	0.05	0.20	0.01	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.09	< 0.20	< 0.10
Total Zinc (lbs/day) Daily Maximum	0.1	0.3	0.04	< 0.2	< 0.2	< 0.3	< 0.20	< 0.20	< 0.2	0.2	< 0.3	< 0.20
Total Zinc (mg/L) Average Monthly	0.030	0.030	0.030	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.010	< 0.010	< 0.020	< 0.010
Total Zinc (mg/L) Daily Maximum	0.028	0.044	0.030	0.022	< 0.020	< 0.020	< 0.015	< 0.015	0.019	0.017	0.017	0.012

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
2-Chlorophenol (lbs/day) Annual Average				< 0.004								
2-Chlorophenol (lbs/day) Daily Maximum				< 0.005								
2-Chlorophenol (mg/L) Annual Average				< 0.0002								
2-Chlorophenol (mg/L) Daily Maximum				< 0.00023								
2,4-Dichlorophenol (lbs/day) Annual Average				< 0.0008								
2,4-Dichlorophenol (lbs/day) Daily Maximum				< 0.001								
2,4-Dichlorophenol (mg/L) Annual Average				< 0.00005								
2,4-Dichlorophenol (mg/L) Daily Maximum				< 0.00005 3								
2,4-Dimethylphenol (lbs/day) Annual Average				< 0.010								
2,4-Dimethylphenol (lbs/day) Daily Maximum				< 0.010								
2,4-Dimethylphenol (mg/L) Annual Average				< 0.0006								
2,4-Dimethylphenol (mg/L) Daily Maximum				< 0.00061								
Fluorene (lbs/day) Annual Average				< 0.002								
Fluorene (lbs/day) Daily Maximum				0.002								
Fluorene (mg/L) Annual Average				< 0.0001								
Fluorene (mg/L) Daily Maximum				0.00014								
2,4-Dinitrophenol (lbs/day) Annual Average				< 0.050								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
2,4-Dinitrophenol (lbs/day) Daily Maximum				< 0.07								
2,4-Dinitrophenol (mg/L) Annual Average				< 0.003								
2,4-Dinitrophenol (mg/L) Daily Maximum				< 0.0034								
2,4-Dinitrotoluene (lbs/day) Annual Average				< 0.006								
2,4-Dinitrotoluene (lbs/day) Daily Maximum				< 0.008								
2,4-Dinitrotoluene (mg/L) Annual Average				< 0.0004								
2,4-Dinitrotoluene (mg/L) Daily Maximum				< 0.00037								
2,6-Dinitrotoluene (lbs/day) Annual Average				< 0.003								
2,6-Dinitrotoluene (lbs/day) Daily Maximum				< 0.004								
2,6-Dinitrotoluene (mg/L) Annual Average				< 0.0002								
2,6-Dinitrotoluene (mg/L) Daily Maximum				< 0.00018								
4,6-dinitro-o-cresol (lbs/day) Annual Average				< 0.02								
4,6-dinitro-o-cresol (lbs/day) Daily Maximum				< 0.03								
4,6-dinitro-o-cresol (mg/L) Annual Average				< 0.002								
4,6-dinitro-o-cresol (mg/L) Daily Maximum				< 0.0015								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
2-Nitrophenol (lbs/day) Annual Average				< 0.003								
2-Nitrophenol (lbs/day) Daily Maximum				< 0.004								
2-Nitrophenol (mg/L) Annual Average				< 0.0002								
2-Nitrophenol (mg/L) Daily Maximum				< 0.0002								
4-Nitrophenol (lbs/day) Annual Average				< 0.020								
4-Nitrophenol (lbs/day) Daily Maximum				< 0.020								
4-Nitrophenol (mg/L) Annual Average				< 0.001								
4-Nitrophenol (mg/L) Daily Maximum				< 0.00098								
Phenol (lbs/day) Average Monthly	< 0.020	< 0.050	< 0.004	< 0.100	< 0.100	< 0.100	< 0.060	< 0.050	< 0.060	< 0.030	< 0.040	< 0.020
Phenol (lbs/day) Daily Maximum	< 0.040	< 0.100	< 0.010	< 0.100	< 0.100	< 0.100	< 0.070	< 0.080	< 0.070	< 0.050	< 0.070	< 0.050
Phenol (mg/L) Average Monthly	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.002
Phenol (mg/L) Daily Maximum	< 0.010	< 0.011	< 0.010	< 0.013	< 0.010	< 0.010	< 0.0049	< 0.0053	< 0.0053	< 0.0051	< 0.0053	< 0.0047
Acenaphthene (lbs/day) Annual Average				< 0.001								
Acenaphthene (lbs/day) Daily Maximum				< 0.001								
Acenaphthene (mg/L) Annual Average				< 0.00007								
Acenaphthene (mg/L) Daily Maximum				< 0.000068								
Acenaphthylene (lbs/day) Annual Average				< 0.001								
Acenaphthylene (lbs/day) Daily Maximum				< 0.001								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Acenaphthylene (mg/L) Annual Average				< 0.00007								
Acenaphthylene (mg/L) Daily Maximum				< 0.00006 8								
Acrolein (lbs/day) Average Quarterly	< 0.040			< 0.060			< 0.040			< 0.060		
Acrolein (lbs/day) Daily Maximum	< 0.070			< 0.070			< 0.050			< 0.080		
Acrolein (mg/L) Average Quarterly	< 0.0050			< 0.0050			< 0.0040			< 0.0040		
Acrolein (mg/L) Daily Maximum	< 0.0050			< 0.0050			< 0.0040			< 0.0040		
Acrylonitrile (lbs/day) Annual Average				< 0.100								
Acrylonitrile (lbs/day) Daily Maximum				< 0.10								
Acrylonitrile (mg/L) Annual Average				< 0.008								
Acrylonitrile (mg/L) Daily Maximum				< 0.0078								
Anthracene (lbs/day) Annual Average				< 0.0008								
Anthracene (lbs/day) Daily Maximum				< 0.001								
Anthracene (mg/L) Annual Average				< 0.00005								
Anthracene (mg/L) Daily Maximum				< 0.00005 1								
Chlorobenzene (lbs/day) Annual Average				< 0.007								
Chlorobenzene (lbs/day) Daily Maximum				< 0.009								
Chlorobenzene (mg/L) Annual Average				< 0.005								
Chlorobenzene (mg/L) Daily Maximum				< 0.005								
1,2-Dichlorobenzene (lbs/day) Annual Average				< 0.005								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
1,2-Dichlorobenzene (lbs/day) Daily Maximum				< 0.006								
1,2-Dichlorobenzene (mg/L) Annual Average				< 0.0004								
1,2-Dichlorobenzene (mg/L) Daily Maximum				< 0.00036								
1,3-Dichlorobenzene (lbs/day) Annual Average				< 0.007								
1,3-Dichlorobenzene (lbs/day) Daily Maximum				< 0.009								
1,3-Dichlorobenzene (mg/L) Annual Average				< 0.0005								
1,3-Dichlorobenzene (mg/L) Daily Maximum				< 0.0005								
1,4-Dichlorobenzene (lbs/day) Annual Average				< 0.008								
1,4-Dichlorobenzene (lbs/day) Daily Maximum				< 0.009								
1,4-Dichlorobenzene (mg/L) Annual Average				< 0.0005								
1,4-Dichlorobenzene (mg/L) Daily Maximum				< 0.00054								
1,3-Dichloro-propylene (lbs/day) Annual Average				< 0.020								
1,3-Dichloro-propylene (lbs/day) Daily Maximum				< 0.020								
1,3-Dichloro-propylene (mg/L) Annual Average				< 0.001								
1,3-Dichloro-propylene (mg/L) Daily Maximum				< 0.0011								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
1,2,4-Trichloro-benzene (lbs/day) Annual Average				< 0.004								
1,2,4-Trichloro-benzene (lbs/day) Daily Maximum				< 0.005								
1,2,4-Trichloro-benzene (mg/L) Annual Average				< 0.0002								
1,2,4-Trichloro-benzene (mg/L) Daily Maximum				< 0.00025								
Ethylbenzene (lbs/day) Annual Average				< 0.007								
Ethylbenzene (lbs/day) Daily Maximum				< 0.009								
Ethylbenzene (mg/L) Annual Average				< 0.0005								
Ethylbenzene (mg/L) Daily Maximum				< 0.00051								
Hexachloro-benzene (lbs/day) Annual Average				< 0.0009								
Hexachloro-benzene (lbs/day) Daily Maximum				< 0.001								
Hexachloro-benzene (mg/L) Annual Average				< 0.00006								
Hexachloro-benzene (mg/L) Daily Maximum				< 0.00005 8								
Nitrobenzene (lbs/day) Annual Average				< 0.008								
Nitrobenzene (lbs/day) Daily Maximum				< 0.010								
Nitrobenzene (mg/L) Annual Average				< 0.0005								
Nitrobenzene (mg/L) Daily Maximum				< 0.00052								
Benzene (lbs/day) Annual Average				< 0.008								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Benzene (lbs/day) Daily Maximum				< 0.01								
Benzene (mg/L) Annual Average				< 0.0006								
Benzene (mg/L) Daily Maximum				< 0.0006								
Benzo(a)-Anthracene (lbs/day) Annual Average				< 0.001								
Benzo(a)-Anthracene (lbs/day) Daily Maximum				< 0.002								
Benzo(a)-Anthracene (mg/L) Annual Average				< 0.00008								
Benzo(a)-Anthracene (mg/L) Daily Maximum				< 0.00007 8								
Benzo(a)Pyrene (lbs/day) Annual Average				< 0.0009								
Benzo(a)Pyrene (lbs/day) Daily Maximum				< 0.001								
Benzo(a)Pyrene (mg/L) Annual Average				< 0.00005								
Benzo(a)Pyrene (mg/L) Daily Maximum				< 0.00005 5								
Benzo(k)Fluor- anthene (lbs/day) Annual Average				< 0.001								
Benzo(k)Fluor- anthene (lbs/day) Daily Maximum				< 0.002								
Benzo(k)Fluor- anthene (mg/L) Annual Average				< 0.00009								
Benzo(k)Fluor- anthene (mg/L) Daily Maximum				< 0.00009 2								
3,4-Benzo- fluoranthene (lbs/day) Annual Average				< 0.002								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
3,4-Benzo-fluoranthene (lbs/day) Daily Maximum				< 0.002								
3,4-Benzo-fluoranthene (mg/L) Annual Average				< 0.0001								
3,4-Benzo-fluoranthene (mg/L) Daily Maximum				< 0.0001								
Carbon Tetrachloride (lbs/day) Annual Average				< 0.010								
Carbon Tetrachloride (lbs/day) Daily Maximum				< 0.020								
Carbon Tetrachloride (mg/L) Annual Average				< 0.0009								
Carbon Tetrachloride (mg/L) Daily Maximum				< 0.00088								
Chloroethane (lbs/day) Annual Average				< 0.01								
Chloroethane (lbs/day) Daily Maximum				< 0.02								
Chloroethane (mg/L) Annual Average				< 0.0009								
Chloroethane (mg/L) Daily Maximum				< 0.0009								
1,1,1-Trichloroethane (lbs/day) Annual Average				< 0.008								
1,1,1-Trichloroethane (lbs/day) Daily Maximum				< 0.010								
1,1,1-Trichloroethane (mg/L) Annual Average				< 0.0006								
1,1,1-Trichloroethane (mg/L) Daily Maximum				< 0.0006								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
1,1,2-Trichloroethane (lbs/day) Annual Average				< 0.006								
1,1,2-Trichloroethane (lbs/day) Daily Maximum				< 0.008								
1,1,2-Trichloroethane (mg/L) Annual Average				< 0.0005								
1,1,2-Trichloroethane (mg/L) Daily Maximum				< 0.00045								
1,1-Dichloroethane (lbs/day) Annual Average				< 0.009								
1,1-Dichloroethane (lbs/day) Daily Maximum				< 0.010								
1,1-Dichloroethane (mg/L) Annual Average				< 0.0006								
1,1-Dichloroethane (mg/L) Daily Maximum				< 0.00063								
1,2-Dichloroethane (lbs/day) Annual Average				< 0.008								
1,2-Dichloroethane (lbs/day) Daily Maximum				< 0.01								
1,2-Dichloroethane (mg/L) Annual Average				< 0.0006								
1,2-Dichloroethane (mg/L) Daily Maximum				< 0.00057								
1,2-Dichloropropane (lbs/day) Annual Average				< 0.009								
1,2-Dichloropropane (lbs/day) Daily Maximum				< 0.01								
1,2-Dichloropropane (mg/L) Annual Average				< 0.0007								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
1,2-Dichloropropane (mg/L) Daily Maximum				< 0.00066								
Bis(2-Ethyl-hexyl)Phthalate (lbs/day) Annual Average				< 0.10								
Bis(2-Ethyl-hexyl)Phthalate (lbs/day) Daily Maximum				< 0.10								
Bis(2-Ethyl-hexyl)Phthalate (mg/L) Annual Average				< 0.006								
Bis(2-Ethyl-hexyl)Phthalate (mg/L) Daily Maximum				< 0.0065								
Chloroform (lbs/day) Annual Average				< 0.008								
Chloroform (lbs/day) Daily Maximum				< 0.010								
Chloroform (mg/L) Annual Average				< 0.0006								
Chloroform (mg/L) Daily Maximum				< 0.0006								
Chrysene (lbs/day) Annual Average				< 0.001								
Chrysene (lbs/day) Daily Maximum				< 0.002								
Chrysene (mg/L) Annual Average				< 0.00008								
Chrysene (mg/L) Daily Maximum				< 0.00008 4								
Diethyl Phthalate (lbs/day) Annual Average				< 0.009								
Diethyl Phthalate (lbs/day) Daily Maximum				< 0.01								
Diethyl Phthalate (mg/L) Annual Average				< 0.0006								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Diethyl Phthalate (mg/L) Daily Maximum				< 0.00059								
Dimethyl Phthalate (lbs/day) Annual Average				< 0.003								
Dimethyl Phthalate (lbs/day) Daily Maximum				< 0.004								
Dimethyl Phthalate (mg/L) Annual Average				< 0.0002								
Dimethyl Phthalate (mg/L) Daily Maximum				< 0.00021								
Di-n-Butyl Phthalate (lbs/day) Annual Average				< 0.080								
Di-n-Butyl Phthalate (lbs/day) Daily Maximum				< 0.100								
Di-n-Butyl Phthalate (mg/L) Annual Average				< 0.005								
Di-n-Butyl Phthalate (mg/L) Daily Maximum				< 0.0051								
Fluoranthene (lbs/day) Annual Average				< 0.001								
Fluoranthene (lbs/day) Daily Maximum				< 0.001								
Fluoranthene (mg/L) Annual Average				< 0.00006								
Fluoranthene (mg/L) Daily Maximum				< 0.00006 3								
Hexachloro-butadiene (lbs/day) Annual Average				< 0.001								
Hexachloro-butadiene (lbs/day) Daily Maximum				< 0.002								
Hexachloro-butadiene (mg/L) Annual Average				< 0.00007								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Hexachloro-butadiene (mg/L) Daily Maximum				< 0.00007 2								
Hexachloroethane (lbs/day) Annual Average				< 0.002								
Hexachloroethane (lbs/day) Daily Maximum				< 0.003								
Hexachloroethane (mg/L) Annual Average				< 0.0001								
Hexachloroethane (mg/L) Daily Maximum				< 0.00014								
Methyl Chloride (lbs/day) Annual Average				< 0.01								
Methyl Chloride (lbs/day) Daily Maximum				< 0.02								
Methyl Chloride (mg/L) Annual Average				< 0.0009								
Methyl Chloride (mg/L) Daily Maximum				< 0.0009								
Methylene Chloride (lbs/day) Annual Average				< 0.010								
Methylene Chloride (lbs/day) Daily Maximum				< 0.02								
Methylene Chloride (mg/L) Annual Average				< 0.0009								
Methylene Chloride (mg/L) Daily Maximum				< 0.00089								
Naphthalene (lbs/day) Annual Average				< 0.001								
Naphthalene (lbs/day) Daily Maximum				< 0.001								
Naphthalene (mg/L) Annual Average				< 0.00006								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Naphthalene (mg/L) Daily Maximum				< 0.00006 1								
Phenanthrene (lbs/day) Average Quarterly	< 0.0002			< 0.030			< 0.020			< 0.003		
Phenanthrene (lbs/day) Daily Maximum	< 0.0002			< 0.030			< 0.020			< 0.004		
Phenanthrene (mg/L) Average Quarterly	< 0.002			< 0.002			< 0.002			< 0.0002		
Phenanthrene (mg/L) Daily Maximum	< 0.0019			< 0.002			< 0.0017			< 0.0002		
Pyrene (lbs/day) Annual Average				< 0.0009								
Pyrene (lbs/day) Daily Maximum				< 0.001								
Pyrene (mg/L) Annual Average				0.00006								
Pyrene (mg/L) Daily Maximum				< 0.00005 6								
Styrene (mg/L) Average Quarterly	< 0.001			< 0.001			< 0.00047			< 0.00047		
Styrene (mg/L) Daily Maximum	< 0.001			< 0.001			< 0.00047			< 0.00047		
1,1-Dichloroethylene (lbs/day) Annual Average				< 0.008								
1,1-Dichloroethylene (lbs/day) Daily Maximum				< 0.009								
1,1-Dichloroethylene (mg/L) Annual Average				< 0.0006								
1,1-Dichloroethylene (mg/L) Daily Maximum				< 0.00055								
trans-1,2- Dichloroethylene (lbs/day) Annual Average				< 0.009								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
trans-1,2-Dichloroethylene (lbs/day) Daily Maximum				< 0.010								
trans-1,2-Dichloroethylene (mg/L) Annual Average				< 0.0007								
trans-1,2-Dichloroethylene (mg/L) Daily Maximum				< 0.00067								
Tetrachloro-ethylene (lbs/day) Annual Average				< 0.007								
Tetrachloro-ethylene (lbs/day) Daily Maximum				< 0.008								
Tetrachloro-ethylene (mg/L) Annual Average				< 0.0005								
Tetrachloro-ethylene (mg/L) Daily Maximum				< 0.00047								
Toluene (lbs/day) Annual Average				< 0.006								
Toluene (lbs/day) Daily Maximum				< 0.008								
Toluene (mg/L) Annual Average				< 0.0005								
Toluene (mg/L) Daily Maximum				< 0.00046								
Trichloroethylene (lbs/day) Annual Average				< 0.010								
Trichloroethylene (lbs/day) Daily Maximum				< 0.010								
Trichloroethylene (mg/L) Annual Average				< 0.0007								
Trichloroethylene (mg/L) Daily Maximum				< 0.00069								

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Vinyl Chloride (lbs/day) Annual Average				< 0.006								
Vinyl Chloride (lbs/day) Daily Maximum				< 0.007								
Vinyl Chloride (mg/L) Annual Average				< 0.0004								
Vinyl Chloride (mg/L) Daily Maximum				< 0.00041								

DMR Data for Outfall 020 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Daily Maximum				0.12258 9						0.16130 2		
pH (S.U.) Daily Maximum				7.41						7.21		
COD (mg/L) Daily Maximum				80						< 9.1		
TSS (mg/L) Daily Maximum				210						27.0		
Nitrate-Nitrite (mg/L) Daily Maximum				1.7						0.45		
Total Phosphorus (mg/L) Daily Maximum				0.71						< 0.04		
Total Aluminum (mg/L) Daily Maximum				8.4						0.38		
Total Chromium (mg/L) Daily Maximum				0.023						< 0.0026		
Total Copper (mg/L) Daily Maximum				0.11						< 0.0039		
Total Iron (mg/L) Daily Maximum				13						0.61		
Total Lead (mg/L) Daily Maximum				0.15						< 0.0023		
Total Zinc (mg/L) Daily Maximum				1.3						0.092		
Benzo(a)-Anthracene (ug/L) Daily Maximum				1.6						< 0.082		

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Phenanthrene (ug/L) Daily Maximum				2.4						< 0.06		

DMR Data for Outfall 021 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Daily Maximum				0.01857 4						0.02444 39		
pH (S.U.) Daily Maximum				7.37						7.50		
COD (mg/L) Daily Maximum				22						380.0		
TSS (mg/L) Daily Maximum				35						520.0		
Nitrate-Nitrite (mg/L) Daily Maximum				1.3						0.13		
Total Phosphorus (mg/L) Daily Maximum				0.074						0.51		
Total Aluminum (mg/L) Daily Maximum				0.23						6.6		
Total Chromium (mg/L) Daily Maximum				0.0014						0.014		
Total Copper (mg/L) Daily Maximum				< 0.0035						0.051		
Total Iron (mg/L) Daily Maximum				0.77						11.0		
Total Lead (mg/L) Daily Maximum				< 0.0028						0.022		
Total Zinc (mg/L) Daily Maximum				0.17						0.3		
Benzo(a)-Anthracene (ug/L) Daily Maximum				< 0.075						< 0.072		
Phenanthrene (ug/L) Daily Maximum				< 0.16						< 0.15		

DMR Data for Outfall 025 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Daily Maximum				0.03714 8						0.04887 9		

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
pH (S.U.) Daily Maximum				7.65						7.37		
COD (mg/L) Daily Maximum				< 9.1						16.0		
TSS (mg/L) Daily Maximum				14						1000		
Nitrate-Nitrite (mg/L) Daily Maximum				0.35						0.33		
Total Phosphorus (mg/L) Daily Maximum				0.05						1.7		
Total Aluminum (mg/L) Daily Maximum				0.28						44.0		
Total Chromium (mg/L) Daily Maximum				0.0024						0.053		
Total Copper (mg/L) Daily Maximum				0.0042						0.13		
Total Iron (mg/L) Daily Maximum				0.48						54.0		
Total Lead (mg/L) Daily Maximum				< 0.0028						0.11		
Total Zinc (mg/L) Daily Maximum				< 0.023						1.1		
Benzo(a)-Anthracene (ug/L) Daily Maximum				< 0.072						< 0.078		
Phenanthrene (ug/L) Daily Maximum				< 0.15						< 0.16		

DMR Data for Outfall 102 (from April 1, 2024 to March 31, 2025)

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	0.07080 8	0.09401 02	0.14301 14	0.17591 67	0.17233 37	0.17146 82	0.16963 96	0.175	0.17345 01	0.165	0.168	0.07
Flow (MGD) Daily Maximum	0.093	0.12858 72	0.18585 76	0.18592 69	0.18600 57	0.19963 85	0.18456 51	0.195	0.18480 52	0.181	0.201	0.12
pH (S.U.) Instantaneous Minimum	6.6	6.5	6.5	6.5	6.1	6.4	6.4	6.5	6.3	6.4	6.6	6.4
pH (S.U.) Instantaneous Maximum	6.9	6.8	6.8	6.9	6.9	6.9	6.8	6.8	6.8	6.9	6.9	7.0

Parameter	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (mg/L) Average Monthly	< 4.4	< 3.3	< 2.5	< 2.2	< 4.5	< 2.9	< 2.5	< 2.0	< 2.2	< 3.0	< 5.3	< 2.3
CBOD5 (mg/L) Instantaneous Maximum	8.3	6.0	2.8	2.6	9.5	6.5	3.8	< 2.0	2.7	< 3.0	12.0	3.3
TSS (mg/L) Average Monthly	2.1	1.9	2.4	1.5	< 1.3	1.8	1.5	1.7	< 1.6	2.0	< 5.4	5.0
TSS (mg/L) Instantaneous Maximum	4.5	4.1	4.8	2.7	2.4	5.6	2.7	3.0	3.7	3.0	13.0	14.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 3	< 1	< 2	< 4	5	< 3	< 2	< 2	< 3	10.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	< 1	136	< 1	11	12	14	50	8	7	18	48.0
Total Nitrogen (mg/L) Daily Maximum	2.8	7	1.7	2.6	3.9	2.5	3.3	3.7	1.9	2.8	3.1	2.6
Total Phosphorus (mg/L) Daily Maximum	0.42	0.77	0.27	0.46	0.4	0.38	0.45	0.5	0.34	0.31	0.42	0.35
UV Dosage (mWsec/cm ²) Daily Maximum	13.99	14.0103 9124	13.9846 8781	8.72092 8192	8.80960 9413	6.11214 8285	9.66957 0923	9.66957 0923	5.6823	5.65	9.05378 9139	5.07

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 19.69 (avg.); 37.41 (max.)
Latitude 40° 39' 29.75" **Longitude** -80° 21' 26.75"

Wastewater Description: Non-contact cooling water, miscellaneous non-process wastewaters, excess intake water, and storm water runoff

Wastewaters regulated at Outfall 001 are currently subject to the following effluent limits and monitoring requirements.

Table 1. Outfall 001 – Current Effluent Limits and Monitoring Requirements

Parameter	Mass (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Avg. Mo.	Daily Max	Instant. Minimum	Avg. Mo.	Daily Max	IMAX		
Flow (MGD)	Report	Report	—	—	—	—	Continuous	Recorded
pH (S.U.)	—	—	6.0	—	—	9.0	1/week	Grab
Total Residual Chlorine	—	—	—	0.5	1.0	—	1/week	Grab
Temperature (°F)	—	—	—	—	110.0	—	1/week	I-S
Total Dissolved Solids	—	—	—	—	Report	—	1/quarter	Grab
Copper, Total	—	—	—	Report	Report	—	2/month	Grab
Sulfate, Total	—	—	—	—	Report	—	1/quarter	Grab
Chloride	—	—	—	—	Report	—	1/quarter	Grab
Bromide	—	—	—	—	Report	—	1/quarter	Grab
Styrene	—	—	—	—	Report	—	2/month	Grab

The effluent limits and monitoring requirements in **Table 1** will remain in effect in the renewed permit pursuant to anti-backsliding requirements under Section 402(o) of the Clean Water Act (33 U.S.C. §1342(o)) and/or 40 CFR § 122.44(l) (incorporated by reference at 25 Pa. Code § 92a.44) unless the limits are superseded by more stringent limits developed for this renewal or are relaxed pursuant to the anti-backsliding exceptions listed in 33 U.S.C. §1342(o) or 40 CFR § 122.44(l).

001.A. Technology-Based Effluent Limitations (TBELs)

There are no Federal Effluent Limitations Guidelines that apply to discharges of non-contact cooling water (NCCW). In accordance with the recommendations given in Chapter 6, Table 6-4 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 386-0400-001], self-monitoring requirements for NCCW discharges should include the following parameters: flow, pH, and temperature.

Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b). Effluent standards for pH (6.0 minimum and 9.0 maximum) also will be imposed at Outfall 001 based on 25 Pa. Code § 95.2(1).

No TBELs are developed to control thermal pollution. However, a maximum daily temperature limit of 110°F is imposed in the absence of thermal WQBELs (refer to Section 001.B, below). The 110°F temperature limit is imposed to protect human health caused by exposure resulting from water contact pursuant to the recommendations of DEP's "Implementation Guidance for Temperature Criteria" [Doc. No. 386-2000-001], and as an implementation of general water quality criteria under 25 Pa. Code § 93.6(a), which states that "[w]ater may not contain substances attributable to point or nonpoint source discharges in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life."

BVPV adds sodium hypochlorite to the river water intake stream. Excess river water from the intake discharges through Outfall 001. Therefore, TRC TBELs are imposed pursuant to 25 Pa. Code § 92a.48(b)(2), which states:

(b) For facilities or activities using chlorination, the following apply:

(2) For facilities where the EPA has not promulgated a National ELG setting forth limits for TRC or free available chlorine for an industry or activity, and the Department has not developed a facility-specific BAT effluent limitation for TRC under the factors in paragraph (1), an effluent limitation for TRC of 0.5 milligrams per liter (30-day average) constitutes BAT.

Applicable TBELs, effluent standards, and monitoring requirements summarized in **Table 2** are the same as those imposed in the previous permit.

Table 2. TBELs, Effluent Standards, and Monitoring Requirements for Outfall 001

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)
Flow (MGD)	Report	Report
Total Residual Chlorine	0.5	1.0
Temperature (°F)	—	110
pH (s.u.)	within the range of 6.0 and 9.0	

Storm Water Associated with Industrial Activities

Outfall 001 receives storm water runoff from the 97.4-acre main manufacturing area of the Beaver Valley Site. Historically, raw chemicals and materials, manufactured products (beads), and wastes were transported, stored, packaged, loaded, and/or otherwise managed in this area. Site investigations have indicated that some drains in the Outfall 001 drainage area are directed to the wastewater treatment system and ultimately to Outfall 002 including select building roof drains, select catch basins in the D3/D4 process area and contractor lot, and exterior process trenches and sumps. Investigations in that regard are ongoing.

Consistent with 25 Pa. Code § 92a.61(h) and DEP’s policy for permitting storm water discharges associated with industrial activities, minimum standards described in DEP’s PAG-03 NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity are applied to Outfall 001’s storm water discharges. Based on the Beaver Valley Site’s SIC Code of 2821, the facility would be classified under Appendix F – “Chemicals and Allied Products” of the PAG-03 General Permit.¹ To ensure that there is consistency across the state for all chemical product facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix F of the PAG-03 are imposed at Outfall 001. The monitoring requirements of Appendix F are shown in **Table 3**. Monitoring for additional pollutants is considered if baseline monitoring requirements from Appendix F do not capture the range of analytes present in Outfall 001’s discharges.

Table 3. PAG-03 Appendix F – Minimum Monitoring Requirements

Discharge Parameter	Units	Sample Type	Minimum Measurement Frequency	Benchmark Values
Total Nitrogen †	mg/L	1 Grab	1/6 months	XXX
Total Phosphorus	mg/L	1 Grab	1/6 months	XXX
pH	S.U.	1 Grab	1/6 months	9.0
Chemical Oxygen Demand	mg/L	1 Grab	1/6 months	120
Total Suspended Solids	mg/L	1 Grab	1/6 months	100
Nitrate + Nitrite-Nitrogen	mg/L	1 Grab	1/6 months	3.0
Lead, Total	mg/L	1 Grab	1/6 months	XXX
Zinc, Total	mg/L	1 Grab	1/6 months	XXX
Iron, Total	mg/L	1 Grab	1/6 months	XXX
Aluminum, Total	mg/L	1 Grab	1/6 months	XXX

† Total Nitrogen is the sum of Total Kjeldahl-N (TKN) plus Nitrite-Nitrate as N (NO₂+NO₃-N), where TKN and NO₂+NO₃-N are measured in the same sample.

In accordance with 40 CFR § 122.44(k)(2), DEP considers the use of Best Management Practices (BMPs) to be BAT for storm water discharges associated with industrial activities unless effluent concentrations indicate that BMPs provide inadequate pollution control. **Table 4** summarizes the effluent data reported for the general chemistry pollutants listed on Module 1 of the updated NPDES permit application and additional parameters regulated in BVPV’s process wastewaters.

Table 4. Effluent Concentrations Reported for Outfall 001

Parameter	Outfall 001 Result	Parameter	Outfall 001 Result
Oil and Grease (mg/L)	<4.3	pH (S.U.)	7.88
BOD ₅ (mg/L)	<2.0	Acenaphthene	<0.068
COD (mg/L)	48	Acenaphthylene	<0.068
TSS (mg/L)	16	Acrylonitrile	<7.8
Nitrogen, Total (mg/L)	0.95	Anthracene	<0.051
Phosphorus, Total (mg/L)	<0.04	Benzene	<0.60

¹ The determination of which of the PAG-03 General Permit's appendices applies to a facility is based on a facility's SIC Code.

Table 4 (cont'd). Effluent Concentrations Reported for Outfall 001

Parameter	Outfall 001 Result	Parameter	Outfall 001 Result
Benzo(a)anthracene	<0.078	Hexachloroethane	<0.14
3,4-Benzofluoranthene	<0.10	Methyl Chloride	<0.90
Benzo(k)fluoranthene	<0.092	Methylene Chloride	<0.89
Benzo(a)pyrene	<0.055	Naphthalene	<0.061
Bis(2-ethylhexyl)phthalate	<6.5	Nitrobenzene	<0.52
Carbon tetrachloride	<0.88	2-Nitrophenol	<0.20
Chlorobenzene	<0.50	4-Nitrophenol	<0.98
Chloroethane	<0.90	Phenanthrene	<0.057
Chloroform	<0.60	Phenol	<0.51
2-Chlorophenol	<0.13	Pyrene	<0.056
Chrysene	<0.084	Tetrachloroethylene	<0.47
Di-n-butyl phthalate	<0.77	Toluene	<0.46
1,2-Dichlorobenzene	<0.36	Chromium, Total	<2.6
1,3-Dichlorobenzene	<0.50	Copper, Total	<3.9
1,4-Dichlorobenzene	<0.54	Cyanide, Total	<8.0
1,1-Dichloroethane	<0.63	Lead, Total	<2.3
1,2-Dichloroethane	<0.57	Nickel, Total	<4.4
1,1-Dichloroethylene	<0.55	Zinc, Total	<31
1,2-trans-Dichloroethylene	<0.67	1,2,4-Trichlorobenzene	<0.14
2,4-Dichlorophenol	<0.053	1,1,1-Trichloroethane	<0.60
1,2-Dichloropropane	<0.66	1,1,2-Trichloroethane	<0.45
1,3-Dichloropropylene	<1.1	Trichloroethylene	<0.69
Diethyl phthalate	<0.59	Vinyl chloride	<0.41
2,4-Dimethylphenol	<0.17	Styrene	<0.47
Dimethyl phthalate	0.26	TKN	180
4,6-Dinitro-o-cresol	<1.5	Chlordane	<0.047
2,4-Dinitrophenol	<1.6	PCB-1016	<0.057
2,4-Dinitrotoluene	<0.37	PCB-1221	<0.058
2,6-Dinitrotoluene	<0.18	PCB-1232	<0.075
Ethylbenzene	<0.51	PCB-1242	<0.077
Fluoranthene	<0.063	PCB-1248	<0.051
Fluorene	<0.072	PCB-1254	<0.040
Hexachlorobenzene	<0.058	PCB-1260	<0.046
Hexachlorobutadiene	<0.072		

All units are µg/L unless otherwise noted.

Based on the results in **Table 4**, no effluent limits are imposed at Outfall 001 and no monitoring requirements are added for parameters other than those in Appendix F of the PAG-03. General chemistry parameters are present in low concentrations, and, except for dimethyl phthalate, toxic organics regulated in BVPV's process wastewaters are not detected in Outfall 001's storm water. The concentration of dimethyl phthalate is orders of magnitude less than the most stringent water quality criterion (500 µg/L).

The benchmark monitoring requirements of Appendix F of the PAG-03 will apply to Outfall 001's storm water. DEP uses benchmark monitoring in the PAG-03 General Permit as an indicator of the effectiveness of a facility's BMPs. The benchmark values are not effluent limitations and exceedances do not constitute permit violations. However, if sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, then BVPV must submit a Corrective Action Plan within 90 days of the end of the monitoring period triggering the plan. Continued exceedances of the benchmark values will require a graduated response. Consistent with the PAG-03, the benchmark values for Outfall 001's discharges will be set at 9.0 standard units for pH, 120 mg/L for COD, and 100 mg/L for TSS. Other benchmark values in BVPV's existing permit will be maintained in the renewed permit including 6.0 S.U. minimum for pH, 0.68 mg/L for Nitrate+Nitrite Nitrogen, 2.0 mg/L for Total Phosphorus, 0.75 mg/L for Total Aluminum, 0.086 mg/L for Total Chromium, 0.09375 mg/L for Total Copper, 3.0 mg/L for Total Iron, 0.0032 mg/L for Total Lead, and 0.12 mg/L for Total Zinc. The Corrective Action Plan requirement and the benchmark values will be specified in a condition in Part C of the permit. Estimates of the storm water discharge flow rates will be required pursuant to 25 Pa. Code § 92a.61(h). Sampling for storm water parameters must be representative of Outfall 001's storm water only.

Additional BMPs

During inspections at the Beaver Valley Site and adjacent areas in late 2022 and early 2023, DEP observed the presence of plastic beads (a.k.a. “pellets” or “nurdles”) in Raccoon Creek, on the shoreline of Raccoon Creek, and at locations within BVPV’s wastewater treatment system. Further investigations by BVPV and its contractors better quantified the distribution of beads in the wastewater treatment lagoons. Beads also were observed at other locations at the facility including storm water conveyance systems. In response to Notices of Violation from DEP following DEP’s inspections, BVPV prepared and is currently implementing a Sitewide Stormwater Investigation Plan (see **Attachment A**) to continue investigating the sources of plastic beads and to control and clean up those sources. To date, corrective actions have employed, among other things, catch basin filter bags, compost filter socks, silt fencing, and additional wastewater treatment facilities targeting bead removal.

Given the presence of plastic beads at the Beaver Valley Site and the lack of sector-specific BMPs in Appendix F of the PAG-03 to control plastic beads, DEP referred to EPA’s “Industrial Stormwater Fact Sheet Series - Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries” [Doc. No. EPA-833-F-06-040] (see **Attachment B**) for a listing of relevant BMPs for the Beaver Valley Site. BMPs from EPA’s Fact Sheet and BMPs already implemented by BVPV will be included in the NPDES permit as sector- and site-specific BMPs and must be implemented and maintained to the extent practicable.

Per- and Polyfluoroalkyl Substances (PFAS)

In February 2024, DEP implemented a new monitoring initiative for PFAS. 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 in the environment. 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.² Due to their durability, toxicity, persistence, and pervasiveness, PFAS have emerged as 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.

² ATSDR, “Toxicological Profile for Perfluoroalkyls”. Patrick N. Breyse, Ph.D., CIH Director, National Center for Environmental Health and Agency for Toxic Substances and Disease Registry Centers for Disease Control and Prevention, May 2021.

As stated in the SOP, in all cases a condition is included 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 QLs for four consecutive monitoring periods for each PFAS parameter that is analyzed. BVPV reported results for PFOA, PFOS, HFPO-DA, and PFBS at Outfall 001 in the permit renewal application. The results are summarized in **Table 5**.

Table 5. Analytical Results for PFAS at Outfall 001

Parameter	Maximum Concentration (ng/L)	Average Concentration (ng/L)	No. of Non-Detect Results / No. of Analyses	Permit Quantitation Limit (ng/L)
Perfluorooctanoic acid (PFOA)	1.9	<1.5	2/3	4.0
Perfluorooctanesulfonic acid (PFOS)	0.99	0.93	0/3	3.7
Perfluorobutanesulfonic acid (PFBS)	< 2.1	<1.9	3/3	3.5
Hexafluoropropylene oxide dimer acid (HFPO-DA)	< 8.3	<7.7	3/3	6.4

Consistent with Section II.I.a of SOP No. BCW-PMT-032, the presence of PFOA and PFOS in the effluent means that quarterly monitoring will be required for all four of the PFAS parameters. 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 (*i.e.*, four consecutive quarterly results), then the monitoring may be discontinued.

Additionally, Section IV.N of DEP’s “Standard Operating Procedure (SOP) for Clean Water Program – New and Reissuance Industrial Waste and Industrial Stormwater Individual NPDES Permit Applications” [SOP No. BCW-PMT-001] requires that, when there are detections of PFOA, PFOS, PBFS, or HFPO-DA in the application screening analysis or where it is known that materials or wastes containing PFAS was or is used, stored, or disposed of at the facility, a PFAS Reduction Plan will be required by the permit to identify and minimize/eliminate sources of PFAS within one year of the permit effective date. The SOP also states that, where an applicant indicates in Module 1 that Aqueous Film Forming Foam (AFFF) containing PFAS is used at the facility, the permit will require BMPs relating to the use of AFFF including restricting its use to emergency situations and firefighting activities, eliminating AFFF-containing PFOS and PFOA to the maximum extent practicable, and implementing measures to minimize the discharge of PFAS during emergencies. BVPV indicated on Module 1 of the permit that AFFF is or was used at the facility, so BMPs relating to the use of AFFF will be included in the renewed permit.

In February 2019, EPA announced in its PFAS Action Plan that it was taking steps to evaluate whether industrial sources warranted regulation to address PFAS discharges. After studying available data regarding wastewater discharges from facilities that manufacture PFAS, EPA published an advance notice of proposed rulemaking (ANPRM) on March 17, 2021 to solicit data and information regarding manufacturers of PFAS and the presence and treatment of PFAS in discharges from facilities in the OCPSF industrial category. No proposed or final rulemaking has been promulgated to date.

Toxics Management Spreadsheet Water Quality Modeling Program and Procedures for Evaluating Reasonable Potential

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to “control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” The Department of Environmental Protection developed the DEP Toxics Management Spreadsheet (TMS) to facilitate calculations necessary to complete a reasonable potential (RP) analysis and determine WQBELs for discharges of toxic and some nonconventional pollutants.

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports, or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP’s TOXCONC.xls spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling. If warranted, ammonia-nitrogen, CBOD-5, and dissolved oxygen are analyzed separately using DEP’s WQM 7.0 model.

The TMS evaluates each pollutant by computing a wasteload allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following thresholds:

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. Use the average monthly, maximum daily, and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

In most cases, pollutants with effluent concentrations that are not detectable at the level of DEP’s Target Quantitation Limits are eliminated as candidates for WQBELs and water quality-based monitoring requirements.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Table 6. TMS Inputs for Outfall 001

Discharge Characteristics		
Parameter	Value	
Discharge Flow (MGD)	19.69	
Discharge Hardness (mg/L)	302	
Discharge pH (s.u.)	7.6	
Receiving Stream Characteristics		
Parameter	Outfall 001	End of Segment
Stream Code	32317	32317
River Mile Index	951.40	945.38
Drainage Area (mi ²)	22,961	23,000
Q ₇₋₁₀ (cfs)	946	946
Low-flow Yield (cfs/mi ²)	0.21	0.21
Elevation (ft)	681.60	665.0
Slope (ft/ft)	0.0001	0.0001
Average Width (ft)	240	240
Average Depth (ft)	15	15

Discharges from Outfall 001 are evaluated based on the maximum concentrations reported on the permit renewal application or on DMRs. The TMS model is run for Outfall 001 with the modeled discharge and receiving stream characteristics shown in **Table 6**. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, Oil and Grease, etc.) are excluded from the modeling. Modeling is performed using the most stringent of DEP’s water quality criteria in Chapter 93 and ORSANCO’s water quality criteria from the 2019 (current) revision of ORSANCO’s Pollution Control Standards. Mercury is modeled with the benefit of mixing according to Chapter 4.F.1 of ORSANCO’s standards.

Stream hardness (98 mg/L) and pH (7.33 S.U.) are based on water quality data from USGS Gage 03086000 – Ohio River at Sewickley, PA. The Q₇₋₁₀ flow of the Ohio River is the minimum regulated flow given in the 2019 ORSANCO’s Pollution Control Standards: 4,730 cfs. The nearest downstream potable water supply intake (Midland Borough Municipal Authority) is included as a downstream point in the TMS. Additionally, a partial mix factor of 0.2 is applied to the minimum regulated flow of the Ohio River (4,730 cfs × 0.20 = 946 cfs) based on DEP’s best professional judgment. DEP uses partial mix factors (PMFs) in the TMS to represent the fractional portion of the

receiving stream that mixes with a discharge. A PMF of 0.2 provides the permittee with 20% of the receiving stream’s Q₇₋₁₀ flow for mixing and dilution. The PMF is manually applied because, as a single discharge model, the TMS allocates high percentages of stream flow to individual discharges, which often results in those discharges being modeled with most or all of a stream’s assimilative capacity. This would leave little or no assimilative capacity for other dischargers to the same receiving stream.³

The width of the Ohio River entered in the TMS also is adjusted from about 1,200 feet to 240 feet (i.e., 20% of the river’s actual width downstream of BVPV) to maintain correct stream velocities. Modeling 20% of the Ohio River’s flow over the entire cross-section of the river would underrepresent the river’s velocity and result in effluent limits that are not accurate for the river’s actual velocity.

Output from the TMS model is included in **Attachment C** to this Fact Sheet. As explained previously, the TMS compares the input discharge concentrations to the calculated WQBELs using DEP’s reasonable potential thresholds to evaluate the need to impose WQBELs or monitoring requirements in the permit. The results of the modeling indicate that the water quality-based reporting requirements in **Table 7** apply to discharges from Outfall 001.

³ The 946 cfs flow rate is entered as the stream flow rather than 4,730 cfs with a PMF of 0.20 to force reduced stream flow mixing calculations. When analyzing pollutants with potable water supply criteria, the TMS assumes complete mixing at a potable water supply withdrawal regardless of whether a PMF is entered. Since BVPV’s discharge will not completely mix with the Ohio River at the Midland withdrawal, the TMS assumption must be overridden to force “complete mixing” calculations at a reduced stream flow representing the portion of the river the discharge will have mixed with. Forcing partial mixing for the potable water supply parameter in this case is a way to reserve the assimilative capacity of the Ohio River.

Table 7. Water Quality-Based Effluent Limits for Outfall 001

Parameter	Permit Limits			Reported Result (µg/L)	Target QL (µg/L)	Governing WQBEL	Governing WQBEL Basis†
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)				
Aluminum, Total	Report	Report	Report	2,100	10	5,600	AFC
Copper, Total	Report	Report	Report	30	4	109	AFC

† AFC = Acute Fish Criterion

Total Dissolved Solids (TDS), Chloride, Bromide, and Sulfate

Outfall 001 is currently subject to quarterly monitoring for TDS, chloride, bromide, and sulfate based on a monitoring initiative for those pollutants that began in 2014. DEP ended that monitoring initiative in early 2021 after approximately seven years. DEP determined that enough data were collected to evaluate the effects of point source discharges of those pollutants on waters of the Commonwealth in response to concerns from the Environmental Quality Board and U.S. EPA. Consistent with the cessation of that monitoring initiative, the TMS does not recommend WQBELs or water quality-based reporting requirements for TDS, chloride, bromide, and sulfate unless reasonable potential exists or reporting thresholds are exceeded. As the modeling results in **Attachment C** show, there is no reasonable potential for discharges of TDS, chloride, bromide, and sulfate from Outfall 001 to cause or contribute to in-stream excursions above water quality criteria, and the discharge concentrations do not rise to the thresholds at which reporting is necessary. Therefore, reporting requirements for TDS, chloride, bromide, and sulfate will be removed from Outfall 001 consistent with 40 CFR § 40 CFR 122.44(l)(2)(i)(B)(1) regarding the allowance for backsliding based on new information that justifies the application of less stringent permit requirements.

Thermal Limits

Thermal WQBELs are evaluated using a DEP program called "Thermal Discharge Limit Calculation Spreadsheet" created with Microsoft Excel for Windows. The program calculates temperature wasteload allocations (WLAs) through the application of a heat transfer equation, which takes two forms in the program depending on the source of the facility's cooling water. In Case 1, intake water to a facility is from the receiving stream upstream of the discharge location. In Case 2, intake water is from a source other than the receiving stream (e.g., municipal water supply). The determination of which case applies to a given discharge is made based on the input data which include the receiving stream flow rate (Q₇₋₁₀ or other as appropriate), the stream intake flow rate, external source intake flow rates, consumptive flow rates, and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures. Outfall 001 is modeled as a Case 1 scenario.

DEP's "Implementation Guidance for Temperature Criteria" [Doc. No. 386-2000-001] directs permit writers to assume instantaneous complete mixing of the discharge with the receiving stream when calculating thermal effluent limits unless adverse factors exist. One such factor listed in the guidance is that the "discharge is to a receiving water that is very wide, resulting in restricted dispersion of the plume, and horizontal stratification of the plume." The Ohio River is wide, which affects plume dispersion for a discharge at the shoreline. Therefore, thermal limits are modeled using the same partial mix factor that was used to evaluate toxic pollutants in the TMS: 0.2.

The results of the thermal discharge analysis using the Thermal Discharge Limit Calculation Spreadsheet (see **Attachment D**) indicate that WQBELs for temperature are not required. Therefore, a maximum daily temperature limit of 110°F is imposed pursuant to DEP's temperature guidance and Section 3.3.F of the 2019 ORSANCO Pollution Control Standards. BVPV is currently subject to the 110°F temperature limit at Outfall 001 and has not experienced any excursions above that limit. BVPV's average discharge temperature at Outfall 001 from August 2019 through March 2025 is 69.8°F with a maximum reported temperature of 94.8°F in June and July 2022. Therefore, ongoing compliance with the limit is expected.

Total Residual Chlorine (TRC)

To determine if WQBELs are required for discharges containing 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 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 TRC_CALC program include flow rates and chlorine demands for the receiving stream and the discharge (default chlorine demands of 0.3 and 0.0, respectively), 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 waste load allocations 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 those average monthly TRC limits is imposed in the permit.

The stream flow and discharge flow entered in the TRC_CALC spreadsheet are 4,730 cfs and 19.69 MGD, respectively. A PMF of 0.0686 is input for the AFC criterion based on the TMS analysis of Outfall 001 and a PMF of 0.2 is input for the CFC criterion.⁴ The results of the analysis, included in **Attachment E**, indicate that no WQBELs are required for TRC.

Ohio River Use Impairments

The Ohio River has two use impairments: 1) recreational use impairment caused by pathogens (listed in 2004); and 2) fish consumption use impairment caused by PCBs, chlordane, and dioxins (listed in 1996). There is a final TMDL for PCBs and chlordane dated April 9, 2001 that assigns WLAs of 0.0 lbs/day to point source dischargers. There is no final TMDL for the recreational use impairment.

BVPV's discharges do not contain PCBs, chlordane, or dioxins, so BVPV will not contribute to the Ohio River's fish consumption use impairment. However, to ensure the permit reflects the requirements of the Ohio River TMDL with its 'zero' wasteload allocations for PCBs and chlordane, the following narrative limitation will be included as a condition in Part C of the permit.

There shall be no point source discharges of Polychlorinated Biphenyls (PCBs) or Chlordane to the Ohio River.

The condition does not impose monitoring obligations on BVPV. However, it does allow DEP or BVPV to analyze effluent samples for PCBs and chlordane at DEP's discretion to determine whether BVPV complies with the TMDL. The condition also allows DEP to require BVPV to implement corrective actions to comply with the permit condition and, by extension, the TMDL's wasteload allocations if PCBs and chlordane are detected in point source discharges from the Beaver Valley Site.

Fecal coliform bacteria are present at Outfall 001 with an average concentration of 467 mg/L. BVPV does not perform any activities expected to contribute to the presence of fecal coliform bacteria in Outfall 001's discharges (e.g., no sanitary wastewaters contribute to Outfall 001). Potential sources of fecal coliform bacteria are excess intake water from the Ohio River (with fecal coliform bacteria in the effluent originating from fecal coliform bacteria in the Ohio River) and wildlife droppings in the Outfall 001 drainage area that are mobilized by storm water runoff. Generally, the concentration is not unusual for storm water runoff so no requirements are imposed relating to the recreational use impairment.

Styrene Monitoring

Neither EPA nor DEP have promulgated water quality criteria for styrene. However, styrene is present in discharges from Outfall 001 and the monthly monitoring requirement will be maintained pursuant to 25 Pa. Code § 92a.61(b).

001.C. Effluent Limitations and Monitoring Requirements for Outfall 001

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet.

Table 8. Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
pH (s.u.)	—	—	6.0 (IMIN)	—	9.0	25 Pa. Code § 95.2(1)
Aluminum, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(b)
Copper, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(b)

⁴ The acute and chronic partial mix factors are adjusted for the full flow of the Ohio River. Recall that a stream flow of 946 cfs was used for the TMS analysis, which is 20% of the Q₇₋₁₀ flow of the Ohio River. The acute and chronic partial mix factors calculated by the TMS for the 946 cfs flow are 0.343 and 1.0, respectively. Therefore, for the full flow of the river, the acute and chronic partial mix factors are: 0.343 × 0.2 = 0.0686 and 1.0 × 0.2 = 0.2.

Table 8 (cont'd). Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Styrene, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(b)
Temperature (°F)	—	—	—	110	—	25 Pa. Code § 92a.61(b)
Total Residual Chlorine	—	—	0.5	1.0	—	25 Pa. Code § 92a.48(b)(2)
Total Nitrogen	—	—	—	Report	—	25 Pa. Code § 92a.61(b); PAG-03, Appendix F
Total Phosphorus	—	—	—	Report	—	
Chemical Oxygen Demand	—	—	—	Report	—	
Total Suspended Solids	—	—	—	Report	—	
Nitrate + Nitrite-Nitrogen	—	—	—	Report	—	
Iron, Total	—	—	—	Report	—	
Lead, Total	—	—	—	Report	—	
Zinc, Total	—	—	—	Report	—	
Perfluorooctanoic acid (PFOA) (ng/L)	—	—	—	Report	—	
Perfluorooctanesulfonic acid (PFOS) (ng/L)	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Perfluorobutanesulfonic acid (PFBS) (ng/L)	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Hexafluoropropylene oxide dimer acid (HFPO-DA) (ng/L)	—	—	—	Report	—	25 Pa. Code § 92a.61(b)

Monitoring frequencies and sample types are imposed based on those given in the existing permit and on Chapter 6, Table 6-4 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits". Flow must be recorded continuously. Weekly grab sampling will be required for pH. Temperature must be monitored 1/week using immersion stabilization sampling. Aluminum, copper, and styrene will require grab sampling 2/month. TRC will require grab sampling 1/week. Total Nitrogen, Total Phosphorus, COD, TSS, Nitrate + Nitrite Nitrogen, Iron, Lead, and Zinc will require grab sampling 1/6 months of representative storm water samples such as those collected to complete Module 1 of the permit application. PFAS parameters will require grab sampling 1/quarter.

Development of Effluent Limitations

IMP No.	102	Design Flow (MGD)	0.066 (avg.); 0.10 (design)
Latitude	40° 39' 35.80"	Longitude	-80° 21' 13.50"
Wastewater Description: Treated sanitary wastewaters			

Internal Waste Streams

Effluent limits are imposed at IMP 102 rather than another monitoring location because 40 CFR § 125.3(f) prohibits compliance with technology-based treatment requirements using “non-treatment” techniques such as flow augmentation (i.e., dilution). Since the wastewaters monitored at IMP 102 combine with other wastewaters before the next downstream monitoring location (Outfall 002), IMP 102 is the only point at which compliance with applicable effluent limits can be determined without the interference of other wastewaters. This rationale is consistent with 40 CFR § 122.45(h)⁵, which allows for the imposition of effluent limitations on internal waste streams in these circumstances.

Current Effluent Limits

Wastewaters regulated at IMP 102 are currently subject to the following effluent limits and monitoring requirements.

Table 9. Current Effluent Limits and Monitoring Requirements at IMP 102

Parameter	Mass (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Avg. Mo.	Daily Max	Instant. Minimum	Avg. Mo.	Daily Max	IMAX		
Flow (MGD)	Report	Report	—	—	—	—	Continuous	Recorded
pH (S.U.)	—	—	6.0	—	—	9.0	1/day	Grab
Total Residual Chlorine	—	—	—	0.5	—	1.6	1/day †	Grab
CBOD5	—	—	—	25	—	50	1/week	8-Hr Comp.
Total Suspended Solids	—	—	—	30	—	60	1/week	8-Hr Comp.
Fecal Coliform (No./100mL) Nov 1 – Apr 30	—	—	—	2,000 (Geo. Mean)	—	10,000	1/week	Grab
Fecal Coliform (No./100mL) May 1 – Oct 31	—	—	—	200 (Geo. Mean)	—	400	1/week	Grab
Total Nitrogen	—	—	—	—	Report	—	1/month	Grab
Total Phosphorus	—	—	—	—	Report	—	1/month	Grab
Ultraviolet light dosage (mWsec/cm ²)	—	—	—	—	Report	—	1/day	Recorded

† Sampling and analysis for TRC is required when chlorine is used for disinfection instead of ultraviolet light.

The effluent limits and monitoring requirements in **Table 9** will remain in effect in the renewed permit pursuant to anti-backsliding requirements under Section 402(o) of the Clean Water Act (33 U.S.C. §1342(o)) and/or 40 CFR § 122.44(l) (incorporated by reference at 25 Pa. Code § 92a.44) unless the limits are superseded by more stringent limits developed for this renewal or are relaxed pursuant to the anti-backsliding exceptions listed in 33 U.S.C. §1342(o) or 40 CFR § 122.44(l).

102.A. Technology-Based Effluent Limitations (TBELs)

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that apply to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

⁵ 40 CFR § 122.45(h)(1): “When permit effluent limitations or standards imposed at the point of discharge are impractical or infeasible, effluent limitations or standards for discharges of pollutants may be imposed on internal waste streams before mixing with other waste streams or cooling water streams.”

Table 10. 25 Pa. Code § 92.47 TBELs for Sanitary Wastewater

Parameter	Monthly Average (mg/L)	Instant Maximum (mg/L)	Basis
CBOD ₅	25.0	50.0 [†]	25 Pa. Code § 92a.47(a)(1)
Total Suspended Solids	30.0	60.0 [†]	25 Pa. Code § 92a.47(a)(1)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	1,000	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine ^{††}	0.5 (or facility-specific)	1.6 (or facility-specific)	25 Pa. Code § 92a.47(a)(8)
pH (s.u.)	not less than 6.0 and not greater than 9.0		25 Pa. Code § 92a.47(a)(7)

[†] Value is calculated as two times the monthly average in accordance with Chapter 2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits".

^{††} When UV light is used for disinfection, routine monitoring is required for UV transmittance, dosage, or intensity at the same frequency as TRC monitoring.

The CBOD₅, TSS, and pH limits are the same as those specified in EPA's secondary treatment regulation (40 CFR § 133.102). BVPV uses two Imhoff tanks for sewage treatment with alternating one-unit operation over an approximate six-month period. Further treatment of sewage is accomplished in the process wastewater treatment plant.

Other Effluent Limits and Monitoring Requirements

In accordance with Section I of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033] and under the authority of 25 Pa. Code § 92a.61(b), annual reporting for Total Nitrogen and Total Phosphorus is required for sewage discharges with design flows greater than 2,000 gpd to help evaluate treatment effectiveness and to monitor nutrient loading to the receiving watershed; this reporting was required by the previous permit and will be reimposed in the renewed permit. Pursuant to that same SOP, a minimum dissolved oxygen limit of 4.0 mg/L is imposed on sewage discharges based on DEP's best professional judgement to ensure adequate operation and maintenance, and a quarterly reporting requirement for *E. coli* is added to IMP 102 under the authority of § 92a.61(b). Flow must be reported pursuant to 25 Pa. Code § 92a.61(d)(1).

Per- and Polyfluoroalkyl Substances (PFAS)

As discussed in Section 001.A of this Fact Sheet, DEP implemented a new monitoring initiative for PFAS in February 2024. 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.

BVPV reported results for PFOA, PFOS, PFBS, and HFPO-DA at IMP 102 in the permit renewal application. The results are summarized in **Table 11**.

Table 11. Analytical Results for PFAS at IMP 102

Parameter	Maximum Concentration (ng/L)	Average Concentration (ng/L)	No. of Non-Detect Results / No. of Analyses	Permit Quantitation Limit (ng/L)
Perfluorooctanoic acid (PFOA)	1.3	1.1	0/3	4.0
Perfluorooctanesulfonic acid (PFOS)	2.0	1.8	0/3	3.7
Perfluorobutanesulfonic acid (PFBS)	< 2.0	< 2.0	3/3	3.5
Hexafluoropropylene oxide dimer acid (HFPO-DA)	< 8.0	< 7.7	3/3	6.4

Consistent with Section II.I.a of SOP No. BCW-PMT-032, the presence of PFOA and PFOS in the effluent means that quarterly monitoring will be required for all four of the PFAS parameters. 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 (*i.e.*, four consecutive quarterly results), then the monitoring may be discontinued.

102.B. Water Quality-Based Effluent Limitations (WQBELs)

Refer to Section 002.B. of this Fact Sheet for an evaluation of WQBELs for the combined discharge of treated sanitary wastewaters and treated industrial process wastewaters through Outfall 002.

102.C. Effluent Limitations and Monitoring Requirements for Internal Monitoring Point 102

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania’s regulations at 25 Pa. Code § 92a.44), effluent limits are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet.

Table 12. Effluent Limits and Monitoring Requirements for Internal Monitoring Point 102

Parameter	Mass (pounds)		Concentration (mg/L)		Basis
	Average Monthly	Daily Maximum	Average Monthly	Instant Maximum	
Flow (MGD)	Report	Report	—	—	25 Pa. Code § 92a.61(d)(1)
pH (s.u.)	—	—	6.0 (Inst. Min)	9.0	25 Pa. Code § 92a.47(a)(7)
Dissolved Oxygen	—	—	4.0	—	CWA § 402(a)(1); 40 CFR § 125.3
Total Residual Chlorine	—	—	0.5	1.6	25 Pa. Code § 92a.47(a)(8)
CBOD ₅	—	—	25.0	50.0	25 Pa. Code § 92a.47(a)(1)
Total Suspended Solids	—	—	30.0	60.0	25 Pa. Code § 92a.47(a)(1)
Fecal Coliform (No./100mL) May 1 – October 31	—	—	200 (Geo. Mean)	400	25 Pa. Code § 92a.47(a)(4) & 40 CFR § 122.44(l)
Fecal Coliform (No./100mL) November 1 – April 30	—	—	2,000 (Geo. Mean)	10,000	25 Pa. Code § 92a.47(a)(5)
<i>E. coli</i> (No./100mL)	—	—	—	Report	25 Pa. Code § 92.61(b)
Total Nitrogen	—	—	—	Report	25 Pa. Code § 92.61(b)
Total Phosphorus	—	—	—	Report	25 Pa. Code § 92.61(b)
Ultraviolet light dosage (mWsec/cm ²)	—	—	—	Report	25 Pa. Code § 92.61(b)
Perfluorooctanoic acid (PFOA) (ng/L)	—	—	—	Report	25 Pa. Code § 92a.61(b)
Perfluorooctanesulfonic acid (PFOS) (ng/L)	—	—	—	Report	25 Pa. Code § 92a.61(b)
Perfluorobutanesulfonic acid (PFBS) (ng/L)	—	—	—	Report	25 Pa. Code § 92a.61(b)
Hexafluoropropylene oxide dimer acid (HFPO-DA) (ng/L)	—	—	—	Report	25 Pa. Code § 92a.61(b)

Monitoring frequencies and sample types are based on those in the existing permit and those given by Table 6-3 in DEP’s “Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits”. CBOD₅ and TSS will require 1/week sampling using 8-hour composites. Fecal coliform must be sampled 1/week using grab sampling. TRC and pH must be sampled 1/day using grab samples (TRC only when chlorine is used for disinfection instead of UV light). UV light dosage must be recorded 1/day. Total Nitrogen and Total Phosphorus must be sampled 1/month using grab samples. *E. coli* must be sampled 1/quarter using grab sampling. Grab samples should be representative of the effluent and are to be taken at a time when the normal daily maximum flow would reach the sampling point. Flow must be measured daily. PFAS parameters will require grab sampling 1/quarter.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 1.36
Latitude 40° 39' 34.65" **Longitude** -80° 21' 0.34"

Treated wastewaters from maintenance activities, facility idling activities, sewer line jetting; condensate; boiler house blowdown; precipitator blowdown; filter plant cooling tower blowdown and gravity filter blowdown; filter backwash water from the Potable Water Plant; Belt Filter Press wash water; D2, D3, and D4 cooling tower blowdown; storm water; and treated sanitary wastewaters monitored at IMP 102

Wastewater Description:

By email dated March 13, 2025, BVPV notified DEP of BVPV's intention to idle all production at the Beaver Valley Site by March 18, 2025. By letter dated May 6, 2025, BVPV notified DEP that, among other things, all production at the Beaver Valley Site ceased as of March 17, 2025. The March 13th and May 6th notifications note that some wastewaters will continue to flow to the treatment system during idling activities including water generated from the filter plant/potable water system, water from maintenance activities (rinsing and steaming of process equipment, lines, emptied tanks, trenches, and sumps), and storm water. BVPV subsequently notified DEP on May 15, 2025 that all manufacturing operations at the facility and the production and discharge of industrial process wastewater through Outfall 002 would cease by June 30, 2025. BVPV nevertheless requested to maintain authorization to discharge process wastewaters.

Wastewaters regulated at Outfall 002 are currently subject to the following effluent limits and monitoring requirements.

Table 13. Current Effluent Limits and Monitoring Requirements at Outfall 002

Parameter	Mass (pounds/day)		Concentration (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Average Annual	Daily Max	Average Monthly	Daily Max	IMAX		
Flow (MGD)	Report Avg. Mo.	Report	—	—	—	1/day	Measured
pH (S.U.)	—	—	6.0 (IMIN)	—	9.0	1/week	Grab
Dissolved Oxygen	—	—	5.0 (IMIN)	—	—	2/month	Grab
Total Residual Chlorine	—	—	0.44	1.03	—	1/week	Grab
BOD-5	315.0 Avg. Mo.	835.0	24.0	64.0	—	1/week	24-Hr Comp.
Total Suspended Solids	520.0 Avg. Mo.	1,685.0	40.0	130.0	—	1/week	24-Hr Comp.
Oil and Grease	—	—	15.0	30.0	—	2/quarter	Grab
Total Chromium	14.2	35.6	1.11	2.77	—	2/year	24-Hr Comp.
Total Copper	1.07 Avg. Mo.	2.14	0.083	0.166	—	1/week	24-Hr Comp.
Total Cyanide	5.40	15.4	0.420	1.20	—	2/year	24-Hr Comp.
Total Lead	4.12 Avg. Mo.	8.88	0.320	0.690	—	1/week	24-Hr Comp.
Total Nickel	21.7 Avg. Mo.	51.2	1.69	3.98	—	1/week	24-Hr Comp.
Total Zinc	6.18 Avg. Mo.	12.4	0.480	0.960	—	1/week	24-Hr Comp.
Styrene	—	—	Report Avg. Qrtly	Report	—	2/quarter	Grab
Acenaphthene	0.283	0.759	0.022	0.059	—	2/year	24-Hr Comp.
Acenaphthylene	0.283	0.759	0.022	0.059	—	2/year	24-Hr Comp.
Acrolein	0.078 Avg. Qrtly	0.121	0.0060 Avg. Qrtly	0.0094	—	2/quarter	4 Grabs/24 Hrs
Acrylonitrile	0.816	1.27	0.063	0.098	—	2/year	4 Grabs/24 Hrs
Anthracene	0.283	0.759	0.022	0.059	—	2/year	24-Hr Comp.
Benzene	0.476	1.75	0.037	0.136	—	2/year	4 Grabs/24 Hrs
Benzo(a)anthracene	0.013	0.020	0.0010	0.0016	—	2/year	24-Hr Comp.
3,4-Benzofluoranthene	0.060	0.094	0.0047	0.0073	—	2/year	24-Hr Comp.
Benzo(k)fluoranthene	0.060	0.094	0.0047	0.0073	—	2/year	24-Hr Comp.
Benzo(a)pyrene	0.060	0.094	0.0047	0.0073	—	2/year	24-Hr Comp.

Table 13 (cont'd). Current Effluent Limits and Monitoring Requirements at Outfall 002

Parameter	Mass (pounds/day)		Concentration (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Average Annual	Daily Max	Average Monthly	Daily Max	IMAX		
Bis(2-ethylhexyl) phthalate	1.32	3.59	0.103	0.279	—	2/year	24-Hr Comp.
Carbon Tetrachloride	0.232	0.489	0.018	0.038	—	2/year	4 Grabs/24 Hrs
Chlorobenzene	0.193	0.360	0.015	0.028	—	2/year	4 Grabs/24 Hrs
Chloroethane	1.33	3.45	0.104	0.268	—	2/year	4 Grabs/24 Hrs
Chloroform	0.270	0.592	0.021	0.046	—	2/year	4 Grabs/24 Hrs
2-Chlorophenol	0.399	1.26	0.031	0.098	—	2/year	24-Hr Comp.
Chrysene	0.060	0.094	0.0047	0.0073	—	2/year	24-Hr Comp.
Di-n-butyl phthalate	0.347	0.733	0.027	0.057	—	2/year	24-Hr Comp.
1,2-Dichlorobenzene	0.991	2.09	0.077	0.163	—	2/year	4 Grabs/24 Hrs
1,3-Dichlorobenzene	0.399	0.566	0.031	0.044	—	2/year	4 Grabs/24 Hrs
1,4-Dichlorobenzene	0.193	0.360	0.015	0.028	—	2/year	4 Grabs/24 Hrs
1,1-Dichloroethane	0.283	0.759	0.022	0.059	—	2/year	4 Grabs/24 Hrs
1,2-Dichloroethane	0.875	2.71	0.068	0.211	—	2/year	4 Grabs/24 Hrs
1,1-Dichloroethylene	0.206	0.321	0.016	0.025	—	2/year	4 Grabs/24 Hrs
1,2-trans-Dichloroethylene	0.270	0.695	0.021	0.054	—	2/year	4 Grabs/24 Hrs
2,4-Dichlorophenol	0.502	1.44	0.039	0.112	—	2/year	24-Hr Comp.
1,2-Dichloropropane	1.97	2.96	0.153	0.230	—	2/year	4 Grabs/24 Hrs
1,3-Dichloropropylene	0.373	0.566	0.029	0.044	—	2/year	4 Grabs/24 Hrs
Diethyl phthalate	1.04	2.61	0.081	0.203	—	2/year	24-Hr Comp.
2,4-Dimethylphenol	0.231	0.463	0.018	0.036	—	2/year	24-Hr Comp.
Dimethyl phthalate	0.244	0.605	0.019	0.047	—	2/year	24-Hr Comp.
4,6-Dinitro-o-cresol	1.00	3.56	0.078	0.277	—	2/year	24-Hr Comp.
2,4-Dinitrophenol	0.914	1.58	0.071	0.123	—	2/year	24-Hr Comp.
2,4-Dinitrotoluene	1.46	3.66	0.113	0.285	—	2/year	24-Hr Comp.
2,6-Dinitrotoluene	3.28	8.25	0.255	0.641	—	2/year	24-Hr Comp.
Ethylbenzene	0.412	1.39	0.032	0.108	—	2/year	4 Grabs/24 Hrs
Fluoranthene	0.321	0.875	0.025	0.068	—	2/year	24-Hr Comp.
Fluorene	0.283	0.759	0.022	0.059	—	2/year	24-Hr Comp.
Hexachlorobenzene	0.004	0.006	0.0003	0.0005	—	2/year	4 Grabs/24 Hrs
Hexachlorobutadiene	0.257	0.630	0.020	0.049	—	2/year	24-Hr Comp.
Hexachloroethane	0.270	0.695	0.021	0.054	—	2/year	24-Hr Comp.
Methyl Chloride	1.11	2.44	0.086	0.190	—	2/year	4 Grabs/24 Hrs
Methylene Chloride	0.515	1.14	0.040	0.089	—	2/year	4 Grabs/24 Hrs
Naphthalene	0.283	0.759	0.022	0.059	—	2/year	24-Hr Comp.
Nitrobenzene	0.347	0.875	0.027	0.068	—	2/year	4 Grabs/24 Hrs
2-Nitrophenol	0.527	0.888	0.041	0.069	—	2/year	24-Hr Comp.
4-Nitrophenol	0.927	1.59	0.072	0.124	—	2/year	24-Hr Comp.
Phenanthrene	0.129 Avg. Qrtly	0.202	0.010 Avg. Qrtly	0.015	—	2/quarter	24-Hr Comp.
Phenol	0.193	0.334	0.015	0.026	—	2/year	24-Hr Comp.
Pyrene	0.321	0.862	0.025	0.067	—	2/year	24-Hr Comp.
Tetrachloroethylene	0.283	0.721	0.022	0.056	—	2/year	4 Grabs/24 Hrs
Toluene	0.334	1.03	0.026	0.080	—	2/year	4 Grabs/24 Hrs
1,2,4-Trichlorobenzene	0.875	1.80	0.068	0.140	—	2/year	4 Grabs/24 Hrs
1,1,1-Trichloroethane	0.270	0.695	0.021	0.054	—	2/year	4 Grabs/24 Hrs
1,1,2-Trichloroethane	0.270	0.695	0.021	0.054	—	2/year	4 Grabs/24 Hrs
Trichloroethylene	0.270	0.695	0.021	0.054	—	2/year	4 Grabs/24 Hrs
Vinyl Chloride	0.400	0.624	0.031	0.048	—	2/year	4 Grabs/24 Hrs

The effluent limits and monitoring requirements in **Table 13** will remain in effect in the renewed permit pursuant to anti-backsliding requirements under Section 402(o) of the Clean Water Act (33 U.S.C. §1342(o)) and/or 40 CFR § 122.44(l) (incorporated by reference at 25 Pa. Code § 92a.44) unless the limits are superseded by more stringent limits developed for this renewal or are relaxed pursuant to the anti-backsliding exceptions listed in 33 U.S.C. §1342(o) or 40 CFR § 122.44(l).

Treatment Process

BVPV's NPDES permit renewal application included a description of the wastewater treatment process as follows:

BVPV's wastewater treatment system treats process wastewater from the D2, D3, and D4 plants, wastewater following treatment by the Imhoff sanitary treatment system, miscellaneous process and non-process flow, wastewaters generated as a result of approved maintenance activities, and select stormwater discharges. Contributions from these sources may include process chemicals and solids including residual plastics or beads. The treatment system includes clarification, sedimentation, and aeration.

Wastewater is collected in two main sumps throughout the production area of the site (D2 and D3/D4). The sumps are outfitted with screens for initial solids removal. Foam at the D2 sump is controlled with addition of antifoam and water sprays. The water is treated with lime before discharging to a Mix Pit where flocculant and coagulant are added to aid in removal of solids. Following commencement of idling activities at the site, the acid feed addition was relocated upstream of the Mix Pit to maintain the low pH of the wastewater that triggers the lime addition. The wastewater is then sent to the Clarifier for solids removal via settling. Clarified water flows to the North Settling Basin (Basin No. 2) for additional sedimentation. Sludge from the Clarifier is sent to the Thickener and subsequently dewatered via a Belt Filter Press. Some sludge from the Thickener is sent to the Mix Pit for reseeded. A portion of the overflow from the Thickener can be transferred to a holding tank and then pumped back to the Mix Pit. From the North Settling Basin, wastewater commingles with UV-treated water from the Imhoff system. Carbon dioxide is added for additional pH adjustment and the wastewater flows to the site's Aeration and Quiescent Lagoons for further settling of solids. The aeration lagoon also provides reduction in biochemical oxygen demand. Turbidity curtains are installed within the lagoons as a measure to mitigate migration of solids from the lagoons. Treated wastewater discharges from the Quiescent Lagoon. Currently a disk filter is being used on a trial basis to treat water from the Quiescent Lagoon prior to discharge to Aeration Stairs. An additional or alternative end of pipe treatment may be utilized if the disk filter doesn't prove to be appropriate. The Aeration Stairs increase dissolved oxygen prior to discharge via Outfall 002 to Raccoon Creek.

Although biological treatment is not explicitly identified, Water Quality Management (WQM) permit documents for the treatment system from 1972 identify anhydrous ammonia addition and residual phosphate as nutrients for the lagoons and biosolids settling with facultative digestion as a treatment process in the quiescent lagoon. WQM permit documents do not clarify the design parameters for the aeration lagoon; however, the lagoon would facilitate aerobic digestion of organic wastes. The previous NPDES permit renewal application and the current NPDES permit renewal application also state that hydrogen peroxide is added to the aeration and quiescent lagoons to "improve biodegradation." Based on that information, DEP previously concluded (and maintains) that BVPV operates a biological treatment system comprised, in part, of facultative waste stabilization ponds.⁶ Volatile organics also are likely to volatilize from the aeration lagoon but permit and application documents do not identify volatilization as a design treatment process.

By letter dated May 6, 2025, consistent with the idling of production operations, BVPV notified DEP of BVPV's plan to bypass the Clarifier so that water from the Mix Pit flows directly to the North Settling Basin. This will be done because the clarification treatment process is no longer needed based on the types of wastewaters generated during idling.

002.A. Technology-Based Effluent Limitations (TBELs)

Historically, based on the applicability criteria in 40 CFR §§ 414.11(a) and 414.40, wastewaters from BVPV's production of expandable polystyrene ("EPS") and related products under SIC Code 2821 were subject to national technology-based performance standards under 40 CFR Part 414 – Organic Chemicals, Plastics, and Synthetic Fibers ("OCPSF") Point Source Category Federal Effluent Limitations Guidelines, Subpart D – Thermoplastic Resins ("ELGs"). Those standards impose mass limits based on a facility's wastewater flow rate and allowable discharge concentrations specified in the ELGs with additional requirements applying to facilities with OCPSF production equal to or exceeding five (5) million pounds per year. BVPV's average annual production over the past five years was 323,807,103 pounds. On the permit renewal application, BVPV reported its anticipated average annual production over the next five years will be "<323,807,103 lbs". However, with all OCPSF manufacturing at the site ceasing, 40 CFR Part 414 no longer applies to Outfall 002 according to

⁶ Whether BVPV uses end-of-pipe biological treatment is pertinent to the category of effluent limits that apply to the discharge under 40 CFR Part 414.

the ELGs' applicability criteria.⁷ Nevertheless, consistent with BVPV's request to maintain authorization to discharge process wastewaters and the potential for residual production-related wastes in the treatment lagoons to be mobilized by the remaining non-production-related wastewater inputs to the treatment system, the existing concentration-based BPT and BAT effluent limitations from 40 CFR §§ 414.41, 414.43(b), and 414.91 will be maintained in the renewed permit based on DEP's best professional judgement under the authority of 25 Pa. Code § 92a.48(a)(3) and 40 CFR § 125.3 regarding the establishment of case-by-case TBELs. Mass limits will be imposed based on the Outfall 002 flow rate reported on the permit application after it is determined whether more stringent WQBELs are necessary.

Table 14. BPT Effluent Limitations (40 CFR § 414.41)

Parameter	BPT Effluent Limitations (mg/L)	
	Maximum for any one day	Maximum for monthly average
BOD-5	64	24
Total Suspended Solids	130	40
pH	Within the range of 6.0 to 9.0 at all times.	

Table 15. BAT Effluent Limitations (40 CFR § 414.43(b) & 414.91)

Parameter	Effluent limitations BAT and NSPS (µg/L)	
	Maximum for any one day	Maximum for any monthly average
Acenaphthene	59	22
Acenaphthylene	59	22
Acrylonitrile	242	96
Anthracene	59	22
Benzene	136	37
Benzo(a)anthracene	59	22
3,4-Benzofluoranthene	61	23
Benzo(k)fluoranthene	59	22
Benzo(a)pyrene	61	23
Bis(2-ethylhexyl) phthalate	279	103
Carbon Tetrachloride	38	18
Chlorobenzene	28	15
Chloroethane	268	104
Chloroform	46	21
2-Chlorophenol	98	31
Chrysene	59	22
Di-n-butyl phthalate	57	27
1,2-Dichlorobenzene	163	77
1,3-Dichlorobenzene	44	31
1,4-Dichlorobenzene	28	15
1,1-Dichloroethane	59	22
1,2-Dichloroethane	211	68
1,1-Dichloroethylene	25	16
1,2-trans-Dichloroethylene	54	21
2,4-Dichlorophenol	112	39
1,2-Dichloropropane	230	153
1,3-Dichloropropylene	44	29
Diethyl phthalate	203	81
2,4-Dimethylphenol	36	18
Dimethyl phthalate	47	19

⁷ 40 CFR 414.11(a): "The provisions of this part are applicable to process wastewater discharges from all establishments or portions of establishments that manufacture the organic chemicals, plastics, and synthetic fibers (OCPSF) products or product groups covered by subparts B through H of this regulation and are included within the following U.S. Department of Commerce Bureau of the Census Standard Industrial Classification (SIC) major groups:

(1) SIC 2821—Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers ..."

Table 15 (cont'd). BAT Effluent Limitations (40 CFR § 414.43(b) & 414.91)

Parameter	Effluent limitations BAT and NSPS (µg/L)	
	Maximum for any one day	Maximum for any monthly average
4,6-Dinitro-o-cresol	277	78
2,4-Dinitrophenol	123	71
2,4-Dinitrotoluene	285	113
2,6-Dinitrotoluene	641	255
Ethylbenzene	108	32
Fluoranthene	68	25
Fluorene	59	22
Hexachlorobenzene	28	15
Hexachlorobutadiene	49	20
Hexachloroethane	54	21
Methyl Chloride	190	86
Methylene Chloride	89	40
Naphthalene	59	22
Nitrobenzene	68	27
2-Nitrophenol	69	41
4-Nitrophenol	124	72
Phenanthrene	59	22
Phenol	26	15
Pyrene	67	25
Tetrachloroethylene	56	22
Toluene	80	26
Total Chromium	2,770	1,110
Total Copper	3,380	1,450
Total Cyanide	1,200	420
Total Lead	690	320
Total Nickel	3,980	1,690
Total Zinc	2,610	1,050
1,2,4-Trichlorobenzene	140	68
1,1,1-Trichloroethane	54	21
1,1,2-Trichloroethane	54	21
Trichloroethylene	54	21
Vinyl Chloride	268	104

Other case-by-case TBELs and reporting requirements for Oil & Grease, Total Residual Chlorine, Dissolved Oxygen, and Styrene also will be maintained. As an oil-bearing wastewater, Outfall 002's wastewaters are subject to effluent limits for Oil & Grease from 25 Pa. Code § 95.2(2). As a wastewater containing chlorinated water, Outfall 002's wastewaters are subject to effluent limits for Total Residual Chlorine from 25 Pa. Code § 92a.48(b)(2). A Dissolved Oxygen limit is imposed to confirm that BVPV's treatment system is operating properly; although, a decrease in pollutant loading in the raw wastewater from the cessation of OCPSF manufacturing may result in compliance without complete treatment (as suggested by BVPV's plan to bypass the Clarifier). Styrene monitoring is required pursuant to 25 Pa. Code § 92a.61(b) because styrene is present in the discharge and may cause adverse effects.⁸

⁸ EPA Hazard Summary for Styrene: "Styrene is primarily used in the production of polystyrene plastics and resins. Acute (short-term) exposure to styrene in humans results in mucous membrane and eye irritation, and gastrointestinal effects. Chronic (long-term) exposure to styrene in humans results in effects on the central nervous system (CNS), such as headache, fatigue, weakness, and depression, CSN dysfunction, hearing loss, and peripheral neuropathy. Human studies are inconclusive on the reproductive and developmental effects of styrene; several studies did not report an increase in developmental effects in women who worked in the plastics industry, while an increased frequency of spontaneous abortions and decreased frequency of births were reported in another study. Several epidemiologic studies suggest there may be an association between styrene exposure and an increased risk of leukemia and lymphoma. However, the evidence is inconclusive due to confounding factors. EPA has not given a formal carcinogen classification to styrene."

Table 16. Regulatory Effluent Standards and Retained TBELs

Parameter	Daily Minimum (mg/L)	Average Monthly (mg/L)	Maximum Daily (mg/L)
Oil and Grease	—	15.0	30.0
Total Residual Chlorine	—	0.5	1.25
Dissolved Oxygen	5.0	—	—
Styrene	—	Report	Report

Outfall 002 also discharges cooling tower blowdown. DEP has regulated cooling tower blowdown at other facilities based on the requirements of 40 CFR Part 423 – Steam Electric Power Generating Point Source Category. However, no effluent limits specific to BVPV’s cooling tower blowdown will be imposed. BVPV directs its cooling tower blowdown to its process wastewater treatment system. The blowdown stream is small, and the combined wastewaters are already regulated for the constituents that DEP would consider regulating in blowdown such as chlorine, chromium, and zinc. Despite the omission of limits specific to cooling tower blowdown, conditions relating to cooling tower blowdown that were previously imposed will be maintained including the requirement for no net addition of pollutants to non-contact cooling water and the requirement for TRC minimization.

Per- and Polyfluoroalkyl Substances (PFAS)

As discussed in Section 001.A of this Fact Sheet, DEP implemented a new monitoring initiative for PFAS in February 2024. 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.

BVPV reported results for PFOA, PFOS, HFPO-DA, and PFBS at Outfall 002 in the permit renewal application. The results are summarized in **Table 17**.

Table 17. Analytical Results for PFAS at Outfall 002

Parameter	Maximum Concentration (ng/L)	Average Concentration (ng/L)	No. of Non-Detect Results / No. of Analyses	Permit Quantitation Limit (ng/L)
Perfluorooctanoic acid (PFOA)	1.3	1.1	0/3	0.73
Perfluorooctanesulfonic acid (PFOS)	1.7	1.4	0/3	0.42
Perfluorobutanesulfonic acid (PFBS)	1.9	<1.5	1/3	1.1
Hexafluoropropylene oxide dimer acid (HFPO-DA)	< 8.2	< 7.8	3/3	7.8

Consistent with Section II.I.a of SOP No. BCW-PMT-032, the presence of PFOA, PFOS, and PFBS in the effluent means that quarterly monitoring will be required for all four of the PFAS parameters. 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 (*i.e.*, four consecutive quarterly results), then the monitoring may be discontinued.

002.B. Water Quality-Based Effluent Limitations (WQBELs)

Reasonable Potential Analysis and WQBEL Development for Outfall 002

Outfall 002 discharges to Raccoon Creek about one quarter mile upstream of where Raccoon Creek empties into the Ohio River. Generally, the maximum criteria compliance times for chronic fish criteria (CFC), threshold human health (THH), and cancer risk level (CRL) criteria from 25 Pa. Code §§ 93.7 and 93.8c are twelve hours or the amount of time until complete mixing, whichever occurs first. A compliance time of twelve hours would exceed the time for the discharge to reach the Ohio River. Also, while complete mixing of the discharge with Raccoon Creek theoretically occurs at the mouth of Raccoon Creek, the mouth of Raccoon Creek also is the location where additional stream flow from the Ohio River becomes available for mixing and dilution. Therefore, requirements based on CFC, THH, or CRL criteria are not imposed for the Raccoon Creek mixing conditions. Only WQBELs derived from acute fish criteria are considered for the Raccoon Creek analysis. WQBELs based on chronic criteria are evaluated separately based on mixing with the Ohio River.

Acute WQBELs for Raccoon Creek

Discharges from Outfall 002 are evaluated based on the higher of the following: 1) maximum concentrations reported on the permit renewal application; 2) the AMECs calculated using DEP’s TOXCONC spreadsheet and BVPV’s daily effluent monitoring data as reported on Daily Effluent Monitoring forms submitted through eDMR; or 3) the maximum daily TBELs from 40 CFR Part 414. The TMS model is run for Outfall 002 with the modeled discharge and receiving stream characteristics shown in **Table 18**. Pollutants for which water quality criteria have not been promulgated (e.g., TSS, Oil and Grease, etc.) are excluded from the modeling.

Table 18. TMS Inputs for Outfall 002 (Acute)

Discharge Characteristics		
Parameter	Value	
Discharge Flow (MGD)	1.36	
Discharge Hardness (mg/L)	390	
Discharge pH (s.u.)	7.57	
Receiving Stream Characteristics		
Parameter	Outfall 002	End of Segment
Stream Code	33564	33564
River Mile Index	0.24	0.01
Drainage Area (mi ²)	184.0	184.50
Q ₇₋₁₀ (cfs)	8.17	8.17
Low-flow Yield (cfs/mi ²)	0.045	0.045
Elevation (ft)	683	682.5
Slope (ft/ft)	0.0017	0.0017
Average Width (ft)	175	175
Average Depth (ft)	1.4	1.4

Discharge hardness (390 mg/L) and pH (7.57 S.U.) are the average values reported on the permit application. Stream hardness (345 mg/L) and pH (8.1 S.U.) are the average and median values, respectively, reported from November 2012 through August 2022 at DEP’s Water Quality Network (WQN) Station 903 located on Raccoon Creek a few miles upstream of Outfall 002. WQN Station 903 is co-located with USGS Gage 03108000 from which discharge flow data were obtained to calculate Raccoon Creek’s Q₇₋₁₀ flow.

The width of Raccoon Creek at Q₇₋₁₀ flow conditions is estimated to be 175 feet using aerial and topographic maps. The depth of Raccoon Creek at Q₇₋₁₀ is estimated to be 1.4 feet, which is the minimum gage height reported at USGS Gage 03108000 within the available period of record (October 2007 through May 2025).

Output from the TMS model is included in **Attachment F** to this Fact Sheet. The results for acute mixing indicate that WQBELs are required for Total Copper, Total Lead, Total Nickel, Total Zinc, Acrolein, Benzo(a)Anthracene, Hexachlorobutadiene, and Phenanthrene. Also, reporting is required for Hexavalent Chromium, Free Cyanide, and Total Mercury. The recommended limits and monitoring requirements are summarized in **Table 19**.

Table 19. Water Quality-Based Effluent Limits for Outfall 002 (Raccoon Creek: Acute)

Parameter	Raccoon Creek Acute WQBELs			Discharge Conc. (µg/L)	Target QL (µg/L)	Governing WQBEL (Acute)
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)			
Chromium, Hexavalent	Report	Report	—	< 6	1	18.4
Copper, Total	54.6	85.1	136	3,380 †	4	54.3
Free Cyanide	Report	Report	—	< 8	1	24.8
Lead, Total	295	460	738	690 †	1	294
Mercury, Total	Report	Report	—	0.21	0.2	1.58
Nickel, Total	1610	2512	4024	3,980 †	4	1,602
Zinc, Total	412	644	1031	2,610 †	5	411
Acrolein	3.41	5.31	8.51	<4.4	2	3.0
Benzo(a)Anthracene	0.57	0.89	1.42	59 †	2.5	0.56
4,6-Dinitro-o-Cresol	90.8	142	227	277 †	10	90.4
Hexachlorobutadiene	11.4	17.7	28.4	49 †	0.5	11.3
Naphthalene	Report	Report	—	59 †	0.5	158
Phenanthrene	5.68	8.86	14.2	59 †	2.5	5.65
1,2,4-Trichlorobenzene	148	230	369	140 †	0.5	147

† Concentration is the maximum daily TBEL from 40 CFR Part 414.

For modeling purposes, Total Cyanide reported on the permit application is conservatively assumed to be present entirely as Free Cyanide due to the lack of analytical data for Free Cyanide. BVPV has the option to collect data on Free Cyanide during the draft permit comment period so DEP can re-evaluate requirements for Free Cyanide before the permit is renewed.

The water quality-based reporting requirements for Hexavalent Chromium are the result of BVPV's use of an insufficiently sensitive analytical method. BVPV has the option to collect additional samples to quantify Hexavalent Chromium to the level of DEP's Target QL to allow DEP to re-evaluate requirements for Hexavalent Chromium before the permit is renewed.

WQBELs and water quality-based reporting requirements for Total Copper, Total Lead, Total Nickel, Total Zinc, Benzo(a)Anthracene, Hexachlorobutadiene, 4,6-Dinitro-o-Cresol, Naphthalene, and 1,2,4-Trichlorobenzene, and Phenanthrene are based on modeling using TBELs as the discharge concentrations. Even if BVPV reported on the permit application that a parameter is not present in the effluent, if a TBEL applies to that parameter and a more stringent WQBEL is calculated for that parameter, then the WQBEL must be imposed to ensure that effluent limits protect waters of the Commonwealth.

Table 20. TMS Inputs for Outfall 002 (Chronic)

Discharge Characteristics		
Parameter	Value	
Discharge Flow (MGD)	1.36	
Discharge Hardness (mg/L)	390	
Discharge pH (s.u.)	7.57	
Receiving Stream Characteristics		
Parameter	Outfall 002	End of Segment
Stream Code	32317	32317
River Mile Index	951.42	945.38
Drainage Area (mi ²)	22961	23000
Q ₇₋₁₀ (cfs)	946	946
Low-flow Yield (cfs/mi ²)	0.21	0.21
Elevation (ft)	681.65	665.0
Slope (ft/ft)	0.0001	0.0001
Average Width (ft)	240	240
Average Depth (ft)	15	15

Acute and Chronic WQBELs for the Ohio River

The TMS analysis for the Ohio River uses similar inputs as those used for the analysis for Outfall 001 including the same stream hardness and pH values (98 mg/L and 7.33 s.u.), a partial mix factor of 0.2 (reserving 80% of the river's assimilative capacity at Q₇₋₁₀), and the Midland Borough Municipal Authority's potable water supply intake at river mile index 945.38 as the downstream end-of-reach. Model inputs are summarized in **Table 20**.

Output from the TMS model is included in **Attachment G** to this Fact Sheet. The results of the modeling are summarized in **Table 21**, which compares the acute WQBELs calculated for Raccoon Creek, the acute and chronic WQBELs calculated for the Ohio River, and the existing effluent limits. The most stringent limits among those are shown in bold except in circumstances where the existing limits are WQBELs calculated for the previous permit and backsliding to less stringent WQBELs or TBELs is warranted consistent with 40 CFR § 40 CFR 122.44(l)(2)(i)(B)(1) regarding the allowance for backsliding based on new information that justifies that application of less stringent permit requirements.

Table 21. Comparison of New WQBELs and Existing Limits at Outfall 002

Parameter	Raccoon Creek Acute WQBELs (µg/L)		Ohio River WQBELs (µg/L)		Existing Limits (µg/L)		Reported Discharge Conc. (µg/L)	Target QL (µg/L)
	Avg Mo.	Max Daily	Avg Mo.	Max Daily	Avg Mo.	Max Daily		
Chromium, Hexavalent	Report	Report	—	—	—	—	<6	1.0
Copper, Total	54.6	85.1	4744	7401	83	166	45	4.0
Free Cyanide	Report	Report	—	—	—	—	—	
Lead, Total	295	460	—	—	320	690	4.3	1.0
Mercury, Total	Report	Report	—	—	—	—	0.21	0.2
Nickel, Total	1610	2512	—	—	1,690	3,980	14	4.0
Zinc, Total	412	644	—	—	480	960	57	5.0
Acrolein	3.41	5.31	—	—	6.0	9.4	<16	2.0
Acrylonitrile	—	—	77.7	121	63	98	<7.8	5.0
1,2-Dichloroethane	—	—	Report	Report	68	211	<0.63	0.5
1,2-Dichloropropane	—	—	Report	Report	153	230	<0.66	0.5
Vinyl Chloride	—	—	30.5	47.5	31	48	<0.41	0.5
Benzo(a)Anthracene	0.57	0.89	1.52	2.38	1.0	1.6	<0.085	2.5
3,4-Benzofluoranthene	—	—	1.52	2.38	4.7	7.3	<0.11	2.5
Benzo(k)Fluoranthene	—	—	5.79	9.03	4.7	7.3	<0.10	2.5
Bis(2-Ethylhexyl)Phthalate	—	—	487	760	103	279	<7.1	5.0

Table 21 (cont'd). Comparison of New WQBELs and Existing Limits at Outfall 002

Parameter	Raccoon Creek Acute WQBELs (µg/L)		Ohio River WQBELs (µg/L)		Existing Limits (µg/L)		Reported Discharge Conc. (µg/L)	Target QL (µg/L)
	Avg Mo.	Max Daily	Avg Mo.	Max Daily	Avg Mo.	Max Daily		
Chrysene	—	—	5.79	9.03	4.7	7.3	<0.092	2.5
4,6-Dinitro-o-Cresol	90.8	142	Report	Report	78	277	<1.7	10
2,4-Dinitrotoluene	—	—	76.1	119	113	285	<0.40	5.0
2,6-Dinitrotoluene	—	—	76.1	119	255	641	<0.20	5.0
Hexachlorobenzene	—	—	0.00008	0.0001	0.3	0.5	<0.064	5.0
Hexachlorobutadiene	11.4	17.7	0.01	0.016	20	49	<0.078	0.5
Hexachloroethane	—	—	Report	Report	21	54	<0.15	5.0
Naphthalene	Report	Report	—	—	22	59	0.12	0.5
Phenanthrene	5.68	8.86	—	—	10	15	<0.63	2.5
1,2,4-Trichlorobenzene	148	230	34.4	53.7	68	140	<0.25	0.5

WQBELs for Benzo(a)Anthracene, 3,4-Benzofluoranthene, Hexachlorobenzene, and Hexachlorobutadiene are less than DEP's Target QLs. Part A of the NPDES permit will identify the actual WQBELs derived from modeling, but the Target QLs will be used to determine compliance with WQBELs that are less than those Target QLs.

Mass Limits

Mass limits are calculated by multiplying the most stringent concentration limits (whether TBELs or WQBELs) by the Outfall 002 discharge flow rate reported on the permit application: 1.36 MGD. The most stringent concentration limits and the corresponding mass limits are summarized in **Table 23**.

Total Residual Chlorine

WQBELs for Total Residual Chlorine are evaluated using the TRC_CALC spreadsheet with inputs specific to Raccoon Creek including a Q₇₋₁₀ flow of 8.17 cfs, a discharge flow rate of 1.36 MGD, and an acute partial mix factor of 0.196 as calculated by the TMS for the analysis of acute WQBELs for discharges to Raccoon Creek. The results of the analysis indicate that the following acute WQBELs are necessary for TRC at Outfall 002.

Table 22. WQBELs for TRC at Outfall 002

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)
Total Residual Chlorine	0.168	0.393

On average, TRC concentrations at Outfall 002 are less than the new WQBELs, so no schedule of compliance is included for the new TRC WQBELs.

Ohio River Use Impairments

BVPV's discharges do not contain PCBs, chlordane, or dioxins, so BVPV will not contribute to the Ohio River's fish consumption use impairment. Nevertheless, the condition discussed in Section 001.B of this Fact Sheet prohibiting the discharge of PCBs and chlordane will implement the Ohio River TMDL in BVPV's permit.

With respect to the Ohio River's pathogen impairment, DEP observes that fecal coliform counts reported for Outfall 002 on the permit application are low (10/100 mL). Also, there should be no contribution of pathogens to the river from the sanitary wastewaters discharged at Outfall 002 because sanitary wastewaters are disinfected prior to discharge. Therefore, no requirements are added to the permit relating to the river's pathogen impairment.

Raccoon Creek Watershed Total Maximum Daily Load (TMDL)

There is an approved TMDL for the Raccoon Creek Watershed dated February 3, 2005. Outfall 002 is located downstream of the farthest downstream TMDL evaluation point (*i.e.*, downstream of the impaired segments of the watershed). DEP determined that the segment of Raccoon Creek into which Outfall 002 discharges is attaining its designated uses. The concentrations of the TMDL's pollutants of concern at Outfall 002 (aluminum, iron, and manganese) are an order of

magnitude less than the most stringent water quality criteria for those metals and do not warrant WQBELs based on the TMS analysis. Therefore, no effluent limits are added to Outfall 002 based on the Raccoon Creek Watershed TMDL.

002.C. Effluent Limitations and Monitoring Requirements for Outfall 002

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania’s regulations at 25 Pa. Code § 92a.44), effluent limits are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet.

Table 23. Effluent Limits and Monitoring Requirements for Outfall 002

Parameter	Mass (pounds/day)		Concentration (µg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
pH (S.U.)	—	—	6.0 Inst. Min	—	9.0	40 CFR §§ 122.44(l), 414.41; 25 Pa. Code
BOD-5 (mg/L)	270.0	725.0	24.0	64.0	—	40 CFR §§ 414.41, 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Total Suspended Solids (mg/L)	450.0	1475.0	40.0	130.0	—	40 CFR §§ 414.41, 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Oil and Grease (mg/L)	—	—	15.0	30.0	—	40 CFR § 122.44(l) & 25 Pa. Code § 95.2(2)
Total Residual Chlorine (mg/L)	—	—	0.168	0.393	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Dissolved Oxygen (mg/L)	—	—	5.0 Inst. Min	—	—	40 CFR § 122.44(l) & 25 Pa. Code § 92a.48(a)(3)
Styrene	—	—	Report	Report	—	40 CFR § 122.44(l) & 25 Pa. Code § 92a.61(b)
Acenaphthene	0.249	0.669	22.0	59.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Acenaphthylene	0.249	0.669	22.0	59.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Acrolein	0.038	0.060	3.41	5.31	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Acrylonitrile	0.881	1.37	77.7	121.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Anthracene	0.249	0.669	22.0	59.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Benzene	0.419	1.54	37.0	136.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Benzo(a)anthracene	0.028	0.028	0.57	0.89	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
3,4-Benzofluoranthene	0.028	0.028	1.52	2.38	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Benzo(k)fluoranthene	0.065	0.102	5.79	9.03	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Benzo(a)pyrene	0.261	0.692	23.0	61.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Bis(2-ethylhexyl) phthalate	1.16	3.16	103.0	279.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Carbon Tetrachloride	0.204	0.431	18.0	38.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Chlorobenzene	0.170	0.317	15.0	28.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Chloroethane	1.18	3.04	104.0	268.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Chloroform	0.238	0.522	21.0	46.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
2-Chlorophenol	0.351	1.112	31.0	98.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Chrysene	0.065	0.102	5.79	9.03	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Di-n-butyl phthalate	0.306	0.646	27.0	57.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)

Table 23 (cont'd). Effluent Limits and Monitoring Requirements for Outfall 002

Parameter	Mass (pounds/day)		Concentration (µg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
1,2-Dichlorobenzene	0.873	1.850	77.0	163.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,3-Dichlorobenzene	0.351	0.499	31.0	44.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,4-Dichlorobenzene	0.170	0.317	15.0	28.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,1-Dichloroethane	0.249	0.669	22.0	59.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,2-Dichloroethane	0.771	2.394	68.0	211.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,1-Dichloroethylene	0.181	0.283	16.0	25.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,2-trans-Dichloroethylene	0.238	0.612	21.0	54.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
2,4-Dichlorophenol	0.442	1.271	39.0	112.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,2-Dichloropropane	1.73	2.61	153.0	230.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,3-Dichloropropylene	0.329	0.499	29.0	44.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Diethyl phthalate	0.919	2.303	81.0	203.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
2,4-Dimethylphenol	0.204	0.408	18.0	36.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Dimethyl phthalate	0.215	0.533	19.0	47.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
4,6-Dinitro-o-cresol	0.885	3.143	78.0	277.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
2,4-Dinitrophenol	0.805	1.396	71.0	123.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
2,4-Dinitrotoluene	0.863	1.350	76.1	119.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
2,6-Dinitrotoluene	0.863	1.350	76.1	119.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Ethylbenzene	0.363	1.225	32.0	108.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Fluoranthene	0.283	0.771	25.0	68.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Fluorene	0.249	0.669	22.0	59.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Hexachlorobenzene	0.056	0.056	0.00008	0.0001	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Hexachlorobutadiene	0.005	0.005	0.01	0.16	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Hexachloroethane	0.238	0.612	21.0	54.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Methyl Chloride	0.976	2.15	86.0	190.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Methylene Chloride	0.453	1.01	40.0	89.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Naphthalene	0.249	0.669	22.0	59.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Nitrobenzene	0.306	0.771	27.0	68.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
2-Nitrophenol	0.465	0.783	41.0	69.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
4-Nitrophenol	0.817	1.40	72.0	124.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Phenanthrene	0.064	0.100	5.68	8.86	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Phenol	0.170	0.295	15.0	26.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Pyrene	0.283	0.760	25.0	67.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Tetrachloroethylene	0.249	0.635	22.0	56.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Toluene	0.295	0.907	26.0	80.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)

Table 23 (cont'd). Effluent Limits and Monitoring Requirements for Outfall 002

Parameter	Mass (pounds/day)		Concentration (µg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Hexavalent Chromium	Report	Report	Report	Report	—	25 Pa. Code § 92a.61(b)
Total Chromium	12.5	31.4	1110.0	2770.0	—	40 CFR §§ 414.41 and 414.91
Total Copper	0.619	0.965	54.6	85.1	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Free Cyanide	Report	Report	Report	Report	—	25 Pa. Code § 92a.61(b)
Total Cyanide	4.76	13.6	420.0	1200.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Total Lead	3.34	5.22	295.0	460.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Total Mercury	Report	Report	Report	Report	—	25 Pa. Code § 92a.61(b)
Total Nickel	18.2	28.5	1610.0	2512.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Total Zinc	4.67	7.30	412.0	644.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
1,2,4-Trichlorobenzene	0.390	0.609	34.4	53.7	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
1,1,1-Trichloroethane	0.238	0.612	21.0	54.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
1,1,2-Trichloroethane	0.238	0.612	21.0	54.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Trichloroethylene	0.238	0.612	21.0	54.0	—	40 CFR §§ 414.43(b), 122.44(l); 25 Pa. Code § 92a.48(a)(3)
Vinyl Chloride	0.346	0.539	30.5	47.5	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)

Monitoring frequencies and sample types are imposed based, in part, on the existing permit and Chapter 6, Table 6-4 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits". Table 6-4 requires that samples for priority pollutant analyses be collected 1/week using 24-hour composite sampling except for volatile organics. The requirements for volatile organics are 1/week sampling using four grab samples over 24 hours (4 grabs/24 hours) with the four grab samples composited by the lab for a single analysis. Parameters with WQBELs generally also require weekly sampling because the collection of four samples per month is the baseline number of samples assumed when deriving average monthly WQBELs (per EPA's "Technical Support Document for Water Quality-based Toxics Control", Section 5.5.3, p.110) even if the actual number of samples collected per month is less than four.

BVPV's current permit requires daily flow measurements at Outfall 002; 1/week sampling for pH, BOD-5, TSS, TRC, Copper, Lead, Nickel, Zinc, and Phenol; 2/month sampling for Dissolved Oxygen; 2/quarter sampling for Oil & Grease, Phenanthrene, and Styrene; and 2/year sampling for all other parameters. Grab sampling is required for pH, Dissolved Oxygen, TRC, Oil & Grease, and Styrene; 4 grabs/24 hours sampling is required for all volatile pollutants; and 24-hour composite sampling is required for all other pollutants.

The sampling requirements in BVPV's current permit differ from the baseline requirements in DEP's Technical Guidance because EPA recognized that permittees could incur significant analytical costs from frequent monitoring for the full list of parameters in 40 CFR § 414.91.⁹ EPA also recognized that not all parameters regulated by Part 414 are present in all OCPSF manufacturers' effluent due to the variety of products produced by the industry. 40 CFR Part 414, Subpart D alone lists 98 different products/product groups. Consequently, EPA left decisions on monitoring frequencies to individual permitting authorities to be determined on a case-by-case basis (40 CFR § 122.44(i)(2)).¹⁰

Now that manufacturing has ceased, BVPV requested to collect all samples at Outfall 002 as grab samples because discharges occur intermittently and for varying periods of time depending on water levels in the lagoons. DEP agrees to that change. Flow will continue to require measurement 1/day.

⁹ Development Document for Effluent Limitations Guidelines and Standards for the Organic Chemicals, Plastics and Synthetic Fibers Point Source Category, Volume II, pp. X-32 to X-36.

¹⁰ 40 CFR § 122.44(i)(2): "Except as provided in paragraphs (i)(4) and (5) of this section, requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge, but in no case less than once a year."

Table 24 summarizes the current permit’s sampling frequencies and how those frequencies will change (if they will). Only a couple of sampling frequencies are changing with the renewed permit as highlighted in **Table 24**. Sampling frequencies for parameters new to Outfall 002 also are highlighted.

Table 24. Sampling Frequencies for Outfall 002

Parameter	Current	New	Parameter	Current	New	Parameter	Current	New
Flow (MGD)	1/day	1/day	Di-n-butyl phthalate	2/year	2/year	Methylene Chloride	2/year	2/year
pH (S.U.)	1/week	1/week	1,2-Dichlorobenzene	2/year	2/year	Naphthalene	2/year	2/year
BOD-5	1/week	1/week	1,3-Dichlorobenzene	2/year	2/year	Nitrobenzene	2/year	2/year
TSS	1/week	1/week	1,4-Dichlorobenzene	2/year	2/year	2-Nitrophenol	2/year	2/year
Oil and Grease	2/quarter	2/quarter	1,1-Dichloroethane	2/year	2/year	4-Nitrophenol	2/year	2/year
TRC	1/week	1/week	1,2-Dichloroethane	2/year	2/year	Phenanthrene	2/quarter	2/year
Dissolved Oxygen	2/month	2/month	1,1-Dichloroethylene	2/year	2/year	Phenol	1/week	2/year
Styrene	2/quarter	2/quarter	1,2-trans-Dichloroethylene	2/year	2/year	Pyrene	2/year	2/year
Acenaphthene	2/year	2/year	2,4-Dichlorophenol	2/year	2/year	Tetrachloroethylene	2/year	2/year
Acenaphthylene	2/year	2/year	1,2-Dichloropropane	2/year	2/year	Toluene	2/year	2/year
Acrolein	2/quarter	2/quarter	1,3-Dichloropropylene	2/year	2/year	Hexavalent Chromium	—	2/quarter
Acrylonitrile	2/year	2/year	Diethyl phthalate	2/year	2/year	Total Chromium	2/year	2/year
Anthracene	2/year	2/year	2,4-Dimethylphenol	2/year	2/year	Total Copper	1/week	1/week
Benzene	2/year	2/year	Dimethyl phthalate	2/year	2/year	Free Cyanide	—	2/quarter
Benzo(a)anthracene	2/year	2/year	4,6-Dinitro-o-cresol	2/year	2/year	Total Cyanide	2/year	2/year
3,4-Benzofluoranthene	2/year	2/year	2,4-Dinitrophenol	2/year	2/year	Total Lead	1/week	1/week
Benzo(k)fluoranthene	2/year	2/year	2,4-Dinitrotoluene	2/year	2/year	Total Mercury	—	2/quarter
Benzo(a)pyrene	2/year	2/year	2,6-Dinitrotoluene	2/year	2/year	Total Nickel	1/week	1/week
Bis(2-ethylhexyl) phthalate	2/year	2/year	Ethylbenzene	2/year	2/year	Total Zinc	1/week	1/week
Carbon Tetrachloride	2/year	2/year	Fluoranthene	2/year	2/year	1,2,4-Trichlorobenzene	2/year	2/year
Chlorobenzene	2/year	2/year	Fluorene	2/year	2/year	1,1,1-Trichloroethane	2/year	2/year
Chloroethane	2/year	2/year	Hexachlorobenzene	2/year	2/year	1,1,2-Trichloroethane	2/year	2/year
Chloroform	2/year	2/year	Hexachlorobutadiene	2/year	2/year	Trichloroethylene	2/year	2/year
2-Chlorophenol	2/year	2/year	Hexachloroethane	2/year	2/year	Vinyl Chloride	2/year	2/year
Chrysene	2/year	2/year	Methyl Chloride	2/year	2/year			

The sampling frequencies for Phenanthrene and Phenol will be changed to 2/year. Phenanthrene was the only organic parameter that was subject to new WQBELs in the previous permit that was detected in the effluent. That is, of the organic pollutants that exhibited ‘reasonable potential’, Phenanthrene was the only pollutant known to be present in the effluent at the time (albeit at concentrations less than the WQBELs). During the previous permit term, Phenanthrene was only detected in two of twenty-two 2/quarter samples at concentrations orders of magnitude less than the limits, so a performance-based reduction in sampling frequency is warranted for Phenanthrene. Similarly, more frequent monitoring was required for Phenol in the previous permit due to reported effluent violations. However, BVPV has reported only one exceedance of the Phenol limits during the previous permit term (in December 2021). Otherwise, Phenol was not detected in the effluent or was detected at an order of magnitude less than the effluent limits. Therefore, a performance-based reduction in sampling frequency is warranted for Phenol.

Several parameters are subject to new WQBELs based on modeling using TBELs as discharge concentrations. Sampling frequencies for those parameters are not increased because the “nature and effect” of the discharge of those parameters—as defined by the actual discharge concentrations and not by the concentrations allowed based on treatment technology—is limited. Other parameters (hexavalent chromium, acrolein, free cyanide) are subject to requirements based on non-detect values representing the use of insufficiently sensitive analytical methods or based on certain assumptions by DEP, as described previously. The sampling frequencies for those parameters are set or maintained at 2/quarter.

While all average limits are calculated using average monthly statistical bases, average limits for parameters sampled less often than monthly are identified in the permit at the corresponding sampling frequency interval. Consequently, average monthly limits for parameters with sampling frequencies of 2/quarter are identified as average quarterly limits and average

monthly limits for parameters with sampling frequencies of 2/year are identified as annual average limits. To align with the statistical bases for the limits, parameters with a minimum measurement frequency of 2/quarter or 2/year shall be sampled during the same calendar month to calculate the average.

As stated previously, WQBELs for Benzo(a)Anthracene, 3,4-Benzofluoranthene, Hexachlorobenzene, and Hexachlorobutadiene are less than DEP's Target QLs. Part A of the NPDES permit will identify the actual WQBELs derived from modeling, but the Target QLs will be used in DEP's eDMR system to determine compliance with WQBELs that are less than those quantitation limits.

Development of Effluent Limitations

Outfall Nos.	004 and 005	Design Flow (MGD)	0.001 and 0.01
Latitude	40° 39' 51.44"; 40° 39' 50.43"	Longitude	-80° 21' 1.07"; -80° 21' 2.06"
Wastewater Description:	004: River Pump House discharge of river water from piping and equipment leaks to sump 005: River Pump House discharge of river water from piping and equipment leaks to sump and from pump seal water		

Discharges from Outfalls 004 and 005 are currently subject to the following narrative limitation:

“Discharges shall consist solely of uncontaminated potable/river water leakage.”

The circumstances under which Outfalls 004 and 005 discharge were described in the permit renewal application as follows:

Of the six intake pumps at the River Pump House [RPH], up to three receive contact water to maintain pump seals at any given time. It is estimated that two gallons per minute (gpm) of water per pump are used to maintain the pump seals. The seal water collects in a storage tank that batch discharges and combines with the west sump pit discharge (which includes river water from pipe and equipment leaks) prior to exiting from Outfall 005. Additional river water leaks from equipment and piping are directed to a sump on the east end of the building and ultimately discharge to the Ohio River from Outfall 004. Under normal conditions, the two sumps collecting equipment and piping leaks are discharged approximately once per week. However, discharge to the Ohio River from Outfall 004 has temporarily been discontinued due to ongoing maintenance activities. Water from the east sump is being containerized for off-site disposal.

BVPV reported an incident at Outfall 004 in April 2024, which was summarized in the application as follows:

Seal water to maintain the River Pump House intake pumps was previously discharged between the east and west sumps (Outfalls 004 and 005). Seal pump discharges were rerouted to the west sump (Outfall 005) only. The seal water collects in a storage tank that batch discharges and combines with the west sump pit discharge (which includes river water from pipe and equipment leaks) prior to exiting from Outfall 005. With this adjustment, the only river water discharged to Outfall 004 is from equipment and piping leaks directed to the east sump. Recently, oil from a leaking piece of equipment has discharged to the east sump leading to Outfall 004. Oil was observed in the east sump, which led to evaluation and mitigation efforts. As maintenance efforts are completed in the area, the discharge from Outfall 004 to the Ohio River has been discontinued. The water from the east sump is temporarily being containerized for off-site disposal. Evaluation for this outfall is ongoing. Any permanent changes to outfall configuration or discharge would be incorporated into future permit modifications.

RPH.A. Technology-Based Effluent Limitations (TBELs)

Based on application sampling results for Outfall 005 and BVPV’s reported incident, Outfall 004’s and Outfall 005’s discharges are not necessarily “uncontaminated”. While most pollutants reported on the permit application were not detectable in the effluent or were present in low concentrations, TSS had a maximum concentration of 160 mg/L. Also, the oil leakage incident in April 2024 suggests that the effluent has the potential to be an oil-bearing wastewater even though BVPV believed that no oil was discharged from the east sump at that time. PFOA, PFOS, and PFBS also were detected in the effluent but may originate from the Ohio River given the prevalence of PFAS in the environment.

As a basis of comparison, equipment leaks and pump seal water would be identified as low volume waste sources in the Steam Electric Power Generating Point Source Category Effluent Limitations Guidelines, which regulates the concentrations of TSS and Oil & Grease and the pH of low volume waste sources. The Beaver Valley Site is not a power-generating facility, but equipment leaks and pump seal water at the Beaver Valley Site are analogous to equipment leaks and pump seal water regulated by the Steam Electric Power Generating Point Source Category Effluent Limitations Guidelines. The TBELs in 40 CFR § 423.12(b)(3) could reasonably be applied to equipment leaks and pump seal water discharged at facilities in other industrial categories since those wastewater sources are common to many industries and generally do not exhibit industry-specific wastewater characteristics (e.g., any facility with pumps that use pump seal water could discharge pump lubricating oil with the seal water). Discharges of equipment leakage and pump seal water are not regulated by Part 414.

The BPT TBELs for low volume waste sources from Part 423 are summarized in **Table 25**.

Table 25. 40 CFR Part 423 – BPT TBELs for Low Volume Waste Sources

Pollutant	Average of daily values for 30 consecutive days (mg/L)	Maximum for any 1 day (mg/L)	Basis
TSS	30.0	100.0	40 CFR § 423.12(b)(3)
Oil and Grease	15.0	20.0	40 CFR § 423.12(b)(3)
pH	within the range of 6.0 to 9.0		40 CFR § 423.12(b)(1)

Comparing the analytical results for Outfall 005 (also representing Outfall 004’s discharges) to the TBELs for low volume waste sources shows that Oil & Grease and pH are not excursive in the sampled wastewaters. However, the maximum TSS concentration reported on the permit application exceeds the 100 mg/L maximum TSS concentration for low volume wastes. TSS is a parameter that can be readily controlled with sedimentation technologies or basic filters. Due to the similarity of equipment leakage and pump seal wastewater at steam electric-power generating facilities to equipment leakage and pump seal water at the Beaver Valley Site, and based on DEP’s Best Professional Judgement and the concept of technology transfer, the TSS and Oil & Grease limits for low volume waste sources from 40 CFR § 423.12(b)(3) will be adopted as case-by-case TBELs for TSS and Oil & Grease at Outfalls 004 and 005 pursuant to 40 CFR § 125.3(c)(2) and 25 Pa. Code §§ 92a.3(b)(4) and 92a.48(a)(3). Consistent with the requirements of 40 CFR § 125.3(c)(2) regarding the factors that must be considered when setting case-by-case TBELs, EPA’s consideration of the § 125.3(d) factors in the Steam Electric ELGs substitutes for DEP’s consideration of those factors.

Flow monitoring will be required based on 25 Pa. Code § 92a.61(d)(1).

RPH.B. Water Quality-Based Effluent Limitations (WQBELs)

Based on the low discharge flow rates, the low concentrations of pollutants with water quality criteria reported in the permit renewal application, and the significant dilution afforded by the Ohio River, no WQBELs are developed for Outfalls 004 and 005.

RPH.C. Effluent Limitations and Monitoring Requirements for Outfalls 004 and 005

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania’s regulations at 25 Pa. Code § 92a.44), effluent limits are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet.

Table 26. Effluent Limits and Monitoring Requirements for Outfalls 004 and 005

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
TSS	—	—	30.0	100.0	—	40 CFR § 125.3(c)(2) & 25 Pa. Code §§ 92a.3(b)(4) & 92a.48(a)(3)
Oil and Grease	—	—	15.0	20.0	—	40 CFR § 125.3(c)(2) & 25 Pa. Code §§ 92a.3(b)(4) & 92a.48(a)(3)

The monitoring frequencies and sample types for TSS and Oil & Grease will be 2/month using grab sampling. Flow should be estimated at the time of sampling.

Development of Effluent Limitations

Outfall Nos.	006 and 007	Design Flow (MGD)	1.05
Latitude	40° 39' 51.44"; 40° 39' 50.43"	Longitude	-80° 21' 1.07"; -80° 21' 2.06"
Wastewater Description:	River water used to backwash and clean the intake screens		

CWIS.A. Technology-Based Effluent Limitations (TBELs)

The backwash water for the intake screen consists solely of water from the Ohio River. No pollutants are expected to be introduced to the effluent from Outfalls 006 and 007 other than debris from the river that collects on the intake screen, which BVPV must collect and remove (discussed below).

There are no federal ELGs that apply to discharges of intake screen backwash water and no other TBELs are developed for discharges from this outfall.

Clean Water Act § 316(b) – Cooling Water Intake Structures (“CWIS”)

BVPV’s Cooling Water Intake Structure Characteristics and Flows

BVPV operates one cooling water intake structure on the south bank of the Ohio River. The intake structure provides water to the facility via two 54-inch pipelines. The screen house is equipped with four vertical trash racks (1/2-inch vertical steel bars with 2-inch spacing) followed by four, 11-foot wide intake bays containing traveling screens to protect the cooling water pumps. Trash racks are raked manually and debris is placed in a container located upstream and adjacent to the screen house for disposal. The RPH has six circulating water pumps with a combined rated capacity of 212 MGD. The traveling water screens have a coarse mesh size (3/8-inch) and are located approximately fifteen feet upstream of the common suction well where the circulating water pumps are located.

There are four (4) vertical traveling intake screens constructed of stainless-steel mesh (3/8-inch). All screens were replaced circa 2004. Debris and fish may pass by the intake screens and then bypass the condenser at the station using a conical device that diverts any debris to the discharge at Outfall 001.

AES Corporation formerly operated a 125 MW coal-fired cogeneration plant at the Beaver Valley Site that was supplied with water from the CWIS (then owned and operated by NOVA Corporation—the previous owner of the Beaver Valley Site). AES supplied electricity to West Penn Power and steam to NOVA Corporation and BASF Corporation’s Monaca Plant located on the east bank of Raccoon Creek. The AES plant shut down in October 2015 and reclamation of the former AES coal yard was completed in July 2017. In addition, by letter dated January 16, 2025, BASF notified DEP of BASF’s intention to switch its water supply source from BVPV’s CWIS to Center Township Water Authority by the end of April 2025.

Following the closure of AES and the elimination of its water demand, intake water needs decreased from about 148 MGD to 33.12 MGD requiring the operation of only one intake pump. There was also a commensurate decrease in the through-screen velocity. The CWIS’s actual intake flow is 33.12 MGD with an actual through screen velocity of 0.14 feet per second. On average, BASF’s intake water usage accounted for only 0.155 MGD (0.395 MGD maximum).

Currently, of the 33.12 MGD actual intake flow, about 4.2% is used for cooling:

$$\frac{1.39 \text{ MGD [NCCW Flow]}}{33.12 \text{ MGD [Actual Intake Flow]}} = 0.04196 \text{ or } 4.196\%$$

Applicability Criteria of 40 CFR part 125, Subpart J

BVPV is an “existing facility” as defined in 40 CFR § 125.92(k).¹¹ Existing facilities are subject to 40 CFR part 125, Subpart J – Requirements Applicable to Cooling Water Intake Structures for Existing Facilities Under Section 316(b) of the Clean Water Act if they meet the applicability criteria given by § 125.91(a), as follows:

¹¹ *Existing facility* means any facility that commenced construction as described in 40 CFR 122.29(b)(4) on or before January 17, 2002 (or July 17, 2006 for an offshore oil and gas extraction facility) and any modification of, or any addition of a unit at such a facility. A facility built adjacent to another facility would be a new facility while the original facility would remain as an existing facility for purposes of this subpart. A facility cannot both be an existing facility and a new facility as defined at §125.83.

- (a) The owner or operator of an existing facility, as defined in §125.92(k), is subject to the requirements at §§125.94 through 125.99 if:
- (1) The facility is a point source;
 - (2) The facility uses or proposes to use one or more cooling water intake structures with a cumulative design intake flow (DIF) of greater than 2 million gallons per day (mgd) to withdraw water from waters of the United States; and
 - (3) Twenty-five percent or more of the water the facility withdraws on an actual intake flow basis is used exclusively for cooling purposes.

BVPV is a point source and uses a cooling water intake structure with a design intake flow of 212 MGD, which is greater than the 2 MGD threshold. However, less than 25% of the water withdrawn by BVPV is used for cooling purposes. Therefore, BVPV is not subject to the requirements of 40 CFR §§ 125.94 – 125.99. However, pursuant to 40 CFR § 125.90(b), “[c]ooling water intake structures not subject to requirements under §§ 125.94 through 125.99 or subparts I or N of this part must meet requirements under section 316(b) of the CWA established by the Director on a case-by-case, best professional judgment (BPJ) basis.”

Case-by-Case BTA Standards for Impingement Mortality and Entrainment

DEP’s “Standard Operating Procedure (SOP) for Clean Water Program, Establishing Best Technology Available (BTA) Using Best Professional Judgement (BPJ) for Cooling Water Intake Structures at Existing NPDES Facilities” [SOP No. BCW-PMT-038, December 7, 2021] describes the procedures DEP uses to make BTA determinations for existing cooling water intake structures based on BPJ.

Pursuant to Section II.A of the SOP, facilities that have one or more of the following technologies or best management practices has BTA for impingement mortality:

1. Closed-cycle recirculating system.
2. 0.5 foot per second (fps) through-screen design velocity.
3. 0.5 fps through-screen actual velocity.
4. Modified Traveling Screens with a fish handling and return system with sufficient water flow to return the fish directly to the source water in a manner that does not promote re-impingement of the fish or require a large vertical drop.

In addition, pursuant to Section II.B of the SOP, facilities that have one or more of the following technologies or best management practices has BTA for entrainment:

1. Closed-cycle recirculating system.
2. The actual intake flow (AIF) is minimal compared to the mean annual flow of the river. For cases where this option is being used, cumulative withdrawals from nearby facilities should be considered. The application manager may contact the Bureau of Clean Water to determine if this option is applicable.
3. Seasonal flow reductions - If a facility can reduce flows to mimic closed cycle cooling during spawning and biologically important time periods.

Pursuant to Section II.E of the SOP, if a permittee’s facility does not employ any of the technologies or processes listed in Sections II.A and II.B of the SOP, and no impingement or entrainment studies have been completed within the last 10 years, then the permit must incorporate conditions necessary to determine the appropriate BTA for the facility. Recommended conditions are included in Attachment A of the SOP. Permit conditions may require the completion of biological studies and the collection of other cooling water intake structure data.

BVPV reported that its chosen BTA compliance option for the impingement mortality standard is a through-screen actual velocity of 0.5 feet per second. According to Section II.A.3 of the SOP, when this option is chosen, a monitoring requirement for through-screen velocity should be included in the permit. The monitoring will confirm that actual velocities are less than 0.5 fps.

Entrainment BTA is a site-specific determination for all existing facilities whether they are subject to the requirements of 40 CFR §§ 125.94 – 125.99 or requirements under 40 CFR § 125.90(b), so the NPDES permit application does not prompt applicants to select an entrainment BTA. However, DEP’s SOP for Establishing Best Technology Available (BTA) Using Best Professional Judgement (BPJ) for Cooling Water Intake Structures at Existing NPDES Facilities lists three entrainment BTA options. In the permit application, BVPV provided a summary of the proportion of the Ohio River’s average monthly flows that is withdrawn by BVPV using Ohio River flow data from the available 90-year period of record at USGS Gage 03086000 – Ohio River at Sewickley, PA. BVPV may have intended to show that its Actual Intake Flow is minimal compared to the mean annual flow of the Ohio River (BPJ Entrainment BTA Option 2). However, the SOP indicates that cumulative withdrawals from nearby facilities should be considered. The SOP also only requires comparison to mean annual flow, but comparisons to long-term average monthly flows is a more conservative demonstration.

Facilities with surface water withdrawals near BVPV include Shell Polymers Monaca with a design intake flow of 22.12 MGD and Center Township Water Authority with an intake flow of 3.0 MGD. **Table 27** summarizes the percentages of the long-term average monthly flows of the Ohio River that are withdrawn by BVPV and the percentages withdrawn by BVPV and all nearby facilities.

Table 27. Ohio River Withdrawal Percentages

Month	Average Flows (1934 – 2024) (MGD) ¹	Percentage of Ohio River Flow Withdrawn (BVPV Only) (%)	Percentage of Ohio River Flow Withdrawn (All Nearby Withdrawals) (%)
January	30,321	0.11	0.29
February	32,395	0.10	0.27
March	41,296	0.08	0.21
April	35,993	0.09	0.25
May	25,256	0.13	0.35
June	16,073	0.21	0.55
July	10,838	0.31	0.82
August	8,752	0.38	1.01
September	8,543	0.39	1.04
October	10,431	0.32	0.85
November	17,682	0.19	0.50
December	27,199	0.12	0.33
Overall Average	22,063	0.15	0.40

¹ Ohio River flows based on U.S. Geological Survey flow data from Sewickley monitoring location (Station ID: 0308600). Flows were averaged from January 1934 (the first full year of data from the Sewickley USGS station) through May 2024.

Although not stated in DEP’s SOP for Establishing Best Technology Available (BTA) Using Best Professional Judgement (BPJ) for Cooling Water Intake Structures at Existing NPDES Facilities, the threshold used to determine what is “minimal” with respect to Entrainment BTA Option 2 is 5%, which is the threshold in EPA’s 316(b) Phase II rule from 2004. Based on the summary in **Table 27**, BVPV qualifies for BPJ Entrainment BTA Option 2. According to Section II.B.2 of the SOP, when this option is chosen, a monitoring requirement for intake flow should be included in the permit.

The following 316(b) conditions will be included in Part C of the permit.

COOLING WATER INTAKE STRUCTURE

- A. Nothing in this permit authorizes a take of endangered or threatened species under the Endangered Species Act.
- B. Technology and operational measures employed at the cooling water intake structures must be operated in a way that minimizes impingement mortality and entrainment to the smallest amount, extent, or degree reasonably possible.
- C. The location, design, construction or capacity of the intake structures may not be altered without prior approval of DEP.
- D. The permittee must notify DEP before changing its source of cooling water.
- E. The permittee shall retain data and other records for any information developed pursuant to Section 316(b) of the Clean Water Act for a minimum of ten (10) years.

- F. Throughout the permit term, the permittee shall continue to operate and maintain the following technologies or BMPs that constitute Best Technology Available (BTA) for reducing impingement:
- 0.5 foot per second (fps) through-screen actual velocity. The permittee shall monitor the through-screen actual velocity once per week. In lieu of velocity monitoring, the permittee may calculate the through-screen velocity using water flow, water depth, and the screen open areas. The data shall be submitted on the Cooling Water Intake Monitoring Supplemental Report (3800-FM-BCW0010) as an attachment to monthly Discharge Monitoring Reports (DMRs).
- G. Throughout the permit term, the permittee shall continue to operate and maintain the following technologies or BMPs that constitute Best Technology Available (BTA) for reducing entrainment:
- Maintenance of actual intake flow of 5% or less of the mean annual flow of the surface waters. The permittee shall monitor intake flows daily. The data shall be submitted on the Cooling Water Intake Monitoring Supplemental Report (3800-FM-BCW0010) as an attachment to monthly Discharge Monitoring Reports (DMRs).

CWIS.B. Water Quality-Based Effluent Limitations (WQBELs)

As stated above, other than debris that collects on the intake screen, no other pollutants are expected to be introduced to Outfalls 006 and 007 by BVPV. Therefore, no reasonable potential to cause or contribute to excursions above water quality standards is presumed to exist.

Notwithstanding a lack of reasonable potential for backwash discharges to cause or contribute to excursions above numerical water quality criteria, any discharges containing debris from the intake screen would violate narrative water quality criteria and corresponding prohibitions under 25 Pa. Code §§ 93.6 and 92a.41(c), respectively, which state:

§ 93.6. General water quality criteria

- (a) Water may not contain substances attributable to point or nonpoint source discharges in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life.
- (b) In addition to other substances listed within or addressed by this chapter, specific substances to be controlled include, but are not limited to, floating materials, oil, grease, scum and substances that produce color, tastes, odors, turbidity or settle to form deposits.

§ 92a.41. Conditions applicable to all permits.

- (c) The discharger may not discharge floating materials, scum, sheen, or substances that result in deposits in the receiving water. Except as provided for in the permit, the discharger may not discharge foam, oil, grease, or substances that produce an observable change in the color, taste, odor or turbidity of the receiving water.

Based on these requirements, the following permit condition (in addition to the § 92a.41(c) condition cited above, which is included in all NPDES permits) will be imposed at Outfalls 006 and 007 to ensure compliance with narrative water quality criteria:

" Debris collected on the intake trash racks shall not be returned to the waterway."

CWIS.C. Effluent Limitations and Monitoring Requirements for Outfalls 006 and 007

There are no TBELs or WQBELs applicable to discharges from Outfalls 006 and 007. Therefore, the narrative condition regarding collected debris will be imposed.

Table 28. Effluent Limits and Monitoring Requirements for Outfalls 006 and 007

Pollutant	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Debris collected on the intake trash racks shall not be returned to the waterway.						25 Pa. Code §§ 92a.41(c) and 93.6

Development of Effluent Limitations

Outfall Nos.	020, 021, and 025	Design Flow (MGD)	Variable
Latitudes	40° 39' 15.66"; 40° 39' 17.47"; 40° 39' 22.49"	Longitudes	-80° 21' 2.74"; -80° 21' 4.86"; -80° 21' 2.94"
Wastewater Description:	Storm water runoff		

The Beaver Valley Site has three outfalls that discharge only storm water: Outfalls 020, 021, and 025. Each outfall is described below based on BVPV’s descriptions included in the NPDES permit application. As discussed in Section 001.A of this Fact Sheet, plastic beads were observed in the facility’s storm water conveyance systems. BVPV’s observations and corrective actions relating to the presence of beads also are described below.

Outfall 020

Outfall 020 receives storm water runoff from the 89.7-acre area that includes the parking and administration area and the Technology Building. Activities related to the Technology Building include lab scale production (polymerization and impregnation) of beads, analytical testing, physical testing, and processing of products to convert beads into foam parts for testing. Raw chemicals and materials, manufactured products (beads), and waste are transported, stored, packaged, loaded, and/or otherwise managed in this area. The drainage area for Outfall 020 extends to areas along and beyond Route 18 leading to storm water discharge contributions from off-site sources including Frankfort Road south of the site. The outfall also receives water from a watercourse west of the site that enters the site’s storm water system.

Focused investigations are being completed in the Outfall 020 area to better understand contributions to the outfall. Currently, Outfall 020 is designated with coordinates where the discharge enters Raccoon Creek. However, the sampling location for the outfall is approximately 950 feet upstream from a 48” concrete pipe that then discharges into a watercourse, which flows towards Raccoon Creek and Outfall 020. BVPV’s goal is to relocate or replace Outfall 020 or discontinue surface water discharges from the site in this drainage area to segregate site discharges of industrial storm water from off-site storm water contributions.

Outfalls 021 and 025

Outfall 021 receives storm water runoff from the 3.2-acre area that includes the section of the site to the southeast with railway transport. Outfall 025 receives storm water runoff from the 1.6-acre area that includes the section of the site to the southeast with railway transport. Rail transport may include interplant and outbound rail cars of bead product, incoming chemical and raw materials, or CSX rail shipments unassociated with Styropek manufacturing activities.

Maintenance activities were completed in the Outfall 021 and 025 areas to mitigate erosion issues.

Temporary erosion and sediment control measures were put into place beginning January 2023 while engineering designs for the permanent measures were developed. Permanent mitigation measures include:

- Installation of 12-inch concrete curb to better direct stormwater flow to treatment areas.
- Installation of rip-rap aprons to bioretention areas for flow and solids control.
- Installation of lined bioretention areas for flow and solids control.
- Installation of skimmer device at outlet control structures for solids control.
- Vegetated Swale to better direct stormwater flow to hydrodynamic separator.
- Hydrodynamic separator with filtration unit for solids removal.
- Grading and paving to ensure positive drainage to treatment areas.

Sitework to install the permanent mitigation measures began during the first quarter 2024 and was completed in the third quarter of 2024.

Outfalls 020, 021, and 025 are currently subject to the following monitoring requirements.

Table 29. Outfalls 020, 021, and 025 – Current Effluent Limits and Monitoring Requirements

Parameter	Mass (lbs/day)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type	
	Avg. Mo.	Daily Max	Instant. Minimum	Avg. Mo.	Daily Max			IMAX
Flow (MGD)	—	Report	—	—	—	—	1/6 months	Estimate
pH (S.U.)	—	—	—	—	Report	—	1/6 months	Grab
Chemical Oxygen Demand (COD)	—	—	—	—	Report	—	1/6 months	Grab
Total Suspended Solids	—	—	—	—	Report	—	1/6 months	Grab
Nitrate-Nitrite as N	—	—	—	—	Report	—	1/6 months	Grab
Total Phosphorus	—	—	—	—	Report	—	1/6 months	Grab
Aluminum, Total	—	—	—	—	Report	—	1/6 months	Grab
Chromium, Total	—	—	—	—	Report	—	1/6 months	Grab
Copper, Total	—	—	—	—	Report	—	1/6 months	Grab
Iron, Total	—	—	—	—	Report	—	1/6 months	Grab
Lead, Total	—	—	—	—	Report	—	1/6 months	Grab
Zinc, Total	—	—	—	—	Report	—	1/6 months	Grab
Benzo(a)Anthracene	—	—	—	—	Report	—	1/6 months	Grab
Phenanthrene	—	—	—	—	Report	—	1/6 months	Grab

The monitoring requirements in **Table 29** will remain in effect in the renewed permit pursuant to anti-backsliding requirements under Section 402(o) of the Clean Water Act (33 U.S.C. §1342(o)) and/or 40 CFR § 122.44(l) (incorporated by reference at 25 Pa. Code § 92a.44) unless the limits are superseded by more stringent limits developed for this renewal or are relaxed pursuant to the anti-backsliding exceptions listed in 33 U.S.C. §1342(o) or 40 CFR § 122.44(l).

SWO.A. Technology-Based Effluent Limitations (TBELs)

Consistent with 25 Pa. Code § 92a.61(h) and DEP’s policy for permitting storm water discharges associated with industrial activities, minimum standards described in DEP’s PAG-03 NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity are applied to Outfall 001’s storm water discharges. Based on the Beaver Valley Site’s SIC Code of 2821, the facility would be classified under Appendix F – “Chemicals and Allied Products” of the PAG-03 General Permit. To ensure there is baseline consistency across the state for all chemical product facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix F of the PAG-03 are imposed at Outfalls 020, 021, and 025 (see **Table 3** in Section 001.A of this Fact Sheet). Monitoring for additional pollutants is considered if baseline monitoring requirements from Appendix F do not capture the range of analytes present in the discharges.

In accordance with 40 CFR § 122.44(k)(2), DEP considers the use of BMPs to be BAT for storm water discharges associated with industrial activities unless effluent concentrations indicate that BMPs provide inadequate pollution control. **Table 30** summarizes the effluent data reported for the general chemistry pollutants listed on Module 1 of the updated NPDES permit application and additional parameters regulated in BVPV’s process wastewaters. Highlighted concentrations are elevated.

Table 30. Effluent Concentrations Reported for Outfalls 020, 021, and 025

Parameter	Outfall 020	Outfall 021	Outfall 025	Parameter	Outfall 020	Outfall 021	Outfall 025
Oil and Grease (mg/L)	<4.4	<4.6	<4.3	4,6-Dinitro-o-cresol	<1.6	<1.5	<1.5
BOD ₅ (mg/L)	<2.0	4.7	<6.0	2,4-Dinitrophenol	<1.7	<3.2	<3.3
COD (mg/L)	<9.1	201	<12.6	2,4-Dinitrotoluene	<0.38	<0.35	<0.36
TSS (mg/L)	27	278	507	2,6-Dinitrotoluene	<0.19	<0.17	<0.18
Nitrogen, Total (mg/L)	0.87	1.3	1.5	Ethylbenzene	<0.51	<0.51	<0.51
Phosphorus, Total (mg/L)	<0.04	0.292	0.875	Fluoranthene	<0.065	<0.059	<0.061
pH (S.U.)	7.21	7.37	7.37	Fluorene	<0.075	<0.068	<0.069
Acenaphthene	<0.071	<0.064	<0.0655	Hexachlorobenzene	<0.061	<0.055	<0.056
Acenaphthylene	<0.071	<0.064	<0.0655	Hexachlorobutadiene	<0.075	<0.068	<0.069
Acrylonitrile	<7.8	<12.4	<12.4	Hexachloroethane	<0.14	<0.13	<0.14
Anthracene	<0.053	<0.048	<0.049	Methyl Chloride	<0.90	<0.90	<0.90
Benzene	<0.60	<0.60	<0.60	Methylene Chloride	<0.89	<0.89	<0.89
Benzo(a)anthracene	<0.082	<0.074	<0.075	Naphthalene	<0.064	<0.095	<0.059
3,4-Benzofluoranthene	<0.11	<0.095	<0.0965	Nitrobenzene	<0.54	<0.49	<0.50

Table 30 (cont'd). Effluent Concentrations Reported for Outfalls 020, 021, and 025

Parameter	Outfall 020	Outfall 021	Outfall 025	Parameter	Outfall 020	Outfall 021	Outfall 025
Benzo(k)fluoranthene	<0.096	<0.087	<0.089	2-Nitrophenol	<0.21	<0.19	<0.20
Benzo(a)pyrene	<0.058	<0.052	<0.053	4-Nitrophenol	<1.0	<0.92	<0.94
Bis(2-ethylhexyl)phthalate	<6.8	<6.1	<6.25	Phenanthrene	<0.060	<0.16	<0.16
Carbon tetrachloride	<0.88	<0.88	<0.88	Phenol	<0.53	<0.48	<0.49
Chlorobenzene	<0.50	<0.50	<0.50	Pyrene	<0.059	<0.053	<0.054
Chloroethane	<0.90	<0.90	<0.90	Tetrachloroethylene	<0.47	<0.47	<0.47
Chloroform	<0.60	<0.60	<0.60	Toluene	<0.46	<0.58	<0.46
2-Chlorophenol	<0.14	<0.23	<0.23	Aluminum, Total	380	3415	22140
Chrysene	<0.088	<0.080	<0.081	Chromium, Total	<2.6	7.7	27.7
Di-n-butyl phthalate	<0.81	<4.85	<4.9	Copper, Total	<3.9	<27.3	67.1
1,2-Dichlorobenzene	<0.36	<0.53	<0.53	Cyanide, Total	<8.0	<8.0	<8.0
1,3-Dichlorobenzene	<0.50	<0.50	<0.50	Iron, Total	610	5885	27240
1,4-Dichlorobenzene	<0.54	<0.54	<0.54	Lead, Total	<2.3	<12.4	<56.4
1,1-Dichloroethane	<0.63	<0.60	<0.60	Manganese, Total	41	385	659
1,2-Dichloroethane	<0.57	<0.57	<0.57	Nickel, Total	<4.4	12.4	<27.6
1,1-Dichloroethylene	<0.55	<0.75	<0.75	Zinc, Total	92	235	<562
1,2-trans-Dichloroethylene	<0.67	<0.67	<0.67	1,2,4-Trichlorobenzene	<0.14	<0.24	<0.24
2,4-Dichlorophenol	<0.055	<0.050	<0.051	1,1,1-Trichloroethane	<0.60	<0.60	<0.60
1,2-Dichloropropane	<0.66	<0.66	<0.66	1,1,2-Trichloroethane	<0.45	<0.45	<0.45
1,3-Dichloropropylene	<1.1	<1.1	<1.1	Trichloroethylene	<0.69	<0.69	<0.69
Diethyl phthalate	<0.62	<0.57	<0.57	Vinyl chloride	<0.41	<0.41	<0.41
2,4-Dimethylphenol	<0.18	<0.59	<0.59	Styrene	<0.47	<0.94	<0.47
Dimethyl phthalate	<0.22	<0.20	<0.20	TKN	420	1250	1165

Unless otherwise indicated, all results are reported in units of µg/L.

Based on the results in **Table 30**, no monitoring is required for parameters other than those currently monitored. **Table 31** presents DMR data from the previous permit term. Highlighted results exceed benchmarks or acute water quality criteria.

Table 31. Discharge Monitoring Report Summary for Outfalls 020, 021, and 025

Monitoring Period	TSS: 100 mg/L Benchmark			COD: 120 mg/L Benchmark		
	Outfall 020	Outfall 021	Outfall 025	Outfall 020	Outfall 021	Outfall 025
1st Half 2020	220	1600	680	17	14	< 9.1
2nd Half 2020	7.8	80	63	< 9.1	< 9.1	14
1st Half 2021	30	73	68	41	29	86
2nd Half 2021	23	31	94	< 9.1	12	25
1st Half 2022	76	18	35	23	14	< 9.1
2nd Half 2022	13	E	680	< 9.1		39
1st Half 2023	21	2.8	250	35	34	40
2nd Half 2023	23	110	100	10	34	49
1st Half 2024	27	520	1000	< 9.1	380	16
2nd Half 2024	210	35	14	80	22	< 9.1
Monitoring Period	Aluminum: 0.75 mg/L Benchmark			Copper: 0.09375 mg/L Benchmark		
	Outfall 020	Outfall 021	Outfall 025	Outfall 020	Outfall 021	Outfall 025
1st Half 2020	2.6	7.1	9.2	0.019	0.088	0.1
2nd Half 2020	0.66	0.78	0.54	0.0065	0.0096	0.0088
1st Half 2021	0.43	0.51	0.93	0.012	0.011	0.011
2nd Half 2021	0.49	1.3	0.88	< 0.0039	0.013	0.0086
1st Half 2022	1.8	1.1	1.8	0.0051	0.012	0.015
2nd Half 2022	0.28	E	2.3	< 0.0039		0.025
1st Half 2023	0.55	0.092	11	0.0069	0.01	0.036
2nd Half 2023	0.67	3.1	3	< 0.0039	0.012	0.016
1st Half 2024	0.38	6.6	44	< 0.0039	0.051	0.13
2nd Half 2024	8.4	0.23	0.28	0.11	< 0.0035	0.0042

Table 31 (cont'd). Discharge Monitoring Report Summary for Outfalls 020, 021, and 025

Benzo(a)Anthracene: 0.0005 Acute Criterion				Phenanthrene: 0.005 mg/L Acute Criterion		
Monitoring Period	Outfall 020	Outfall 021	Outfall 025	Outfall 020	Outfall 021	Outfall 025
1st Half 2020	< 0.00069	< 0.00069	< 0.00072	< 0.00051	< 0.00051	< 0.00053
2nd Half 2020	< 0.00075	< 0.00072	< 0.00069	< 0.00055	0.00053	< 0.00051
1st Half 2021	< 0.72	< 0.70	< 0.80	< 0.53	< 0.50	< 0.50
2nd Half 2021	< 0.00072	< 0.00069	< 0.00072	< 0.00053	< 0.00051	< 0.00053
1st Half 2022	0.6	0.7	0.63	0.44	0.49	0.46
2nd Half 2022	< 0.59	E	< 0.69	< 0.43	E	< 0.51
1st Half 2023	< 0.60	< 0.65	< 0.69	< 0.44	< 0.47	< 0.51
2nd Half 2023	< 0.60	< 0.63	< 0.63	< 0.44	< 0.46	< 0.46
1st Half 2024	< 0.082	< 0.072	< 0.078	< 0.06	< 0.15	< 0.16
2nd Half 2024	1.6	< 0.075	< 0.072	2.4	< 0.16	< 0.15
Chromium, Total: 0.086 mg/L Acute Criterion				Lead, Total: 0.0032 mg/L Benchmark		
Monitoring Period	Outfall 020	Outfall 021	Outfall 025	Outfall 020	Outfall 021	Outfall 025
1st Half 2020	0.0086	0.031	0.04	0.018	0.12	0.13
2nd Half 2020	0.0026	0.0034	0.0033	< 0.0028	0.011	0.0066
1st Half 2021	0.0032	0.0026	0.0034	0.0057	0.0095	0.0074
2nd Half 2021	< 0.0026	0.0052	0.0051	< 0.0023	0.016	0.0065
1st Half 2022	0.0037	0.0049	0.0036	0.0082	0.018	0.02
2nd Half 2022	< 0.0026	E	0.0065	< 0.0023	E	0.028
1st Half 2023	< 0.0026	< 0.0026	0.013	0.0031	< 0.0023	0.03
2nd Half 2023	0.0038	0.0044	0.0044	0.011	0.026	0.026
1st Half 2024	< 0.0026	0.014	0.053	< 0.0023	0.022	0.11
2nd Half 2024	0.023	0.0014	0.0024	0.15	< 0.0028	< 0.0028
Phosphorus, Total: 2.0 mg/L EPA Benchmark				Nitrate-Nitrite as N: 0.68 mg/L Benchmark		
Monitoring Period	Outfall 020	Outfall 021	Outfall 025	Outfall 020	Outfall 021	Outfall 025
1st Half 2020	0.37	1.2	1.7	0.62	0.22	0.68
2nd Half 2020	0.04	0.22	0.13	0.64	0.32	0.45
1st Half 2021	0.16	0.24	0.14	0.72	0.13	< 0.065
2nd Half 2021	0.089	0.38	0.43	0.97	0.69	0.88
1st Half 2022	0.12	0.35	0.33	1.8	0.14	0.29
2nd Half 2022	0.046	E	0.82	0.23	E	0.51
1st Half 2023	0.094	< 0.078	1.2	0.75	1.9	1.4
2nd Half 2023	< 0.04	0.23	0.34	0.57	0.79	0.84
1st Half 2024	< 0.04	0.51	1.7	0.45	0.13	0.33
2nd Half 2024	0.71	0.074	0.05	1.7	1.3	0.35
Zinc, Total: 0.12 mg/L Benchmark				pH: 6.0 to 9.0 S.U. Benchmark		
Monitoring Period	Outfall 020	Outfall 021	Outfall 025	Outfall 020	Outfall 021	Outfall 025
1st Half 2020	0.3	1.5	1.1	8.73	8.86	8.2
2nd Half 2020	0.12	0.12	0.063	7.94	7.32	7.24
1st Half 2021	0.16	0.14	0.081	7.7	7.26	7.89
2nd Half 2021	0.04	0.25	0.089	8.14	7.97	7.61
1st Half 2022	0.12	0.21	0.26	7.3	8.2	8.13
2nd Half 2022	0.075	E	0.37	7.23	E	7.5
1st Half 2023	0.12	0.021	0.24	6.43	6.51	6.81
2nd Half 2023	0.054	0.19	0.24	7.25	8.9	8.65
1st Half 2024	0.092	0.3	1.1	7.21	7.5	7.37
2nd Half 2024	1.3	0.17	< 0.023	7.41	7.37	7.65

E - No Discharge Indicator Code: Samples or results are not available due to analytical equipment failure, because a sample collection was overlooked, or samples could not be collected or analyzed (e.g., exceeded hold time) for the parameter during the reporting period.

BVPV submitted multiple corrective actions plans for its various exceedances of benchmark values. In BVPV's July 12, 2022 Corrective Action Plan, BVPV stated the following:

Previous exceedances have been attributed to dust kicked up at surrounding areas and deposited via air and brought onto site by vehicle tires from the main road that is swept periodically by a neighboring plant to limit how much material is tracked from nearby construction materials. BVPV Styrenics has asked PA DEP for help in

adjusting benchmark values as the choices of approved BMPs that can be used in the Outfall areas is becoming scarcer. Previous attempts to reduce background values of aluminum, zinc, lead, and nitrate have included bringing in professional crews to wash off the pavement areas, adding additional filtration BMPs to each outfall, adding more gravel to slow down stormwater and allow sediment to drop out of the flow, utilizing porous pavers, and adding more numerous cleaning activities of the effected [sic] areas. While it is the belief of BVPV Styrenics that our site is not directly contributing to the increased lead, zinc, aluminum, and nitrate, BVPV shall continue to attempt reducing any contributing factors. The Corrective Action Plan proposed by BVPV Styrenics is to add additional filtration fabric to the areas around the outfalls and add more native vegetation around the outflow areas. BVPV is also looking into commissioning a soil and rainwater study to show the background traces of the beforementioned elements are already exceeding benchmark values in their natural state. BVPV Styrenics proposes continued cooperation between ourselves and the PA DEP to ensure compliance and updating benchmark values as needed.

BVPV's current NPDES permit provides three options for relief from the obligation to continue submitting Corrective Action Plans for benchmark exceedances and iterating on BMPs to achieve pollutant reductions; the permittee must demonstrate one of the following:

- (1) the exceedances are solely attributable to natural background sources;
- (2) no further pollutant reductions are technologically available and economically practicable and achievable in light of best industry practice; or
- (3) further pollutant reductions are not necessary to prevent stormwater discharges from causing or contributing to an exceedance of applicable water quality standards.

BVPV has not made a demonstration under one of those options, so the benchmark values will remain unchanged for this renewal. Many of the exceedances are marginally higher than benchmark values and the ones that are significantly higher than benchmark values appear to be correlated with high concentrations of TSS, so BVPV may be able to demonstrate option (1) or (2) if TSS concentrations are controlled. As stated previously in this Fact Sheet, storm water outfalls are undergoing additional investigations and modifications.

Additional BMPs

As discussed in Section 001.A of this Fact Sheet, given the presence of plastic beads at the Beaver Valley Site and the lack of sector-specific BMPs in Appendix F of the PAG-03 (including any BMPs for the control of plastic beads), BMPs from BVPV's Sitewide Stormwater Investigation Plan and EPA's "Industrial Stormwater Fact Sheet Series - Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries" [Doc. No. EPA-833-F-06-040] (see **Attachments A and B**) will be included in the NPDES permit as sector- and site-specific BMPs and must be implemented and maintained to the extent practicable.

SWO.B. Water Quality-Based Effluent Limitations (WQBELs)

Generally, DEP does not develop numerical WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q₇₋₁₀ low flow conditions. Since uncontrolled storm water discharges should not occur during low flow conditions in the receiving stream, there should be no reasonable potential for storm water discharges to cause or contribute to an exceedance of water quality criteria.

Even though no mathematical modeling is performed, the permit will ensure compliance with water quality standards through a combination of best management practices including pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response. To the extent that plastic beads discharged through storm water outfalls contribute to violations of general water quality criteria under 25 Pa. Code § 93.6(b), the permit will require controls for those materials using BMPs in combination with required cleanup measures.

SWO.C. Effluent Limitations and Monitoring Requirements for Outfalls 020, 021 and 025

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet.

Table 32. Effluent Limits and Monitoring Requirements for Outfalls 020, 021 and 025

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
pH (S.U.)	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Chemical Oxygen Demand	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Nitrate+Nitrite Nitrogen	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Phosphorus, Total	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Aluminum, Total	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Chromium, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Copper, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Iron, Total	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Lead, Total	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Zinc, Total	—	—	—	Report	—	PAG-03, App. F; § 92a.61(h)
Benzo(a)Anthracene (µg/L)	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Phenanthrene (µg/L)	—	—	—	Report	—	25 Pa. Code § 92a.61(h)

Discharges from Outfalls 020, 021, and 025 are precipitation-induced and non-continuous so grab sampling will be required for all parameters except flow, which should be estimated at the time of sampling. The sampling frequency for all parameters will be 1/6 months.

Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment)
<input checked="" type="checkbox"/>	Toxics Management Spreadsheet (see Attachments B, E, and F)
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment D)
<input checked="" type="checkbox"/>	Temperature Model Spreadsheet (see Attachment C)
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input checked="" type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: Standard Operating Procedure for Clean Water Program New and Reissuance Industrial Waste and Industrial Stormwater Individual NPDES Permit Applications, SOP No. BCW-PMT-001, February 5, 2024, Version 1.7.
<input checked="" type="checkbox"/>	SOP: Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Industrial Permits, SOP No. BCW-PMT-032, February 5, 2024, Version 1.7.
<input checked="" type="checkbox"/>	Standard Operating Procedure (SOP) for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits, SOP No. BCW-PMT-033, Version 2.0, February 5, 2024.
<input checked="" type="checkbox"/>	SOP: Standard Operating Procedure for Clean Water Program Establishing Best Technology Available (BTA) Using Best Professional Judgement (BPJ) for Cooling Water Intake Structures at Existing NPDES Facilities, SOP No. BCW-PMT-038, December 7, 2021, Version 1.0.
<input type="checkbox"/>	Other:

ATTACHMENT A

Sitewide Stormwater Investigation Plan (March 31, 2025 Revision)

SITEWIDE STORMWATER INVESTIGATION PLAN

for

**400 Frankfort Road
Monaca, Pennsylvania**

Prepared for:

**BVPV Styrenics LLC
400 Frankfort Road
Monaca, Pennsylvania 15061**

Prepared By:

**Langan Engineering and Environmental Services, Inc.
2400 Ansys Drive, Suite 403
Canonsburg, Pennsylvania 15317**

May 13, 2025

Revised: March 31, 2025

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LANGAN

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INTRODUCTION

Langan Engineering and Environmental Services, Inc. (Langan) has revised this Sitewide Stormwater Investigation Plan (Plan) on behalf of BVPV Styrenics LLC (BVPV) located at 400 Frankfort Road in Monaca, Pennsylvania. The Plan was prepared as outlined in the January 23, 2023 Notice of Violation (NOV) response letter to Pennsylvania Department of Environmental Protection (PADEP) for the NOV issued to BVPV on December 23, 2022. The Plan describes the measures to be taken to assess the potential for contributions of beads to Raccoon Creek or the Ohio River conveyed via stormwater. The original draft of the Plan, submitted to PADEP for review on May 13, 2023, was completed in accordance with the overall Corrective Action Plan provided in the January 23, 2023 NOV response. No objections to the Plan were received and BVPV began implementing the stormwater program as presented. This revised version of the Plan has been prepared to incorporate completed and planned stormwater activities provided to PADEP in other submissions (e.g., Quarterly Status Reports and memorandums). This revised stormwater plan also addresses activities relative to future operational plans for the site relative to idling activities, considered in conjunction with discussions among the legal representatives of Styropek, PADEP and non-government organizations (NGO's) that filed a lawsuit regarding the alleged discharge of plastic beads from the site. As previously communicated to PADEP, the manufacturing was fully idled by March 14, 2025 and beads are no longer being produced at the site.

This revised Plan describes the following activities with regard to their scope and goals for investigation and/or implementation:

- Overall Site Investigation Efforts
- Stormwater Outfall improvements
- Best Management Practices and Bead Interception Efforts
- Reporting of Findings and Recommendations

This Plan is intended to be a living document and will be reviewed and updated as needed until the potential for discharge of solids conveyed via stormwater has been mitigated and the NOV has been resolved, potentially in coordination with a consent decree resolving a suit filed by non-governmental entities under the Clean Water Act . The table below will track all the changes to the Plan.

Date of Review	Changes to the Plan	Reviewer
May 12, 2023	Initial Plan Development	Katie Childs, Langan Engineering and Environmental Services
March 31, 2025	Restructuring of Plan Sections and Format. Updates Stormwater Investigation Activities, Findings, and Planned Actions.	Valentina Miller, Langan Engineering and Environmental Services

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1.0 Overall Site Investigation Efforts

1.1 Conveyance System Evaluation

Observations and Investigations

A goal of the stormwater conveyance system evaluation is to understand the condition of SW lines at the facility. As part of the May 13, 2023 Plan, Langan reviewed multiple pipe drawings for the facility; however, a complete figure of all system components was not available. To further evaluate the potential for conveyance of beads through the stormwater system to Raccoon Creek or the Ohio River, digital mapping and maintenance of the stormwater system was implemented and CCTV/line jetting activities proposed.

During site observations and mapping review of roof drains in the manufacturing portion of the facility, several discharge conditions of roof drains were observed; drains that discharge directly to ground surface, drains that are connected underground to lines discharging to Outfall 001, and roof drains that are connected to trenches discharging to the effluent system then Outfall 002. To better understand roof drain discharges to either Outfall 001 or Outfall 002 a field investigation was initiated starting in the 4Q24.

Implemented Actions

Plans of the stormwater system were provided in CAD format to Langan and were used to develop a GIS-based web viewer application. The application provides the locations of stormwater lines, catch basins, and outfalls at the facility based on the provided mapping. The application is being used during stormwater investigation activities for tracking of observations and data collection.

The stormwater line camera inspection and line cleaning commenced October 16, 2023 and continued through November 28, 2023. A specialty contractor was used to conduct the camera inspection and proposed to clean of all stormwater drainage pipes. Many challenges were encountered during this process due to the variability of line sizes, conditions of the lines, depths of the lines, and location of access points. Many lines were inaccessible with the camera due to accumulated debris. Unmapped lines and connections were identified that could not be fully accessed to determine their source and/or endpoints. Some mapped lines could not be located in the field. Due to the line condition, and inability to confirm that the lines could be properly plugged and isolated for cleaning activities, the proposed cleaning could not be completed. A memorandum outlining findings and recommended next steps related to the stormwater line investigations was submitted to PADEP on February 29, 2024. Based on findings of the CCTV/line jetting activities and other site observations of the presence of legacy beads in certain areas of the site, additional phases of CCTV/line jetting investigation were planned.

An initial targeted area for further investigation was related to Outfall 020. During the initial CCTV investigation, beads were observed in some lines near the Technology Building in the southern (front) portion of the facility, which is understood to connect to Outfall 020. Beginning in 1Q24, a utility location contractor was contracted to conduct a focused CCTV investigation on process lines within the Technology Building, as well as perform exterior subsurface stormwater line locating services in the vicinity of the Technology Building. A memorandum outlining findings and recommended next steps related to the investigations was submitted to PADEP on March 31, 2024. Additional investigations included dye tests and scoping of stormwater lines, and historical

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information review. Findings were submitted to PADEP in a summary memorandum May 31, 2024.

Evaluation was completed to determine methods for cleaning stormwater lines in the Technology Building and Outfall 020 area. Accessible lines in the Technology Building/Outfall 020 area were cleaned between August 26, 2024 and September 6, 2024. Similar cleaning strategies commenced on November 11, 2024 in areas where legacy beads were found to be present in higher concentrations during the site bead investigation. The former JSP production area, former substation, former condensate sump and other stormwater/former process lines in the area of D2 to the southeast of the site were targeted. The investigation uncovered stormwater lines and catch basins as well as former process lines and manholes containing sediment, including bead material. Certain lines in the targeted areas were inaccessible due to blockages or configuration issues with equipment. Continuation of line jetting and scoping activities in other areas of the site are being evaluated.

To further evaluate discharge paths of roof drains, field observations were completed to identify drain locations on site building roofs and visual tracking of the piping completed to understand drain discharge locations. Beads were observed on roofs, primarily in the vicinity of process and other equipment areas, during the roof observation. Upon discovering the beads, bead cleaning efforts were implemented and roof drain filters were installed at many roof drains to control the discharge of beads to the drains. Inspections of the roof drain filters are performed on a routine basis.

Planned Actions

Additional locations for continued CCTV and/or line cleaning scopes of work will be reevaluated as the investigation continues in an attempt to map the Facility's stormwater system.

BVPV is continuing to work to better understand migration pathways from the roofs. Based on the mapping and field observations, certain roof drains understood to discharge underground are being evaluated for redirection. Dye testing is being evaluated to confirm discharge locations of some roof drains to the effluent system.

Further evaluation of the stormwater system from a civil and survey perspective is underway to evaluate available technologies related to current configuration (such as filtration), relocation or combination of outfall discharges, and/or other redesign of stormwater management features to allow for enhanced solids removal or reduction/elimination of flow of site stormwater to the receiving streams. Evaluation in progress includes review of vegetating areas of the site, rerouting select stormwater lines and assessing filtration units or stormwater detention options.

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1.2 Stormwater Inspections

Observations and Investigations

In accordance with the May 13, 2023 Plan and as reported in the memorandum summarizing the findings and recommendations of the stormwater inspections submitted to PADEP, August 28, 2024, BVPV installed sediment bag filters in stormwater catch basins and manholes in production areas of the facility where the potential for migration of beads to the stormwater system was highest and initiated routine stormwater inspections. Inspections have included:

- Langan Inspections:
 - Performed twelve bimonthly inspections of the stormwater system over a six-month period from May 2023 to October 2023. Each month, two inspections were completed; one inspection during dry weather and one during or following a rainfall event, as practical.
 - The inspection period initially proposed in the Stormwater Inspection Plan was extended on a monthly basis following October 2023 and is currently ongoing. The monthly inspections are completed during or shortly after rainfall events, as practical. Inspections were completed to observe the amount and type of beads accumulating in the installed sediment filters and on ground surfaces around catch basins and manholes throughout the facility. The inspections were completed using the Langan-created geo-location application that is linked to the geographic information system (GIS) web-viewer. The application included specific inspection criteria, including but not limited to: date/time, catch basin identification number, filter condition, and details on observed beads (quantity, type, size, color).
- Weekly Inspections: Weekly stormwater BMP inspections were and continue to be conducted by BVPV and/or its subcontractors, as applicable based on-site conditions.
- Rain Event Inspections: Stormwater BMP inspections were and continue to be conducted by BVPV and/or its subcontractors after qualifying rainfall events with precipitation greater than 0.25-inches, as applicable based on-site conditions.

Implemented Actions

BVPV continues to inspect/install/replace/refine sediment filters in stormwater catch basins and manholes throughout the facility. Following the stormwater inspections, filters needing to be addressed were identified based on accumulation of sediment or observation of beads; the filter showing signs of water accumulation and poor drainage; and/or the filter requiring replacement due to wear. BVPV's on-site contractor addresses the flagged filters and cleans filters or areas impacted by beads on an ongoing basis following the inspections.

In addition to supporting ongoing maintenance activities, the data collected as part of these inspections has been used to identify the location, type, and magnitude of beads accumulated in various areas of the site to support further bead investigation activities.

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Planned Actions

BVPV will continue with routine stormwater inspections on a reduced schedule driven by observation of site conditions (i.e., following significant weather events or activities that could cause wear and tear to filters). Stormwater inspections will continue at least monthly through the stormwater investigations. Findings of the inspections will continue to support site-wide source evaluation activities.

1.3 Site-Wide Source Evaluation

Observations and Investigations

Based on findings of the stormwater inspections described above and continuing site-wide investigations, areas of the site with concentrated accumulations of beads have been identified. A significant amount of the observed bead accumulations can be visually identified as legacy beads, which have been observed in areas that are not used in BVPV's production operations. The beads observed have the potential to migrate via stormwater. The investigation has included the following activities:

- Field and historical mapping review to identify and observe subsurface features that may contain beads.
- Review of historical mapping to identify former site features that may pose a pathway for bead migration. Features include, but are not limited to former process lines, stormwater lines, sumps, production equipment and buildings, technology building and equipment, and loading areas.
- Better defining areas of concentrated beads based on results of historical mapping review, subsurface feature evaluation, and findings from ongoing investigations at the site, including stormwater inspections, that have identified large volumes of legacy beads in areas of the plant operated and/or decommissioned by the prior owner(s).
- Grid investigation to canvas the site and document observations of beads. Observations include sampling of observed beads and evaluation of bead depth in applicable areas.
- Generation of a catalogue of all bead types/sizes known to have been produced at the site.
- Review of historical operational and decommissioning documents to evaluate procedures and activities prior to ownership by BVPV.
- Line jetting and CCTV investigation activities, targeting former process areas with recurring legacy bead observations (activities described in Section 1.1).
- Roof observations were completed to evaluate potential avenues for bead release from processes and to evaluate beads accumulated on the roofs to better understand migration pathways to and from the roofs.

Implemented Actions

Based on findings of site investigation, key areas of concentrated beads were observed at the site. Stormwater controls, such as compost filter socks, were put in place to mitigate migration of bead material in areas of concentrated beads at ground level, including a former condensate sump and former substation area. BVPV implemented controls by installing filter material on roof drains and is continuing to work to better understand migration pathways to and from the roofs. Continued roof investigations include review of mapping, evaluation of current and former documentation on potential sources of beads to roofs, dye testing of select roof drains, evaluation of drain redirection or additional control measures, and evaluation of options for roof cleaning activities. Cleanup of

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surface bead/bead piles is being completed where conditions allow for effective cleaning by site contractors. Stormwater catch basin filters continue to be observed and maintained across the site.

Planned Actions

A review of additional control or mitigation measures to address beads at the site is ongoing. Production has ceased at the facility and target cleanups of production areas is ongoing in the D2, D3, and D4 process areas as part of idling efforts. Idling activities will include the de-inventorying of process lines and equipment, clean-up of process areas, including beads; and decommissioning of equipment. Increased effort and resources have been focused on bead cleanup. This includes areas of the plant that were decommissioned by previous owners of the property, where, in some cases, large volumes of legacy beads were discovered. Thorough review of interior and exterior areas is underway, and significant progress is being made relative to bead removal and migration pathway elimination. These activities are being documented by BVPV and its contractors. Review is being completed to evaluate potential cleaning and mitigation efforts for concentrated beads (including legacy beads) observed in gravel areas at the facility.

2.0 STORMWATER OUTFALL IMPROVEMENTS

2.1 Outfall 001 and Outfall 002

Observations and Investigation

Site investigations have shown the majority of the stormwater from the production portion of the west side of the facility is discharged via the conveyance system to Outfall 001. Review of drainage area mapping as well as findings from CCTV and other site investigations, have shown select roof drains and various stormwater catch basins discharge to the effluent system and eventually Outfall 002. Based on the idling of manufacturing at the facility, processes flow at the site will be significantly decreased, affecting the ultimate discharges from both Outfall 001 and Outfall 002; however, stormwater will continue to discharge to both outfalls.

Trial implementation of a disk filter filtration system prior to Outfall 002 commenced in the 2Q24 and continues.

Planned Actions

The idling of the Facility will result in reduced flows, and additional treatment technologies are being reviewed for potential use in conjunction with or as an alternative to disk filter treatment. The site is in the process of continuing to evaluate alternative filtration options for Outfall 002, including but not limited to, cartridge filtration, cloth media filters, and sand filtration. Options for efficiency monitoring of treatment systems is being evaluated, including recent discussions with Aizaco, which designed a monitoring system at Formosa Plastics in Texas. The feasibility of utilizing filters and other technologies for Outfall 001 is being evaluated. Based on production idling, flows to Outfall 001 and 002 resulting from process and non-process inputs have decreased and will continue to decrease until the final process idling is completed. Evaluation of the anticipated flows to both outfalls under the final idled state is being evaluated. Infrastructure changes are being evaluated relative to the outfalls, including the potential to reroute stormwater and/or excess river water intake from the current Outfall 001 location.

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2.2 Outfall 020

Observations & Investigation

During the stormwater camera inspection and line cleaning activities conducted during the third quarter 2023 (discussed further in Section 1.1), beads were observed in some lines of an area of the front of the facility, which is understood to connect to Outfall 020. On December 6, 2023, a representative of the facility walked the area leading to Outfall 020 in an attempt to identify if beads were present in the conveyance system. The representative walked the stormwater conveyance in the front area of the facility starting from where the culvert at the main entrance enters the swale that runs along Route 18, under the east entrance, and then makes its way toward Outfall 020 (observations of the actual outfall were limited due to the soft ground in the vicinity, which led to limited access). Beads were observed at various points along this conveyance; however, water was not flowing/there was no discharge occurring at that time. PADEP was notified of the observation via email on December 7, 2023, and the facility began planning mitigation efforts.

Implemented Actions

Measures have been completed to mitigate potential bead discharge to Outfall 020, including increased internal and external housekeeping measures, catch basin filter installation and maintenance efforts, and evaluating stormwater connections in the Outfall 020 drainage area. Langan engineers proposed and oversaw the installation of rock filters in the area leading to Outfall 020 as an erosion and sediment control measure. Four rock filters were installed; one at each of the three culvert outfall locations and one at the culvert entrance. Rock filters are observed routinely and following storm events. Based on observations, accumulated sediment or solids are removed from the filters as needed. Stone is maintained and installed filter fabric is cleaned or replaced as needed as part of regular maintenance.

Planned Actions

The current sampling location for Outfall 020 contains flow from a watercourse west of the site and stormwater runoff from Frankfort Road to the south, in addition to stormwater runoff from the site. The feasibility of combining stormwater catch basins and treatment options in the Outfall 020 area are being considered.

The Pennsylvania Department of Transportation (PennDOT) began construction efforts to relocate the Route 18 Bridge during 1Q25. This work impacts the areas adjacent to Racoon Creek in the Outfall 020 discharge area, including areas along the pathway of Outfall 020 where rock filters were placed. Upon discovering that PennDOT's contractor destroyed one of the rock filters, BVPV asked PennDOT to engage DEP to ensure that PennDOT's activities impacting erosion and sediment controls for stormwater from the Facility are coordinated. PennDOT, DEP and BVPV have engaged in discussions, and reconstruction of rock filters may occur.

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2.3 Outfalls 021 and 025

Observations & Investigation

December 2022 and January 2023 facility-wide inspections were completed to evaluate potential solids contributions to the stormwater discharges to Raccoon Creek and the Ohio River. As part of those inspections, observations were made surrounding the erosion and potential bead discharges into the piping of Outfalls 021 and 025. Corrective actions to assist with mitigating erosion before and after the catch basins in the outfall areas were developed.

Implemented Actions

To mitigate erosion and sedimentation prior to stormwater discharging to Raccoon Creek via the existing outfalls or sheet flow, the following erosion and sediment control best management practices (E&S BMPs) were installed (as described in the May 13, 2023 Plan) while design of a permanent engineering solution for the outfall areas was completed. Sitework for the implementation of the reconstruction engineering plans began in 1Q24 and continued through 3Q24 and included:

- Installation of 12-inch concrete curb to better direct stormwater flow to treatment areas.
- Installation of rip-rap aprons to bioretention areas for flow and solids control.
- Installation of lined bioretention areas for flow and solids control.
- Installation of skimmer device at outlet control structures for solids control.
- Vegetated Swale to better direct stormwater flow to hydrodynamic separator.
- Hydrodynamic separator (Contech unit) with filtration unit for solids removal.
- Grading and paving to ensure positive drainage to treatment areas.

Planned Actions

Increased monitoring of stormwater from Outfalls 021 and 025 began in 4Q24 to evaluate effectiveness of the outfall rehabilitation completed in 3Q24. Grab sampling with intent to collect at least 10 samples over 6-months was initiated to observe the influent and effluent from the Outfall 021 and 025 Contech units for visible beads.

2.4 End of Pipe Stormwater Monitoring

Planned Actions

BVPV is reviewing potential options for end of pipe monitoring for outfalls to allow for evaluation for beads in stormwater outfall discharges.

3.0 BEST MANAGEMENT PRACTICES AND BEAD INTERCEPTION EFFORTS

Observations and Investigations

Various site evaluations including stormwater investigations as described in Section 1.1 and Site-Wide Source Evaluation described in Section 1.3, have identified beads across the site with the potential to migrate to stormwater. Based on the observations, stormwater BMPs and mitigation measures were evaluated and implemented, as described below.

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Implemented Actions

Expanded good housekeeping measures were implemented in interior production and exterior facility areas to reduce the potential for beads to migrate to and come in contact with stormwater. BVPV has implemented an exterior bead monitoring program to identify and investigate notable changes to beads on the ground surface and demarcate these areas as appropriate. Enhanced housekeeping procedures have been developed and pertinent facility personnel have been trained on these procedures accordingly. Additional training and oversight will be ongoing to confirm that new housekeeping measures are consistently followed.

Catch Basin Filter Bags

Based on observations and Langan's recommendations, silt fence fabric was cut and installed by Styropek's on-site contractor beginning in January 2024. Simultaneously, Langan and Styropek researched alternative options for stormwater filtration at the facility. Geotextile "bag filters" were purchased and tested within catch basin features, which proved to be more efficient and durable than the silt fence fabric. A combination of silt fence fabric and the bag filters were installed in stormwater features throughout the facility from January 2024 through June 2024, at which time every observed stormwater feature at the facility contained a filter. By September 2024, the transition from silt fence fabric to bag filters was completed for most stormwater feature locations; silt fence fabric is still utilized in oddly- or oversize-shaped stormwater features where standard bag filter sizes are not appropriate. Based on findings of routine stormwater inspections, stormwater filters are cleaned and/or replaced as needed and we are continuing to evaluate evolving technologies for continued stormwater control.

Compost Filter Sock Trap Installation

Compost filter sock is used at the facility as a BMP to mitigate migration of solids, including beads, in various areas. Silt socks have been utilized around stormwater catch basins where high volumes of sediment are observed following rainfall events to reduce the volume of sediment accumulating and clogging the bag filters within the catch basins. Compost filter sock is also utilized in areas of the site (such as those mentioned in Section 1.3) to mitigate the transport of beads to stormwater.

Silt Fence Installation

Installation of erosion and sediment control BMPs was completed by Langan March 6, 2023, as described in the May 13, 2023 Plan. Based on recommendations silt fence was in the areas of Outfalls 021 and 025 and near the clarifier in the eastern portion of the facility. Silt fence was also installed in the area of the former condensate sump where concentrated volumes of legacy beads were observed.

Surface Cleaning Enhancement

A long-term lease of a street sweeping unit with vacuum capabilities was initiated in October 2023 to aid in routine cleaning of the facility. A revised cleanup procedure has been implemented where outside contractors are utilized for bead cleanup and street sweeper use was discontinued. Cleanup procedures, will continue to be evaluated and updated as needed to address site needs.

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Planned Actions

The stormwater inspection monitoring, data compilation, and review are ongoing efforts. Based on the findings of the stormwater monitoring, and other site investigations, bead interception efforts will continue to be implemented as appropriate.

4.0 REPORT OF FINDINGS AND RECOMMENDATIONS

Quarterly Status Reports; including details on stormwater investigations, observations, and corrective actions; have been prepared since 1Q23. Additional reporting on stormwater investigations and observations have also been prepared and submitted to the PADEP as part of the overall Corrective Action Schedule. Additional reporting on stormwater related investigations will be prepared in conjunction with discussions among the legal representatives of Styropek, PADEP and non-government organizations (NGO's) that filed a lawsuit regarding the discharge of beads from the site.

5.0 SCHEDULE

Below is a table of the intended schedule that will be updated if there are any changes prior to completion.

Task	Description	Anticipated Start	Anticipated Completion
Outfall Rehabilitation	Includes temporary measures for reducing erosion in the area of outfalls 021 and 025 prior to design and installation of permanent engineering solution.	11/15/2022	Completed
Reinforce and Expand Good Housekeeping Measures	Interior housekeeping measures may include, but are not limited to: floor drain covers, increased sweeping/vacuuming, bead collection mats near exits. Exterior housekeeping measures may include, but are not limited to: cone observation program, increased sweeping/vacuuming, SW catch basin cleaning/inspections, paving/curbing in key impacted areas.	12/1/2022	Ongoing as BMP.
Bead Interception Efforts	Installation of catch basin filters and silt fence to intercept material prior to conveyance to the storm water system. Some filters have already been placed in catch basins within key areas of the facility. Additional filters will be added to remaining catch basins immediately following system cleaning efforts.	12/15/2022	Ongoing as BMP.
Stormwater System Inspection, Line Tracing, and Cleaning	The current layout and condition of the stormwater system will be evaluated and documented. Evaluation will incorporate findings from mapping review, site line jetting/scoping activities, and dye testing.	10/16/2023	Completion date dependent on extent of findings.
Interim Line Tracing and Cleaning Submittal	Preparation of memorandum summarizing completed stormwater system investigation, line tracing, and cleaning activities, challenges, and next steps for submittal to PADEP.	12/1/2023	Completed

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Task	Description	Anticipated Start	Anticipated Completion
Outfall 020 Investigation	Investigation of the Outfall 020 area to understand stormwater conveyance and solids transport. Installation of stormwater mitigation measures, as needed. Wetland and watercourse delineation of the area will be completed.	12/6/2023	Ongoing.
Technology Building Investigation	The layout, condition, and discharge location of the technology building process drains will be investigated and documented. Exterior subsurface stormwater line locating services in the vicinity of the Technology Building will be completed by a utility location contractor.	12/14/2023	Completed
Initial Monitoring of Bead Interception Efforts	Routine inspections of the catch basin filters, silt fence, and outfalls will be completed to observe the amount and type of beads accumulated in filter material, as well as accumulated on ground surfaces in critical areas of the facility.	5/15/2023	5/30/2024
Review of Initial Investigation Results	Compilation and review of monitoring data. Outlines the observations and will draw a conclusion regarding the potential and magnitude for bead contributions via stormwater.	Continuous with above task.	Completion date dependent on extent of findings.
Preparation of Summary Report and Recommendations	Details findings and makes recommendations for future BMP implementation and/or physical improvements	Following completion of the above two tasks.	8/28/2024
Bead Investigation	Site-wide evaluation of areas with accumulation of beads. Includes review of historical mapping, field and interior observations, and utility/subsurface feature evaluation.	Third Quarter 2024	Ongoing (Completion date dependent on extent of findings.)
Line Jetting/CCTV	Line jetting and CCTV investigation activities, targeting former process areas with recurring legacy bead observations. Investigation was conducted in the southeastern portion of the facility and will continue in the remaining portions of the site during 2025.	Fourth Quarter 2024	Ongoing (Completion date dependent on extent of findings and contractor availability.)
Roof Investigation	Investigation of site roofs to control bead material and better understand migration pathways to and from the roofs. Investigation to include review of mapping, evaluation of current and former documentation on potential sources of beads to roofs, dye testing of select roof drains, evaluation of drain redirection or additional control measures, and evaluation of options for roof cleaning activities.	Fourth Quarter 2024	Ongoing (Completion date dependent on extent of findings and contractor availability.)

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Task	Description	Anticipated Start	Anticipated Completion
Outfall 021 and Outfall 025 Monitoring	Grab sampling with intent to collect at least 10 samples over 6 months to observe the influent and effluent from the Outfall 021 and 025 Contech units for visible beads.	Fourth Quarter 2024	Ongoing (Completion date dependent on extent of findings)
Stormwater System Upgrade Evaluation	Evaluation of the stormwater system from a civil and survey perspective to evaluate available technologies related to current configuration (such as filtration), relocation or combination of outfall discharges, or other redesign of stormwater management features to allow for enhanced solids removal or reduction/elimination of flow of site stormwater to the receiving streams.	Second Quarter 2024	Ongoing

ATTACHMENT B

U.S. Environmental Protection Agency
Industrial Stormwater Fact Sheet Series –
Sector Y: Rubber, Miscellaneous Plastic
Products, and Miscellaneous Manufacturing
Industries

INDUSTRIAL STORMWATER FACT SHEET SERIES

*Sector Y: Rubber, Miscellaneous
Plastic Products, and Miscellaneous
Manufacturing Industries*



U.S. EPA Office of Water
EPA-833-F-06-040
February 2021

What is the NPDES stormwater permitting program for industrial activity?

Activities, such as material handling and storage, equipment maintenance and cleaning, industrial processing or other operations that occur at industrial facilities are often exposed to stormwater. The runoff from these areas may discharge pollutants directly into nearby waterbodies or indirectly via storm sewer systems, thereby degrading water quality.

In 1990, the U.S. Environmental Protection Agency (EPA) developed permitting regulations under the National Pollutant Discharge Elimination System (NPDES) to control stormwater discharges associated with eleven categories of industrial activity. As a result, NPDES permitting authorities, which may be either EPA or a state environmental agency, issue stormwater permits to control runoff from these industrial facilities.

What types of industrial facilities are required to obtain permit coverage?

This fact sheet specifically discusses stormwater discharges from rubber, miscellaneous plastic products, and manufacturing facilities as described by Standard Industrial Classification (SIC) Major Group 30. Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit:

- ◆ Tires and inner tubes (SIC 3011)
- ◆ Rubber and plastic footwear (SIC 3021)
- ◆ Rubber and plastic hose and belting (SIC 3052)
- ◆ Gaskets, packaging, and sealing devices (SIC 3053)
- ◆ Fabricated rubber products, not elsewhere classified (SIC 3061 and 3069)
- ◆ Miscellaneous plastic products (SIC 3081 and 3089)
- ◆ Miscellaneous manufacturing industries (SIC 3991-3999)

Also discussed are stormwater discharges from miscellaneous manufacturing industries (except jewelry, silverware, and plateware) commonly identified by SIC Major Group 39 (except for 391). Miscellaneous manufacturing industries specifically include manufacturers of:

- ◆ Musical instruments (SIC 3931)
- ◆ Games, toys, and athletic goods (SIC 3942-3949)
- ◆ Pens, pencils, and artists' supplies (SIC 3951-3955, except 3952)
- ◆ Buttons, pins, and needles (SIC 3961 and 3965)

INDUSTRIAL STORMWATER FACT SHEET SERIES

*Sector Y: Rubber, Miscellaneous Plastic Products,
and Miscellaneous Manufacturing Industries*

What does an industrial stormwater permit require?

Common requirements for coverage under an Industrial stormwater permit include development of a written stormwater pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent or NOI. The SWPPP is a written assessment of potential sources of pollutants in stormwater runoff and control measures that will be implemented at your facility to minimize the discharge of these pollutants in runoff from the site. These control measures include site-specific best management practices (BMPs), maintenance plans, inspections, employee training, and reporting. The procedures detailed in the SWPPP must be implemented by the facility and updated as necessary, with a copy of the SWPPP kept on-site. The industrial stormwater permit also requires collection of visual, analytical, and/or compliance monitoring data to determine the effectiveness of implemented BMPs. For more information on EPA's industrial stormwater permit and links to State stormwater permits, go to www.epa.gov/npdes/stormwater and click on "Industrial Activity."

What pollutants are associated with activities at my facility?

Pollutants conveyed in stormwater discharges from facilities involved with the manufacturing of rubber, miscellaneous plastic, and other products will vary. There are a number of factors that influence to what extent industrial activities and significant materials can affect water quality.

- ◆ Geographic location
- ◆ Topography
- ◆ Hydrogeology
- ◆ Extent of impervious surfaces (e.g., concrete or asphalt)
- ◆ Type of ground cover (e.g., vegetation, crushed stone, or dirt)
- ◆ Outdoor activities (e.g., material storage, loading/unloading, vehicle maintenance)
- ◆ Size of the operation
- ◆ Type, duration, and intensity of precipitation events

Most of the actual manufacturing and processing activities associated with this industry normally occur indoors. However, there is a wide variety of materials used at these facilities which may include:

- ◆ Solvents
- ◆ Acids and caustic
- ◆ Carbon black
- ◆ Plasticizers
- ◆ Paint
- ◆ Processing oils
- ◆ Resins
- ◆ Rubber compounds and solutions
- ◆ Scrap plastic and rubber
- ◆ Fuels such as diesel or gasoline
- ◆ Adhesives
- ◆ Zinc
- ◆ Miscellaneous chemicals

Tanks, drums, or bags of these materials (including raw materials, by-products, final products, or waste products) may be exposed to stormwater during loading/unloading operations or through outdoor storage or handling at some facilities. Other items which may be exposed to stormwater include surplus processing machinery, scrap metal, PVC pipe, and rags.

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at Rubber, miscellaneous plastic product, and miscellaneous manufacturing facilities.

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 and Miscellaneous Manufacturing Industries*

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities

Activity	Pollutant Source	Pollutant
Outdoor material loading/unloading	Wooden pallets, spills/leaks from material handling equipment, solvents, resins	Total suspended solids (TSS), oil and grease, organics
Outdoor material and equipment storage	Solvents, acids and caustic, plasticizers, paint, lubricating oils, processing oils, resins, rubber compounds, mineral spirits, zinc, scrap metal, scrap plastic and rubber, plastic pellets, PVC pipe, and rags	Organics, zinc, hydrocarbons, oil and grease, acids, alkalinity

Note: Activities may have additional pollutant sources that contain PFAS and can come into contact with stormwater discharges. Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that include PFOA, PFOS, GenX, and many other chemicals.

What BMPs can be used to minimize contact between stormwater and potential pollutants at my facility?

A variety of BMP options may be applicable to eliminate or minimize the presence of pollutants in stormwater discharges from rubber, miscellaneous plastic products, and miscellaneous manufacturing facilities. You will likely need to implement a combination or suite of BMPs to address stormwater runoff at your facility. Your first consideration should be for pollution prevention BMPs, which are designed to prevent or minimize pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management. Prevention BMPs can include regular cleanup, collection and containment of debris in storage areas, and other housekeeping practices, spill control, and employee training. It may also be necessary to implement treatment BMPs, which are engineered structures intended to treat stormwater runoff and/or mitigate the effects of increased stormwater runoff peak rate, volume, and velocity. Treatment BMPs are generally more expensive to install and maintain and include oil-water separators, wet ponds, and proprietary filter devices.

BMPs must be selected and implemented to address the following:

Good Housekeeping Practices

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle and equipment maintenance areas, and loading docks. Good housekeeping practices must include a schedule for regular pickup and disposal of garbage and waste materials and routine inspections of drums, tanks, and containers for leaks and structural conditions. Practices also include containing and covering garbage, waste materials, and debris. Involving employees in routine monitoring of housekeeping practices has proven to be an effective means of ensuring the continued implementation of these measures. Industrial facilities can conduct activities that use, store, manufacture, transfer, and/or dispose of PFAS containing materials. Successful good housekeeping practices to minimize PFAS exposure to stormwater could include inventorying the location, quantity, and method of storage; using properly designed storage and transfer techniques; providing secondary containment around chemical storage areas; and using proper techniques for cleaning or replacement of production systems or equipment.

Minimizing Exposure

Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters.

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Examples of BMPs for exposure minimization include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even the simple practice of keeping a dumpster lid closed can be a very effective pollution prevention measure. Another example could include locating PFAS-containing materials and residues away from drainage pathways and surface waters.

Erosion and Sediment Control

BMPs must be selected and implemented to limit erosion on areas of your site that, due to topography, activities, soils, cover, materials, or other factors are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

Management of Runoff

Your SWPPP must contain a narrative evaluation of the appropriateness of stormwater management practices that divert, infiltrate, reuse, or otherwise manage stormwater runoff so as to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of stormwater, inlet controls, snow management, infiltration devices, and wet retention measures. Incorporating treatment like granular activated carbon may be helpful to remove certain pollutants like PFAS.

Additionally, identifying weaknesses in current facility practices will aid the permittee in determining appropriate BMPs that will achieve a reduction in pollutant loadings.

A combination of preventive and treatment BMPs will yield the most effective stormwater management for minimizing the offsite discharge of pollutants via stormwater runoff. Though not specifically outlined in this fact sheet, BMPs must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training.

All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are quite involved. You must regularly inspect all BMPs to ensure they are operating properly, including during runoff events. As soon as a problem is found, action to resolve it should be initiated immediately.

Implement BMPs, such as those listed below in Table 2 for the control of pollutants at rubber, miscellaneous plastic products and miscellaneous manufacturing facilities, to minimize and prevent the discharge of pollutants in stormwater. Identifying weaknesses in current facility practices will aid the permittee in determining appropriate BMPs that will achieve a reduction in pollutant loadings. BMPs listed in Table 2 are broadly applicable to rubber, miscellaneous plastic products and miscellaneous manufacturing facilities; however, this is not a complete list and you are recommended to consult with regulatory agencies or a stormwater engineer/consultant to identify appropriate BMPs for your facility.

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 and Miscellaneous Manufacturing Industries*

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities

Pollutant Sources	BMPs
Outdoor material unloading/loading	<ul style="list-style-type: none"> <input type="checkbox"/> Confine loading/unloading activities to designated areas outside drainage pathways and away from surface waters. <input type="checkbox"/> Close storm drains during loading/unloading activities in surrounding areas. <input type="checkbox"/> Use a dead-end sump where materials could be directed. <input type="checkbox"/> Inspect containers for leaks or damage prior to loading/unloading. <input type="checkbox"/> Avoid loading/unloading materials in the rain or provide cover or other protection for loading docks. <input type="checkbox"/> Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. <input type="checkbox"/> Cover loading and unloading areas and perform these activities on an impervious pad to enable easy collection of spilled materials. <input type="checkbox"/> Slope the impervious concrete floor or pad to collect spills and leaks and convey them to proper containment and treatment. <input type="checkbox"/> Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks. <input type="checkbox"/> For rail transfer, a drip pan shall be installed within the rails to collect spillage from the tank. <input type="checkbox"/> Where liquid or powdered materials are transferred in bulk to/from truck or rail cars, ensure hose connection points at storage containers are inside containment areas, or drip pans are used in areas where spillage may occur which are not in a containment area. <input type="checkbox"/> Place catch trays between the dock and trailer at shipping and receiving bays to capture solids. <input type="checkbox"/> Enclose material handling systems. <input type="checkbox"/> Cover materials entering and leaving areas. <input type="checkbox"/> Use dry cleanup methods instead of washing the areas down. <input type="checkbox"/> Regularly sweep area to minimize debris on the ground and dispose of materials properly. <input type="checkbox"/> Provide dust control if necessary. When controlling dust, sweep and/or apply water or materials that will not impact surface or ground water. <input type="checkbox"/> Develop and implement spill prevention, containment, and countermeasure (SPCC) plans. <input type="checkbox"/> Train employees in spill prevention, control, cleanup, and proper materials management techniques. <input type="checkbox"/> Inspect pallets for protruding nails or broken boards.
Outdoor material storage	<ul style="list-style-type: none"> <input type="checkbox"/> Cover storage areas with roofs or tarps. <input type="checkbox"/> Confine storage of raw materials, parts, and equipment to designated areas away from high traffic, outside drainage pathways and away from surface waters. <input type="checkbox"/> Provide secondary containment around chemical storage areas. <input type="checkbox"/> If containment structures have drains, ensure that the drains have valves, and that valves are maintained in the closed position. Institute protocols for checking/testing stormwater in containment areas prior to discharge. <input type="checkbox"/> Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. <input type="checkbox"/> Direct stormwater runoff to an on-site retention pond. <input type="checkbox"/> Ensure that all containers are properly sealed and valves closed. <input type="checkbox"/> Conduct container integrity testing and provide leak detection.

INDUSTRIAL STORMWATER FACT SHEET SERIES

Sector Y: Rubber, Miscellaneous Plastic Products,
 and Miscellaneous Manufacturing Industries

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Outdoor material storage (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Inspect storage tanks and piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks and perform preventive maintenance. <input type="checkbox"/> Plainly label all containers. <input type="checkbox"/> Maintain an inventory of fluids to identify leakage. <input type="checkbox"/> Wash and rinse containers indoors before storing them outdoors. <input type="checkbox"/> Provide transfer of PFAS containing materials and their proper collection and disposal methods in the event of a release from their container. <input type="checkbox"/> Train employees on proper spill prevention and response techniques. <input type="checkbox"/> Train employees on proper waste control and disposal.
Waste management	<ul style="list-style-type: none"> <input type="checkbox"/> Store waste in enclosed and/or covered areas. <input type="checkbox"/> Store wastes in covered, leak proof containers (e.g., dumpsters, drums). <input type="checkbox"/> Cover the dumpsters or move them indoors. <input type="checkbox"/> Use linked dumpsters that do not leak. <input type="checkbox"/> Provide a lining for the dumpsters. <input type="checkbox"/> Dispose or recycle packaging properly. <input type="checkbox"/> Ensure hazardous and solid waste disposal practices are performed in accordance with applicable federal, state, and local requirements. <input type="checkbox"/> Ship all wastes to offsite licensed landfills or treatment facilities.
Particulate emission management	<ul style="list-style-type: none"> <input type="checkbox"/> Clean around vents and stacks. <input type="checkbox"/> Place tubs around vents and stacks to collect particulates. <input type="checkbox"/> Inspect air emission control systems regularly and repair or replace when necessary.
<i>Rubber Manufacturers - Zinc material management</i>	
Material storage	<ul style="list-style-type: none"> <input type="checkbox"/> Store zinc bags indoors. <input type="checkbox"/> Use of special large volume sacks (2,500 pound sacks rather than 50- to 100-pound sacs) with less potential for releases of zinc. <input type="checkbox"/> Store materials in use in sealable container. <input type="checkbox"/> Provide an airspace between the container and the cover to minimize "puffing" losses when the container is opened. <input type="checkbox"/> Use automatic dispensing and weighing equipment. <input type="checkbox"/> Use pre-weighed bags that can be thrown directly into the mixer to reduce spillage. <input type="checkbox"/> Clean up spills without washing zinc into storm drains. <input type="checkbox"/> Train employees on proper handling and emptying of zinc bags.
Dumpsters	<ul style="list-style-type: none"> <input type="checkbox"/> Cover the dumpsters or move them indoors. <input type="checkbox"/> Use linked dumpsters that do not leak. <input type="checkbox"/> Provide a lining for the dumpsters.
Dust collectors or baghouses	<ul style="list-style-type: none"> <input type="checkbox"/> Repair or replace improperly operating baghouses. <input type="checkbox"/> Provide regular maintenance.

INDUSTRIAL STORMWATER FACT SHEET SERIES

*Sector Y: Rubber, Miscellaneous Plastic Products,
 and Miscellaneous Manufacturing Industries*

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Grinding operations from which zinc dust may be released	<input type="checkbox"/> Use dust collection system or reduce the amount of dust generated.
Zinc stearate coating operations	<input type="checkbox"/> Develop a spill prevention/response plan. <input type="checkbox"/> Use dry cleanup methods for spills. <input type="checkbox"/> Use alternate compounds to zinc stearate.
<i>Plastics Manufacturers - Plastic Pellet Management</i>	
Management	<input type="checkbox"/> Conduct regularly scheduled self evaluations to identify problem areas. <input type="checkbox"/> Encourage information sharing between companies. <input type="checkbox"/> Develop educational materials for employees, including those involved in transporting pellets.
Education and training	<input type="checkbox"/> Educate key officials and company managers regarding the fate and effects and the economic disadvantages of pellet loss. <input type="checkbox"/> Educate company employees regarding environmental hazards of pellet loss and employee responsibility for corrective actions. <input type="checkbox"/> Train pellet handlers to operate equipment, particularly fork lifts, in a manner that minimizes the potential for pellet loss.
Equipment and facilities	<input type="checkbox"/> Install a containment system to capture stormwater runoff. <input type="checkbox"/> Implement dry cleanup procedures. <input type="checkbox"/> Install connecting hoses equipped with valves that will close automatically when the connection is broken. <input type="checkbox"/> Direct the water flow from rail hopper cars and bulk trucks through a screen to capture the pellets rather than spilling them onto the ground. <input type="checkbox"/> Seal expansion joints in concrete floors with a flexible material to facilitate cleanup. <input type="checkbox"/> Install alarms in the pellet conveying system. <input type="checkbox"/> Pave all pellet handling areas, including loading docks and rail sidings. <input type="checkbox"/> Place screening in storm drains. <input type="checkbox"/> Place control devices where they can be serviced without losing pellets. <input type="checkbox"/> Equip bag-handling stations with vacuum hoses to facilitate spill cleanup. <input type="checkbox"/> Use tarps or containment devices to collect pellets as they are spilled. <input type="checkbox"/> Install grating at doorways for wiping feet. <input type="checkbox"/> Modify loading systems so that transfer lines can be completely emptied, with any residual resin being contained when loading ceases. <input type="checkbox"/> Ensure equipment is secured and stored properly.

INDUSTRIAL STORMWATER FACT SHEET SERIES

*Sector Y: Rubber, Miscellaneous Plastic Products,
and Miscellaneous Manufacturing Industries*

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Operations	<ul style="list-style-type: none"> <input type="checkbox"/> Place portable screens underneath connection points when making and breaking all connections. <input type="checkbox"/> Secure outlet caps and seals before moving full or empty rail hopper cars and trucks. <input type="checkbox"/> Implement handling procedures that minimize punctures and pellet spillage. <input type="checkbox"/> Inspect pellet packaging before offloading. <input type="checkbox"/> Repair punctured bags immediately.
Good housekeeping	<ul style="list-style-type: none"> <input type="checkbox"/> Implement daily and routine housekeeping and spill response procedures. <input type="checkbox"/> Develop standard operating procedures for containing and cleaning up spills. <input type="checkbox"/> Conduct routine inspections for the presence of loose pellets on the facility grounds, including parking lots, drainage areas, driveways, etc.
Packaging	<ul style="list-style-type: none"> <input type="checkbox"/> Use reinforced bags and containers lined with puncture-resistant material. <input type="checkbox"/> Minimize the use of valved bags or seal valved bags immediately after filling. <input type="checkbox"/> Use sealed containers instead of break bulk packaging.
Shipping	<ul style="list-style-type: none"> <input type="checkbox"/> Use containers for cargo shipping rather than individual pallets. <input type="checkbox"/> Identify the person responsible for sealing the ports on rail hopper cars and bulk trucks, and document sealing. <input type="checkbox"/> Close and secure the rail hopper car valve with strong wire or aircraft cable in addition to the normal sealing mechanism. <input type="checkbox"/> Visually confirm that each compartment and tube of shipping vehicles is empty. <input type="checkbox"/> Inspect interiors of trailers and sea containers for defects that may puncture pellet packaging. Consider vandalism exposure when selecting leased track sites. <input type="checkbox"/> Avoid on-deck pellet storage. <input type="checkbox"/> Seal empty rail hopper cars and bulk trucks before returning them to shipper.
Recycling and waste disposal	<ul style="list-style-type: none"> <input type="checkbox"/> Store waste pellets in properly labeled containers. <input type="checkbox"/> Recycle or resell waste pellets. <input type="checkbox"/> Check broken and discarded packaging for residual pellets. <input type="checkbox"/> Inspect handling and storage procedures. <input type="checkbox"/> If an outside vendor is used for waste removal, train in material handling, spill prevention and control.

What if activities and materials at my facility are not exposed to precipitation?

The industrial stormwater program requires permit coverage for a number of specified types of industrial activities. However, when a facility is able to prevent the exposure of ALL relevant activities and materials to precipitation, it may be eligible to claim no exposure and qualify for a waiver from permit coverage.

If you are regulated under the industrial permitting program, you must either obtain permit coverage or submit a no exposure certification form, if available. Check with your permitting authority for additional information as not every permitting authority program provides no exposure exemptions.

INDUSTRIAL STORMWATER FACT SHEET SERIES

*Sector Y: Rubber, Miscellaneous Plastic Products,
and Miscellaneous Manufacturing Industries*

Where do I get more information?

For additional information on the Industrial stormwater program see
www.epa.gov/npdes/stormwater/msgp.

A list of names and telephone numbers for each EPA Region or state NPDES permitting authority can be found at www.epa.gov/npdes/stormwatercontacts.

References

Information contained in this Fact Sheet was compiled from EPA's past and current Multi-Sector General Permits and from the following sources:

- ◆ City of Phoenix, Arizona, Street Transportation Department, Stormwater Management Section. 2004. Prevent Storm Water Contamination Best Management Practices for Section Y - Rubber, Plastic Products & Miscellaneous Manufacturing. Major Groups 30 and 39 (Except 3910-19). <http://phoenix.gov/STREETS/rubplas.pdf>
- ◆ U.S. EPA, Office of Air and Water Programs - Effluent Guidelines Division. 1974. Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Tire and Synthetic Segment of the Rubber Processing Point Source Category. EPA-820-B-80-100.
- ◆ U.S. EPA, Office of Science and Technology. 1999. Preliminary Data Summary of Urban Stormwater Best Management Practices. EPA-821-R-99-012
www.epa.gov/OST/stormwater/
- ◆ U.S. EPA, Office of Water. 1992. Plastic Pellets in the Aquatic Environment: Sources and Recommendations. EPA 842/B-92/010.
- ◆ U.S. EPA, Office of Wastewater Management. *NPDES Stormwater Multi-Sector General Permit for Industrial Activities (MSGP)*.
www.epa.gov/npdes/stormwater/msgp

ATTACHMENT C

Toxics Management Spreadsheet Results for Outfall 001



Discharge Information

Instructions Discharge Stream

Facility: BVPV Styrenics, LLC NPDES Permit No.: PA0006254 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: NCCW, non-process wastewater, excess in

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 _n
19.69	170	7.59						

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	280								
	Chloride (PWS)	mg/L	31								
	Bromide	mg/L	0.39								
	Sulfate (PWS)	mg/L	98								
	Fluoride (PWS)	mg/L	0.12								
Group 2	Total Aluminum	µg/L	2100								
	Total Antimony	µg/L	1.8								
	Total Arsenic	µg/L	1.9								
	Total Barium	µg/L	56								
	Total Beryllium	µg/L	0.25								
	Total Boron	µg/L	63								
	Total Cadmium	µg/L	0.34								
	Total Chromium (III)	µg/L	3.1								
	Hexavalent Chromium	µg/L	6								
	Total Cobalt	µg/L	4.4								
	Total Copper	µg/L	30								
	Free Cyanide	µg/L	< 8								
	Total Cyanide	µg/L	< 8								
	Dissolved Iron	µg/L	130								
	Total Iron	µg/L	4300								
	Total Lead	µg/L	4.2								
	Total Manganese	µg/L	410								
	Total Mercury	µg/L									
	Total Nickel	µg/L	13								
	Total Phenols (Phenolics) (PWS)	µg/L	11								
	Total Selenium	µg/L	< 1.2								
	Total Silver	µg/L	< 0.79								
	Total Thallium	µg/L	< 0.69								
Total Zinc	µg/L	35									
Total Molybdenum	µg/L	3.7									
Acrolein	µg/L	<									
Acrylamide	µg/L	<									
Acrylonitrile	µg/L	<									
Benzene	µg/L	<									
Bromoform	µg/L	<									



Stream / Surface Water Information

BVPV Styrenics, LLC, NPDES Permit No. PA0006254, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: Ohio 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	032317	951.4	681.65	22961	0.0001		Yes
End of Reach 1	032317	945.38	665	23000	0.0001	63.36	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	951.4	0.21	946			240	15					98	7.33		
End of Reach 1	945.38	0.21				240	15					98	7.33		

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	951.4														
End of Reach 1	945.38														



Model Results

BVPV Styrenics, LLC, NPDES Permit No. PA0006254, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Q₇₋₁₀

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
951.4	946		946	30.46	0.0001	15.	240.	16.	0.271	1.356	127.552
945.38	954.190	98.018	856.17208								

Q_n

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
951.4	2964.27		2964.27	30.46	0.0001	24.561	240.	9.772	0.508	0.724	63.549
945.38	2986.687	98.018	2888.67								

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	8,738	
Total Antimony	0	0		0	1,100	1,100	12,815	
Total Arsenic	0	0		0	340	340	3,961	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	244,654	
Total Boron	0	0		0	8,100	8,100	94,367	
Total Cadmium	0	0		0	2.096	2.22	25.9	Chem Translator of 0.942 applied
Total Chromium (III)	0	0		0	589.197	1,865	21,722	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	190	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,107	
Total Copper	0	0		0	13.968	14.5	170	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	22	22.0	256	
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	67.524	86.0	1,002	Chem Translator of 0.785 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	484.742	486	5,659	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.452	4.06	47.3	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	757	
Total Zinc	0	0		0	121.318	124	1,445	Chem Translator of 0.978 applied
Mercury (ORSANCO)	0	0		0	1.4	1.4	16.3	

CFC

CCT (min): #####

PMF: 1

Analysis Hardness (mg/l): 100.25

Analysis pH: 7.34

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	7,052	
Total Arsenic	0	0		0	150	150	4,809	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	131,432	
Total Boron	0	0		0	1,600	1,600	51,291	
Total Cadmium	0	0		0	0.246	0.27	8.69	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.264	86.4	2,768	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	333	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	609	
Total Copper	0	0		0	8.975	9.35	300	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	167	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	48,085	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.523	3.19	102	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	52.115	52.3	1,676	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	160	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	417	
Total Zinc	0	0		0	118.385	120	3,849	Chem Translator of 0.986 applied
Mercury (ORSANCO)	0	0		0	0.77	0.77	24.7	

THH

CCT (min): #####

THH PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

PWS PMF: 1

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	16,162,780	WQC applied at Rlim 949.58 with a design stream flow of 304.19 cfs
Chloride (PWS)	0	0		0	250,000	250,000	8,081,390	WQC applied at Rlim 949.58 with a design stream flow of 304.19 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	8,081,390	WQC applied at Rlim 949.58 with a design stream flow of 304.19 cfs
Fluoride (PWS)	0	0		0	1,000	1,000	32,057	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	180	
Total Arsenic	0	0		0	10	10.0	321	
Total Barium	0	0		0	1,000	1,000	32,057	
Total Boron	0	0		0	3,100	3,100	99,376	
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	1,300	1,300	41,674	
Free Cyanide	0	0		0	4	4.0	128	
Dissolved Iron	0	0		0	300	300	9,617	
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	32,057	
Total Nickel	0	0		0	610	610	19,555	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	162	WQC applied at Rlim 949.58 with a design stream flow of 304.19 cfs
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	7.69	
Total Zinc	0	0		0	7,400	7,400	237,219	
Mercury (ORSANCO)	0	0		0	0.012	0.012	0.38	

CRL

CCT (min): 63.549

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

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

Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total 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	50	50.0	4,916	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Mercury (ORSANCO)	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Aluminum	Report	Report	Report	Report	Report	µg/L	5,600	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	109	AFC	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)	16,163	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	8,081	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	8,081	mg/L	Discharge Conc ≤ 10% WQBEL
Fluoride (PWS)	32.1	mg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	180	µg/L	Discharge Conc ≤ 10% WQBEL

Total Arsenic	321	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	32,057	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	51,291	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	8.69	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	2,768	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	122	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	609	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	128	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	9,617	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	48,085	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	102	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	32,057	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	1,676	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	162	µg/L	Discharge Conc ≤ 10% WQBEL
Total Selenium	160	µg/L	Discharge Conc < TQL
Total Silver	30.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	7.69	µg/L	Discharge Conc < TQL
Total Zinc	926	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Mercury (ORSANCO)	0.38	µg/L	Discharge Conc ≤ 10% WQBEL

ATTACHMENT D

Thermal Limits Spreadsheet for Outfall 001



Instructions *Inputs*

Facility: **BVPV Styrenics**

Permit No.: **PA0006254**

Stream Name: **Ohio River**

Analyst/Engineer: **Ryan Decker**

Stream Q7-10 (cfs)*: **946.0** Outfall No.: **001**

Analysis Type*: **WWF**

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31	33		13.31	19.69
Feb 1-29	33		13.31	19.69
Mar 1-31	33		13.31	19.69
Apr 1-15	33		13.31	19.69
Apr 16-30	33		13.31	19.69
May 1-15	33		13.31	19.69
May 16-31	33		13.31	19.69
Jun 1-15	33		13.31	19.69
Jun 16-30	33		13.31	19.69
Jul 1-31	33		13.31	19.69
Aug 1-15	33		13.31	19.69
Aug 16-31	33		13.31	19.69
Sep 1-15	33		13.31	19.69
Sep 16-30	33		13.31	19.69
Oct 1-15	33		13.31	19.69
Oct 16-31	33		13.31	19.69
Nov 1-15	33		13.31	19.69
Nov 16-30	33		13.31	19.69
Dec 1-31	33		13.31	19.69

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	3027.20	3006.61
3.5	1.00	3311.00	3290.41
7	1.00	6622.00	6601.41
9.3	1.00	8797.80	8777.21
9.3	1.00	8797.80	8777.21
5.1	1.00	4824.60	4804.01
5.1	1.00	4824.60	4804.01
3	1.00	2838.00	2817.41
3	1.00	2838.00	2817.41
1.7	1.00	1608.20	1587.61
1.4	1.00	1324.40	1303.81
1.4	1.00	1324.40	1303.81
1.1	1.00	1040.60	1020.01
1.1	1.00	1040.60	1020.01
1.2	1.00	1135.20	1114.61
1.2	1.00	1135.20	1114.61
1.6	1.00	1513.60	1493.01
1.6	1.00	1513.60	1493.01
2.4	1.00	2270.40	2249.81



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	81,028	110.0
Feb 1-29	40	88,677	110.0
Mar 1-31	46	213,490	110.0
Apr 1-15	52	236,546	110.0
Apr 16-30	58	236,546	110.0
May 1-15	64	155,362	110.0
May 16-31	72	258,936	110.0
Jun 1-15	80	197,416	110.0
Jun 16-30	84	197,416	110.0
Jul 1-31	87	102,687	110.0
Aug 1-15	87	91,358	110.0
Aug 16-31	87	91,358	110.0
Sep 1-15	84	71,472	110.0
Sep 16-30	78	71,472	110.0
Oct 1-15	72	72,093	110.0
Oct 16-31	66	72,093	110.0
Nov 1-15	58	80,473	110.0
Nov 16-30	50	64,379	110.0
Dec 1-31	42	60,632	110.0

ATTACHMENT E
TRC Modeling Results

TRC EVALUATION – Outfall 001

4730	= Q stream (cfs)	0.5	= CV Daily
19.69	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.0686	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.2	= 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 = 3.417	1.3.2.iii	WLA_cfc = 9.670
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 1.273	5.1d	LTA_cfc = 5.621

Source	Reference	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	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$
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	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$
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	$1.5 \cdot ((av_mon_limit / AML_MULT) / LTAMULT_afc)$

ATTACHMENT F

Toxics Management Spreadsheet Results for Outfall 002 (Raccoon Creek)



Discharge Information

Instructions Discharge Stream

Facility: BVPV Styrenics, LLC NPDES Permit No.: PA0006254 Outfall No.: 002

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated process wastewater

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 _n
1.36	390	7.57						

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	730								
	Chloride (PWS)	mg/L	320								
	Bromide	mg/L	0.51								
	Sulfate (PWS)	mg/L	69								
	Fluoride (PWS)	mg/L	0.041								
Group 2	Total Aluminum	µg/L	71								
	Total Antimony	µg/L	3.3								
	Total Arsenic	µg/L	0.98								
	Total Barium	µg/L	13								
	Total Beryllium	µg/L	< 0.25								
	Total Boron	µg/L	< 63								
	Total Cadmium	µg/L	< 0.34								
	Total Chromium (III)	µg/L	2770								
	Hexavalent Chromium	µg/L	< 6								
	Total Cobalt	µg/L	0.29								
	Total Copper	µg/L	3380								
	Free Cyanide	µg/L	< 8								
	Total Cyanide	µg/L	1200								
	Dissolved Iron	µg/L	110								
	Total Iron	µg/L	110								
	Total Lead	µg/L	690								
	Total Manganese	µg/L	21								
	Total Mercury	µg/L	0.21								
	Total Nickel	µg/L	3980								
	Total Phenols (Phenolics) (PWS)	µg/L	45								
	Total Selenium	µg/L	< 1.2								
	Total Silver	µg/L	< 0.79								
	Total Thallium	µg/L	< 0.69								
Total Zinc	µg/L	2610									
Total Molybdenum	µg/L	1.9									
Acrolein	µg/L	< 4.4									
Acrylamide	µg/L	< 21									
Acrylonitrile	µg/L	242									
Benzene	µg/L	136									
Bromoform	µg/L	< 0.98									

Group 3	Carbon Tetrachloride	µg/L		38																	
	Chlorobenzene	µg/L		28																	
	Chlorodibromomethane	µg/L	<	0.84																	
	Chloroethane	µg/L		268																	
	2-Chloroethyl Vinyl Ether	µg/L	<	1.7																	
	Chloroform	µg/L		46																	
	Dichlorobromomethane	µg/L	<	0.64																	
	1,1-Dichloroethane	µg/L		59																	
	1,2-Dichloroethane	µg/L		211																	
	1,1-Dichloroethylene	µg/L		25																	
	1,2-Dichloropropane	µg/L		230																	
	1,3-Dichloropropylene	µg/L		44																	
	1,4-Dioxane	µg/L	<	0.63																	
	Ethylbenzene	µg/L		108																	
	Methyl Bromide	µg/L	<	0.89																	
	Methyl Chloride	µg/L		190																	
	Methylene Chloride	µg/L		89																	
	1,1,2,2-Tetrachloroethane	µg/L	<	0.6																	
	Tetrachloroethylene	µg/L		56																	
	Toluene	µg/L		80																	
	1,2-trans-Dichloroethylene	µg/L		54																	
1,1,1-Trichloroethane	µg/L		54																		
1,1,2-Trichloroethane	µg/L		54																		
Trichloroethylene	µg/L		54																		
Vinyl Chloride	µg/L		268																		
Group 4	2-Chlorophenol	µg/L		98																	
	2,4-Dichlorophenol	µg/L		112																	
	2,4-Dimethylphenol	µg/L		36																	
	4,6-Dinitro-o-Cresol	µg/L		277																	
	2,4-Dinitrophenol	µg/L		123																	
	2-Nitrophenol	µg/L		69																	
	4-Nitrophenol	µg/L		124																	
	p-Chloro-m-Cresol	µg/L	<	0.44																	
	Pentachlorophenol	µg/L	<	0.96																	
	Phenol	µg/L		26							6.004										
	2,4,6-Trichlorophenol	µg/L	<	0.25																	
Group 5	Acenaphthene	µg/L		59																	
	Acenaphthylene	µg/L	<	59																	
	Anthracene	µg/L		59																	
	Benzidine	µg/L	<	10																	
	Benzo(a)Anthracene	µg/L		59																	
	Benzo(a)Pyrene	µg/L		61																	
	3,4-Benzofluoranthene	µg/L		61																	
	Benzo(ghi)Perylene	µg/L	<	0.078																	
	Benzo(k)Fluoranthene	µg/L		59																	
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.17																	
	Bis(2-Chloroethyl)Ether	µg/L	<	0.045																	
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.066																	
	Bis(2-Ethylhexyl)Phthalate	µg/L		279																	
	4-Bromophenyl Phenyl Ether	µg/L	<	0.36																	
	Butyl Benzyl Phthalate	µg/L	<	0.94																	
	2-Chloronaphthalene	µg/L	<	0.067																	
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.25																	
	Chrysene	µg/L		59																	
	Dibenzo(a,h)Anthracene	µg/L	<	0.082																	
	1,2-Dichlorobenzene	µg/L		163																	
	1,3-Dichlorobenzene	µg/L		44																	
	1,4-Dichlorobenzene	µg/L		28																	
	3,3-Dichlorobenzidine	µg/L	<	0.66																	
Diethyl Phthalate	µg/L		203																		
Dimethyl Phthalate	µg/L		47																		
Di-n-Butyl Phthalate	µg/L		57																		
2,4-Dinitrotoluene	µg/L		285																		



Stream / Surface Water Information

BVPV Styrenics, LLC, NPDES Permit No. PA0006254, Outfall 002

Instructions Discharge **Stream**

Receiving Surface Water Name: Raccoon Creek

No. Reaches to Model: 1

- Statewide Criteria
- Great Lakes Criteria
- ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi ³)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	033564	0.24	683	184	0.0017		Yes
End of Reach 1	033564	0.01	682.5	184.5	0.0017		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	0.24	0.045				175	1.4					345	8.1		
End of Reach 1	0.01	0.045				175	1.4					345	8.1		

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	0.24														
End of Reach 1	0.01														



Model Results

BVPV Styrenics, LLC, NPDES Permit No. PA0006254, Outfall 002

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Q₇₋₁₀

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.24	8.28		8.28	2.104	0.002	1.4	175.	125.	0.042	0.332	390.774
0.01	8.30		8.3025								

Q_n

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.24	47.14		47.14	2.104	0.002	2.777	175.	63.022	0.101	0.139	201.618
0.01	47.247		47.25								

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	1,328	
Total Antimony	0	0		0	1,100	1,100	1,948	
Total Arsenic	0	0		0	340	340	602	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	37,192	
Total Boron	0	0		0	8,100	8,100	14,346	
Total Cadmium	0	0		0	7.181	8.08	14.3	Chem Translator of 0.889 applied
Total Chromium (III)	0	0		0	1665.116	5,269	9,332	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	28.9	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	168	
Total Copper	0	0		0	46.151	48.1	85.1	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	22	22.0	39.0	
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	259.512	432	766	Chem Translator of 0.6 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.92	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1417.649	1,420	2,516	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	30.588	36.0	63.7	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	115	
Total Zinc	0	0		0	355.385	363	644	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	5.31	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	1,151	
Benzene	0	0		0	640	640	1,133	
Bromoform	0	0		0	1,800	1,800	3,188	
Carbon Tetrachloride	0	0		0	2,800	2,800	4,959	
Chlorobenzene	0	0		0	1,200	1,200	2,125	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	31,879	
Chloroform	0	0		0	1,900	1,900	3,365	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	26,566	
1,1-Dichloroethylene	0	0		0	7,500	7,500	13,283	
1,2-Dichloropropane	0	0		0	11,000	11,000	19,482	
1,3-Dichloropropylene	0	0		0	310	310	549	
Ethylbenzene	0	0		0	2,900	2,900	5,136	
Methyl Bromide	0	0		0	550	550	974	
Methyl Chloride	0	0		0	28,000	28,000	49,589	
Methylene Chloride	0	0		0	12,000	12,000	21,253	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,771	
Tetrachloroethylene	0	0		0	700	700	1,240	
Toluene	0	0		0	1,700	1,700	3,011	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	12,043	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	5,313	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	6,022	
Trichloroethylene	0	0		0	2,300	2,300	4,073	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	992	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,011	
2,4-Dimethylphenol	0	0		0	660	660	1,169	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	142	
2,4-Dinitrophenol	0	0		0	660	660	1,169	
2-Nitrophenol	0	0		0	8,000	8,000	14,168	
4-Nitrophenol	0	0		0	2,300	2,300	4,073	
p-Chloro-m-Cresol	0	0		0	160	160	283	
Pentachlorophenol	0	0		0	18.153	18.2	32.1	

Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	460	460	815
Acenaphthene	0	0		0	83	83.0	147
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	300	300	531
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.89
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	53,132
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	7,970
4-Bromophenyl Phenyl Ether	0	0		0	270	270	478
Butyl Benzyl Phthalate	0	0		0	140	140	248
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	820	820	1,452
1,3-Dichlorobenzene	0	0		0	350	350	620
1,4-Dichlorobenzene	0	0		0	730	730	1,293
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	4,000	4,000	7,084
Dimethyl Phthalate	0	0		0	2,500	2,500	4,428
Di-n-Butyl Phthalate	0	0		0	110	110	195
2,4-Dinitrotoluene	0	0		0	1,600	1,600	2,834
2,6-Dinitrotoluene	0	0		0	990	990	1,753
1,2-Diphenylhydrazine	0	0		0	15	15.0	26.6
Fluoranthene	0	0		0	200	200	354
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	17.7
Hexachlorocyclopentadiene	0	0		0	5	5.0	8.86
Hexachloroethane	0	0		0	60	60.0	106
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	10,000	10,000	17,711
Naphthalene	0	0		0	140	140	248
Nitrobenzene	0	0		0	4,000	4,000	7,084
n-Nitrosodimethylamine	0	0		0	17,000	17,000	30,108
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	300	300	531
Phenanthrene	0	0		0	5	5.0	8.86
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	130	130	230
Aldrin	0	0		0	3	3.0	5.31
alpha-BHC	0	0		0	N/A	N/A	N/A
beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	0.95	0.95	1.68
Chlordane	0	0		0	2.4	2.4	4.25

4,4-DDT	0	0		0	1.1	1.1	1.95	
4,4-DDE	0	0		0	1.1	1.1	1.95	
4,4-DDD	0	0		0	1.1	1.1	1.95	
Dieldrin	0	0		0	0.24	0.24	0.43	
alpha-Endosulfan	0	0		0	0.22	0.22	0.39	
beta-Endosulfan	0	0		0	0.22	0.22	0.39	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	0.15	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	0.92	
Heptachlor Epoxide	0	0		0	0.5	0.5	0.89	
PCBs, Total	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	0.73	0.73	1.29	
2,3,7,8-TCDD	0	0		0	N/A	N/A	N/A	
Cadmium (AFC)	0	0		0	8.75	8.75	15.5	
Free Cyanide (AFC)	0	0		0	22	22.0	39.0	
Mercury (AFC)	0	0		0	1.4	1.4	2.48	
Bis(2-Ethylhexyl)Phthalate (AFC)	0	0		0	4,500	4,500	7,970	
Benzo(a)Anthracene (AFC)	0	0		0	0.5	0.5	0.89	
4,6-Dinitro-o-Cresol (AFC)	0	0		0	80	80.0	142	
Hexachlorobutadiene (AFC)	0	0		0	10	10.0	17.7	
Phenanthrene (AFC)	0	0		0	5	5.0	8.86	
Lead (AFC)	0	0		0	260	260	460	
Nickel (AFC)	0	0		0	1418.1	1,418	2,512	
1,2,4-Trichlorobenzene (AFC)	0	0		0	130	130	230	

CFC

CCT (min): #####

PMF: 1

Analysis Hardness (mg/l): 354.12

Analysis pH: 7.93

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	1,086	
Total Arsenic	0	0		0	150	150	740	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	20,236	
Total Boron	0	0		0	1,600	1,600	7,897	
Total Cadmium	0	0		0	0.591	0.69	3.41	Chem Translator of 0.856 applied
Total Chromium (III)	0	0		0	208.764	243	1,198	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	51.3	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	93.8	
Total Copper	0	0		0	26.384	27.5	136	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	25.7	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	7,403	WQC = 30 day average; PMF = 1

Total Lead	0	0		0	9.654	15.9	78.5	Chem Translator of 0.607 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	4.47	Chem Translator of 0.85 applied
Total Nickel	0	0		0	151.578	152	750	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	24.6	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	64.2	
Total Zinc	0	0		0	344.894	350	1,726	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	14.8	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	642	
Benzene	0	0		0	130	130	642	
Bromoform	0	0		0	370	370	1,826	
Carbon Tetrachloride	0	0		0	560	560	2,764	
Chlorobenzene	0	0		0	240	240	1,185	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	17,274	
Chloroform	0	0		0	390	390	1,925	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	15,300	
1,1-Dichloroethylene	0	0		0	1,500	1,500	7,403	
1,2-Dichloropropane	0	0		0	2,200	2,200	10,858	
1,3-Dichloropropylene	0	0		0	61	61.0	301	
Ethylbenzene	0	0		0	580	580	2,863	
Methyl Bromide	0	0		0	110	110	543	
Methyl Chloride	0	0		0	5,500	5,500	27,145	
Methylene Chloride	0	0		0	2,400	2,400	11,845	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	1,036	
Tetrachloroethylene	0	0		0	140	140	691	
Toluene	0	0		0	330	330	1,629	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	6,910	
1,1,1-Trichloroethane	0	0		0	610	610	3,011	
1,1,2-Trichloroethane	0	0		0	680	680	3,356	
Trichloroethylene	0	0		0	450	450	2,221	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	543	
2,4-Dichlorophenol	0	0		0	340	340	1,678	
2,4-Dimethylphenol	0	0		0	130	130	642	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	79.0	
2,4-Dinitrophenol	0	0		0	130	130	642	
2-Nitrophenol	0	0		0	1,600	1,600	7,897	
4-Nitrophenol	0	0		0	470	470	2,320	
p-Chloro-m-Cresol	0	0		0	500	500	2,468	
Pentachlorophenol	0	0		0	13.927	13.9	68.7	

Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	449	
Acenaphthene	0	0		0	17	17.0	83.9	
Anthracene	0	0		0	N/A	N/A	N/A	
Benidine	0	0		0	59	59.0	291	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.49	
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	29,613	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	4,491	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	267	
Butyl Benzyl Phthalate	0	0		0	35	35.0	173	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	790	
1,3-Dichlorobenzene	0	0		0	69	69.0	341	
1,4-Dichlorobenzene	0	0		0	150	150	740	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	3,948	
Dimethyl Phthalate	0	0		0	500	500	2,468	
Di-n-Butyl Phthalate	0	0		0	21	21.0	104	
2,4-Dinitrotoluene	0	0		0	320	320	1,579	
2,6-Dinitrotoluene	0	0		0	200	200	987	
1,2-Diphenylhydrazine	0	0		0	3	3.0	14.8	
Fluoranthene	0	0		0	40	40.0	197	
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	9.87	
Hexachlorocyclopentadiene	0	0		0	1	1.0	4.94	
Hexachloroethane	0	0		0	12	12.0	59.2	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	10,365	
Naphthalene	0	0		0	43	43.0	212	
Nitrobenzene	0	0		0	810	810	3,998	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	16,781	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	291	
Phenanthrene	0	0		0	1	1.0	4.94	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	128	
Aldrin	0	0		0	0.1	0.1	0.49	
alpha-BHC	0	0		0	N/A	N/A	N/A	

beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	N/A	N/A	N/A
Chlordane	0	0		0	0.0043	0.004	0.021
4,4-DDT	0	0		0	0.001	0.001	0.005
4,4-DDE	0	0		0	0.001	0.001	0.005
4,4-DDD	0	0		0	0.001	0.001	0.005
Dieldrin	0	0		0	0.056	0.056	0.28
alpha-Endosulfan	0	0		0	0.056	0.056	0.28
beta-Endosulfan	0	0		0	0.056	0.056	0.28
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A
Endrin	0	0		0	0.036	0.036	0.18
Endrin Aldehyde	0	0		0	N/A	N/A	N/A
Heptachlor	0	0		0	0.0038	0.004	0.019
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.019
PCBs, Total	0	0		0	0.014	0.014	0.069
Toxaphene	0	0		0	0.0002	0.0002	0.001
2,3,7,8-TCDD	0	0		0	N/A	N/A	N/A
Cadmium (AFC)	0	0		0	N/A	N/A	N/A
Free Cyanide (AFC)	0	0		0	N/A	N/A	N/A
Mercury (AFC)	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate (AFC)	0	0		0	N/A	N/A	N/A
Benzo(a)Anthracene (AFC)	0	0		0	N/A	N/A	N/A
4,6-Dinitro-o-Cresol (AFC)	0	0		0	N/A	N/A	N/A
Hexachlorobutadiene (AFC)	0	0		0	N/A	N/A	N/A
Phenanthrene (AFC)	0	0		0	N/A	N/A	N/A
Lead (AFC)	0	0		0	N/A	N/A	N/A
Nickel (AFC)	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene (AFC)	0	0		0	N/A	N/A	N/A

THH

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	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	27.6	
Total Arsenic	0	0		0	10	10.0	49.4	
Total Barium	0	0		0	2,400	2,400	11,845	
Total Boron	0	0		0	3,100	3,100	15,300	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	

Total Cobalt	0	0		0	N/A	N/A	N/A
Total Copper	0	0		0	N/A	N/A	N/A
Free Cyanide	0	0		0	4	4.0	19.7
Dissolved Iron	0	0		0	300	300	1,481
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	4,936
Total Mercury	0	0		0	0.050	0.05	0.25
Total Nickel	0	0		0	610	610	3,011
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	1.18
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	3	3.0	14.8
Acrylamide	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	N/A	N/A	N/A
Benzene	0	0		0	N/A	N/A	N/A
Bromoform	0	0		0	N/A	N/A	N/A
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A
Chlorobenzene	0	0		0	100	100.0	494
Chlorodibromomethane	0	0		0	N/A	N/A	N/A
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	5.7	5.7	28.1
Dichlorobromomethane	0	0		0	N/A	N/A	N/A
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A
1,1-Dichloroethylene	0	0		0	33	33.0	163
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A
Ethylbenzene	0	0		0	68	68.0	336
Methyl Bromide	0	0		0	100	100.0	494
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A
Tetrachloroethylene	0	0		0	N/A	N/A	N/A
Toluene	0	0		0	57	57.0	281
1,2-trans-Dichloroethylene	0	0		0	100	100.0	494
1,1,1-Trichloroethane	0	0		0	10,000	10,000	49,355
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A
Trichloroethylene	0	0		0	N/A	N/A	N/A
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	30	30.0	148
2,4-Dichlorophenol	0	0		0	10	10.0	49.4
2,4-Dimethylphenol	0	0		0	100	100.0	494
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	9.87

2,4-Dinitrophenol	0	0		0	10	10.0	49.4	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	19,742	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	345	
Anthracene	0	0		0	300	300	1,481	
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	987	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.49	
2-Chloronaphthalene	0	0		0	800	800	3,948	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	4,936	
1,3-Dichlorobenzene	0	0		0	7	7.0	34.5	
1,4-Dichlorobenzene	0	0		0	300	300	1,481	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	2,961	
Dimethyl Phthalate	0	0		0	2,000	2,000	9,871	
Di-n-Butyl Phthalate	0	0		0	20	20.0	98.7	
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	98.7	
Fluorene	0	0		0	50	50.0	247	
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	19.7	
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	168	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	49.4	
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	98.7	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.35	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	4.2	4.2	20.7	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	98.7	
beta-Endosulfan	0	0		0	20	20.0	98.7	
Endosulfan Sulfate	0	0		0	20	20.0	98.7	
Endrin	0	0		0	0.03	0.03	0.15	
Endrin Aldehyde	0	0		0	1	1.0	4.94	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
PCBs, Total	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	
2,3,7,8-TCDD	0	0		0	N/A	N/A	N/A	
Cadmium (AFC)	0	0		0	N/A	N/A	N/A	
Free Cyanide (AFC)	0	0		0	N/A	N/A	N/A	
Mercury (AFC)	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate (AFC)	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene (AFC)	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol (AFC)	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene (AFC)	0	0		0	N/A	N/A	N/A	
Phenanthrene (AFC)	0	0		0	N/A	N/A	N/A	
Lead (AFC)	0	0		0	N/A	N/A	N/A	
Nickel (AFC)	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene (AFC)	0	0		0	N/A	N/A	N/A	

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

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

Total Barium	0	0		0	N/A	N/A	N/A
Total Boron	0	0		0	N/A	N/A	N/A
Total Cadmium	0	0		0	N/A	N/A	N/A
Total Chromium (III)	0	0		0	N/A	N/A	N/A
Hexavalent Chromium	0	0		0	N/A	N/A	N/A
Total Cobalt	0	0		0	N/A	N/A	N/A
Total Copper	0	0		0	N/A	N/A	N/A
Free Cyanide	0	0		0	N/A	N/A	N/A
Dissolved Iron	0	0		0	N/A	N/A	N/A
Total Iron	0	0		0	N/A	N/A	N/A
Total Lead	0	0		0	N/A	N/A	N/A
Total Manganese	0	0		0	N/A	N/A	N/A
Total Mercury	0	0		0	N/A	N/A	N/A
Total Nickel	0	0		0	N/A	N/A	N/A
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A
Total Selenium	0	0		0	N/A	N/A	N/A
Total Silver	0	0		0	N/A	N/A	N/A
Total Thallium	0	0		0	N/A	N/A	N/A
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	N/A	N/A	N/A
Acrylamide	0	0		0	0.07	0.07	1.64
Acrylonitrile	0	0		0	0.06	0.06	1.4
Benzene	0	0		0	0.58	0.58	13.6
Bromoform	0	0		0	7	7.0	164
Carbon Tetrachloride	0	0		0	0.4	0.4	9.36
Chlorobenzene	0	0		0	N/A	N/A	N/A
Chlorodibromomethane	0	0		0	0.8	0.8	18.7
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	N/A	N/A	N/A
Dichlorobromomethane	0	0		0	0.95	0.95	22.2
1,2-Dichloroethane	0	0		0	9.9	9.9	232
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,2-Dichloropropane	0	0		0	0.9	0.9	21.1
1,3-Dichloropropylene	0	0		0	0.27	0.27	6.32
Ethylbenzene	0	0		0	N/A	N/A	N/A
Methyl Bromide	0	0		0	N/A	N/A	N/A
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	20	20.0	468
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	4.68
Tetrachloroethylene	0	0		0	10	10.0	234
Toluene	0	0		0	N/A	N/A	N/A
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A
1,1,2-Trichloroethane	0	0		0	0.55	0.55	12.9
Trichloroethylene	0	0		0	0.6	0.6	14.0

Vinyl Chloride	0	0		0	0.02	0.02	0.47
2-Chlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	0.030	0.03	0.7
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	35.1
Acenaphthene	0	0		0	N/A	N/A	N/A
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	0.0001	0.0001	0.002
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.023
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.002
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.023
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.23
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.7
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	7.49
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	2.81
Dibenzo(a,h)Anthracene	0	0		0	0.0001	0.0001	0.002
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	1.17
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	1.17
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.17
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.7
Fluoranthene	0	0		0	N/A	N/A	N/A
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.002
Hexachlorobutadiene	0	0		0	0.01	0.01	0.23
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A
Hexachloroethane	0	0		0	0.1	0.1	2.34
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.023
Isophorone	0	0		0	N/A	N/A	N/A

Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.016	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.12	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	77.2	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	
Aldrin	0	0		0	0.0000008	8.00E-07	0.00002	
alpha-BHC	0	0		0	0.0004	0.0004	0.009	
beta-BHC	0	0		0	0.008	0.008	0.19	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.007	
4,4-DDT	0	0		0	0.00003	0.00003	0.0007	
4,4-DDE	0	0		0	0.00002	0.00002	0.0005	
4,4-DDD	0	0		0	0.0001	0.0001	0.002	
Dieldrin	0	0		0	0.000001	0.000001	0.00002	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	0.0001	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.0007	
PCBs, Total	0	0		0	0.000064	0.00006	0.001	
Toxaphene	0	0		0	0.0007	0.0007	0.016	
2,3,7,8-TCDD	0	0		0	5E-09	5.00E-09	1.17E-07	
Cadmium (AFC)	0	0		0	N/A	N/A	N/A	
Free Cyanide (AFC)	0	0		0	N/A	N/A	N/A	
Mercury (AFC)	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate (AFC)	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene (AFC)	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol (AFC)	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene (AFC)	0	0		0	N/A	N/A	N/A	
Phenanthrene (AFC)	0	0		0	N/A	N/A	N/A	
Lead (AFC)	0	0		0	N/A	N/A	N/A	
Nickel (AFC)	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene (AFC)	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	Comments
	AML	MDL	AML	MDL	IMAY					

Constituent	(lbs/day)	(lbs/day)	PML	MCL	MCLG	Units	WQBEL	Basis	Comments
Total Antimony	Report	Report	Report	Report	Report	µg/L	27.6	THH	Discharge Conc > 10% WQBEL (no RP)
Total Chromium (III)	13.6	21.2	1,198	1,869	2,995	µg/L	1,198	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	18.5	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	0.62	0.97	54.6	85.1	136	µg/L	54.6	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	19.7	THH	Discharge Conc > 25% WQBEL (no RP)
Total Lead	0.89	1.39	78.5	123	196	µg/L	78.5	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Mercury	0.003	0.004	0.25	0.39	0.62	µg/L	0.25	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Nickel	8.51	13.3	750	1,171	1,876	µg/L	750	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	4.68	7.3	412	644	1,031	µg/L	412	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Acrolein	0.039	0.06	3.41	5.31	8.51	µg/L	3.41	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Acrylamide	0.019	0.029	1.64	2.56	4.1	µg/L	1.64	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Acrylonitrile	0.016	0.025	1.4	2.19	3.51	µg/L	1.4	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzene	0.15	0.24	13.6	21.2	33.9	µg/L	13.6	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Carbon Tetrachloride	0.11	0.17	9.36	14.6	23.4	µg/L	9.36	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chloroform	0.32	0.5	28.1	43.9	70.3	µg/L	28.1	THH	Discharge Conc ≥ 50% WQBEL (RP)
1,2-Dichloroethane	2.63	4.1	232	361	579	µg/L	232	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,2-Dichloropropane	0.24	0.37	21.1	32.9	52.7	µg/L	21.1	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,3-Dichloropropylene	0.072	0.11	6.32	9.86	15.8	µg/L	6.32	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Ethylbenzene	Report	Report	Report	Report	Report	µg/L	336	THH	Discharge Conc > 25% WQBEL (no RP)
Toluene	Report	Report	Report	Report	Report	µg/L	281	THH	Discharge Conc > 25% WQBEL (no RP)
1,1,2-Trichloroethane	0.15	0.23	12.9	20.1	32.2	µg/L	12.9	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Trichloroethylene	0.16	0.25	14.0	21.9	35.1	µg/L	14.0	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Vinyl Chloride	0.005	0.008	0.47	0.73	1.17	µg/L	0.47	CRL	Discharge Conc ≥ 50% WQBEL (RP)
2-Chlorophenol	1.68	2.62	148	231	370	µg/L	148	THH	Discharge Conc ≥ 50% WQBEL (RP)
2,4-Dichlorophenol	0.56	0.87	49.4	77.0	123	µg/L	49.4	THH	Discharge Conc ≥ 50% WQBEL (RP)
4,6-Dinitro-o-Cresol	0.11	0.17	9.87	15.4	24.7	µg/L	9.87	THH	Discharge Conc ≥ 50% WQBEL (RP)
2,4-Dinitrophenol	0.56	0.87	49.4	77.0	123	µg/L	49.4	THH	Discharge Conc ≥ 50% WQBEL (RP)
Acenaphthene	0.95	1.48	83.9	131	210	µg/L	83.9	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Anthracene	0.0003	0.0004	0.023	0.037	0.059	µg/L	0.023	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.00003	0.00004	0.002	0.004	0.006	µg/L	0.002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.0003	0.0004	0.023	0.037	0.059	µg/L	0.023	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.003	0.004	0.23	0.37	0.59	µg/L	0.23	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Bis(2-Ethylhexyl)Phthalate	0.085	0.13	7.49	11.7	18.7	µg/L	7.49	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.032	0.05	2.81	4.38	7.02	µg/L	2.81	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,3-Dichlorobenzene	0.39	0.61	34.5	53.9	86.4	µg/L	34.5	THH	Discharge Conc ≥ 50% WQBEL (RP)
Di-n-Butyl Phthalate	1.12	1.75	98.7	154	247	µg/L	98.7	THH	Discharge Conc ≥ 50% WQBEL (RP)
2,4-Dinitrotoluene	0.013	0.021	1.17	1.83	2.93	µg/L	1.17	CRL	Discharge Conc ≥ 50% WQBEL (RP)
2,6-Dinitrotoluene	0.013	0.021	1.17	1.83	2.93	µg/L	1.17	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Fluoranthene	1.12	1.75	98.7	154	247	µg/L	98.7	THH	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorobenzene	0.00002	0.00003	0.002	0.003	0.005	µg/L	0.002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorobutadiene	0.003	0.004	0.23	0.37	0.59	µg/L	0.23	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Hexachloroethane	0.027	0.041	2.34	3.65	5.85	µg/L	2.34	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Naphthalene	Report	Report	Report	Report	Report	µg/L	159	AFC	Discharge Conc > 25% WQBEL (no RP)
Nitrobenzene	0.56	0.87	49.4	77.0	123	µg/L	49.4	THH	Discharge Conc ≥ 50% WQBEL (RP)

Phenanthrene	0.056	0.087	4.94	7.7	12.3	µg/L	4.94	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Pyrene	1.12	1.75	98.7	154	247	µg/L	98.7	THH	Discharge Conc ≥ 50% WQBEL (RP)
1,2,4-Trichlorobenzene	0.004	0.006	0.35	0.54	0.86	µg/L	0.35	THH	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide (AFC)	Report	Report	Report	Report	Report	µg/L	25.0	AFC	Discharge Conc > 25% WQBEL (no RP)
Mercury (AFC)	Report	Report	Report	Report	Report	µg/L	1.59	AFC	Discharge Conc ≥ 10% WQBEL (no RP)
Benzo(a)Anthracene (AFC)	0.006	0.01	0.57	0.89	1.42	µg/L	0.57	AFC	Discharge Conc ≥ 50% WQBEL (RP)
4,6-Dinitro-o-Cresol (AFC)	1.03	1.61	90.8	142	227	µg/L	90.8	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexachlorobutadiene (AFC)	0.13	0.2	11.4	17.7	28.4	µg/L	11.4	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Phenanthrene (AFC)	0.064	0.1	5.68	8.86	14.2	µg/L	5.68	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Lead (AFC)	3.35	5.22	295	460	738	µg/L	295	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Nickel (AFC)	18.3	28.5	1,610	2,512	4,024	µg/L	1,610	AFC	Discharge Conc ≥ 50% WQBEL (RP)
1,2,4-Trichlorobenzene (AFC)	1.67	2.61	148	230	369	µg/L	148	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Other Pollutants without Limits or Monitoring

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., ≤ Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	851	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	49.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	11,845	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	7,897	µg/L	Discharge Conc < TQL
Total Cadmium	3.41	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	93.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,481	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	7,403	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	4,936	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	24.6	µg/L	Discharge Conc < TQL
Total Silver	40.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	1.18	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Bromoform	164	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	494	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	18.7	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS

2-Chloroethyl Vinyl Ether	17,274	µg/L	Discharge Conc < TQL
Dichlorobromomethane	22.2	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,1-Dichloroethylene	163	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Methyl Bromide	494	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	27,145	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	468	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	4.68	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	234	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	494	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	3,011	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dimethylphenol	494	µg/L	Discharge Conc ≤ 25% WQBEL
2-Nitrophenol	7,897	µg/L	Discharge Conc ≤ 25% WQBEL
4-Nitrophenol	2,320	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	182	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.7	µg/L	Discharge Conc < TQL
Phenol	19,742	µg/L	Discharge Conc ≤ 25% WQBEL
2,4,6-Trichlorophenol	35.1	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	1,481	µg/L	Discharge Conc ≤ 25% WQBEL
Benidine	0.002	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.7	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	987	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	267	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.49	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	3,948	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Dibenzo(a,h)Anthracene	0.002	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	790	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	740	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	1.17	µg/L	Discharge Conc < TQL
Diethyl Phthalate	2,961	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	2,468	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.7	µg/L	Discharge Conc < TQL
Fluorene	247	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorocyclopentadiene	4.94	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.023	µg/L	Discharge Conc < TQL
Isophorone	168	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.016	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.12	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	77.2	µg/L	Discharge Conc < TQL

ATTACHMENT G

Toxics Management Spreadsheet Results for Outfall 002 (Ohio River)



Discharge Information

Instructions Discharge Stream

Facility: BVPV Styrenics, LLC NPDES Permit No.: PA0006254 Outfall No.: 002

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated process wastewater

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 _n
1.36	390	7.57						

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	730								
	Chloride (PWS)	mg/L	320								
	Bromide	mg/L	0.51								
	Sulfate (PWS)	mg/L	69								
	Fluoride (PWS)	mg/L	0.041								
Group 2	Total Aluminum	µg/L	71								
	Total Antimony	µg/L	3.3								
	Total Arsenic	µg/L	0.98								
	Total Barium	µg/L	13								
	Total Beryllium	µg/L	< 0.25								
	Total Boron	µg/L	< 63								
	Total Cadmium	µg/L	< 0.34								
	Total Chromium (III)	µg/L	2770								
	Hexavalent Chromium	µg/L	< 6								
	Total Cobalt	µg/L	0.29								
	Total Copper	µg/L	3380								
	Free Cyanide	µg/L	< 8								
	Total Cyanide	µg/L	1200								
	Dissolved Iron	µg/L	110								
	Total Iron	µg/L	110								
	Total Lead	µg/L	690								
	Total Manganese	µg/L	21								
	Total Mercury	µg/L	0.21								
	Total Nickel	µg/L	3980								
	Total Phenols (Phenolics) (PWS)	µg/L	45								
	Total Selenium	µg/L	< 1.2								
	Total Silver	µg/L	< 0.79								
	Total Thallium	µg/L	< 0.69								
Total Zinc	µg/L	2610									
Total Molybdenum	µg/L	1.9									
Acrolein	µg/L	< 4.4									
Acrylamide	µg/L	< 21									
Acrylonitrile	µg/L	242									
Benzene	µg/L	136									
Bromoform	µg/L	< 0.98									

Group 3	Carbon Tetrachloride	µg/L		38																	
	Chlorobenzene	µg/L		28																	
	Chlorodibromomethane	µg/L	<	0.84																	
	Chloroethane	µg/L		268																	
	2-Chloroethyl Vinyl Ether	µg/L	<	1.7																	
	Chloroform	µg/L		46																	
	Dichlorobromomethane	µg/L	<	0.64																	
	1,1-Dichloroethane	µg/L		59																	
	1,2-Dichloroethane	µg/L		211																	
	1,1-Dichloroethylene	µg/L		25																	
	1,2-Dichloropropane	µg/L		230																	
	1,3-Dichloropropylene	µg/L		44																	
	1,4-Dioxane	µg/L	<	0.63																	
	Ethylbenzene	µg/L		108																	
	Methyl Bromide	µg/L	<	0.89																	
	Methyl Chloride	µg/L		190																	
	Methylene Chloride	µg/L		89																	
	1,1,2,2-Tetrachloroethane	µg/L	<	0.6																	
	Tetrachloroethylene	µg/L		56																	
	Toluene	µg/L		80																	
	1,2-trans-Dichloroethylene	µg/L		54																	
1,1,1-Trichloroethane	µg/L		54																		
1,1,2-Trichloroethane	µg/L		54																		
Trichloroethylene	µg/L		54																		
Vinyl Chloride	µg/L		268																		
Group 4	2-Chlorophenol	µg/L		98																	
	2,4-Dichlorophenol	µg/L		112																	
	2,4-Dimethylphenol	µg/L		36																	
	4,6-Dinitro-o-Cresol	µg/L		277																	
	2,4-Dinitrophenol	µg/L		123																	
	2-Nitrophenol	µg/L		69																	
	4-Nitrophenol	µg/L		124																	
	p-Chloro-m-Cresol	µg/L	<	0.44																	
	Pentachlorophenol	µg/L	<	0.96																	
	Phenol	µg/L		26							6.004										
2,4,6-Trichlorophenol	µg/L	<	0.25																		
Group 5	Acenaphthene	µg/L		59																	
	Acenaphthylene	µg/L	<	59																	
	Anthracene	µg/L		59																	
	Benzidine	µg/L	<	10																	
	Benzo(a)Anthracene	µg/L		59																	
	Benzo(a)Pyrene	µg/L		61																	
	3,4-Benzofluoranthene	µg/L		61																	
	Benzo(ghi)Perylene	µg/L	<	0.078																	
	Benzo(k)Fluoranthene	µg/L		59																	
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.17																	
	Bis(2-Chloroethyl)Ether	µg/L	<	0.045																	
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.066																	
	Bis(2-Ethylhexyl)Phthalate	µg/L		279																	
	4-Bromophenyl Phenyl Ether	µg/L	<	0.36																	
	Butyl Benzyl Phthalate	µg/L	<	0.94																	
	2-Chloronaphthalene	µg/L	<	0.067																	
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.25																	
	Chrysene	µg/L		59																	
	Dibenzo(a,h)Anthracene	µg/L	<	0.082																	
	1,2-Dichlorobenzene	µg/L		163																	
	1,3-Dichlorobenzene	µg/L		44																	
	1,4-Dichlorobenzene	µg/L		28																	
	3,3-Dichlorobenzidine	µg/L	<	0.66																	
Diethyl Phthalate	µg/L		203																		
Dimethyl Phthalate	µg/L		47																		
Di-n-Butyl Phthalate	µg/L		57																		
2,4-Dinitrotoluene	µg/L		285																		



Stream / Surface Water Information

BVPV Styrenics, LLC, NPDES Permit No. PA0006254, Outfall 002

Instructions Discharge **Stream**

Receiving Surface Water Name: Ohio 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	032317	951.42	681.65	22961	0.0001		Yes
End of Reach 1	032317	945.38	665	23000	0.0001	63.36	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	951.42	0.045				240	15					345	8.1		
End of Reach 1	945.38	0.045				240	15					345	8.1		

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	951.42														
End of Reach 1	945.38														



Model Results

BVPV Styrenics, LLC, NPDES Permit No. PA0006254, Outfall 002

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Q₇₋₁₀

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
951.42	1033.25		1033.25	2.104	0.0001	15.	240.	16.	0.288	1.283	135.346
945.38	1035.00	98.018	936.98208								

Q_n

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
951.42	3201.86		3201.86	2.104	0.0001	24.658	240.	9.733	0.541	0.682	64.394
945.38	3206.614	98.018	3108.60								

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	123,369	
Total Antimony	0	0		0	1,100	1,100	180,941	
Total Arsenic	0	0		0	340	340	55,927	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	3,454,332	
Total Boron	0	0		0	8,100	8,100	1,332,385	
Total Cadmium	0	0		0	6.708	7.52	1,237	Chem Translator of 0.892 applied
Total Chromium (III)	0	0		0	1571.992	4,975	818,292	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	2,680	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	15,627	
Total Copper	0	0		0	43.194	45.0	7,401	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	22	22.0	3,619	
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	241.354	395	65,036	Chem Translator of 0.61 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	271	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1335.829	1,339	220,174	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	27.106	31.9	5,245	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	10,692	
Total Zinc	0	0		0	334.843	342	56,318	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	493	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	106,920	
Benzene	0	0		0	640	640	105,275	
Bromoform	0	0		0	1,800	1,800	296,086	
Carbon Tetrachloride	0	0		0	2,800	2,800	460,578	
Chlorobenzene	0	0		0	1,200	1,200	197,390	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	2,960,856	
Chloroform	0	0		0	1,900	1,900	312,535	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	2,467,380	
1,1-Dichloroethylene	0	0		0	7,500	7,500	1,233,690	
1,2-Dichloropropane	0	0		0	11,000	11,000	1,809,412	
1,3-Dichloropropylene	0	0		0	310	310	50,993	
Ethylbenzene	0	0		0	2,900	2,900	477,027	
Methyl Bromide	0	0		0	550	550	90,471	
Methyl Chloride	0	0		0	28,000	28,000	4,605,776	
Methylene Chloride	0	0		0	12,000	12,000	1,973,904	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	164,492	
Tetrachloroethylene	0	0		0	700	700	115,144	
Toluene	0	0		0	1,700	1,700	279,636	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	1,118,546	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	493,476	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	559,273	
Trichloroethylene	0	0		0	2,300	2,300	378,332	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	92,116	
2,4-Dichlorophenol	0	0		0	1,700	1,700	279,636	
2,4-Dimethylphenol	0	0		0	660	660	108,565	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	13,159	
2,4-Dinitrophenol	0	0		0	660	660	108,565	
2-Nitrophenol	0	0		0	8,000	8,000	1,315,936	
4-Nitrophenol	0	0		0	2,300	2,300	378,332	
p-Chloro-m-Cresol	0	0		0	160	160	26,319	
Pentachlorophenol	0	0		0	26.186	26.2	4,307	

Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	460	460	75,666
Acenaphthene	0	0		0	83	83.0	13,653
Anthracene	0	0		0	N/A	N/A	N/A
Benzdine	0	0		0	300	300	49,348
Benzo(a)Anthracene	0	0		0	0.5	0.5	82.2
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	4,934,760
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	740,214
4-Bromophenyl Phenyl Ether	0	0		0	270	270	44,413
Butyl Benzyl Phthalate	0	0		0	140	140	23,029
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	820	820	134,883
1,3-Dichlorobenzene	0	0		0	350	350	57,572
1,4-Dichlorobenzene	0	0		0	730	730	120,079
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	4,000	4,000	657,968
Dimethyl Phthalate	0	0		0	2,500	2,500	411,230
Di-n-Butyl Phthalate	0	0		0	110	110	18,094
2,4-Dinitrotoluene	0	0		0	1,600	1,600	263,187
2,6-Dinitrotoluene	0	0		0	990	990	162,847
1,2-Diphenylhydrazine	0	0		0	15	15.0	2,467
Fluoranthene	0	0		0	200	200	32,898
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	1,645
Hexachlorocyclopentadiene	0	0		0	5	5.0	822
Hexachloroethane	0	0		0	60	60.0	9,870
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	10,000	10,000	1,644,920
Naphthalene	0	0		0	140	140	23,029
Nitrobenzene	0	0		0	4,000	4,000	657,968
n-Nitrosodimethylamine	0	0		0	17,000	17,000	2,796,364
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	300	300	49,348
Phenanthrene	0	0		0	5	5.0	822
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	130	130	21,384
Aldrin	0	0		0	3	3.0	493
alpha-BHC	0	0		0	N/A	N/A	N/A
beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	0.95	0.95	156
Chlordane	0	0		0	2.4	2.4	395

Total Lead	0	0		0	9.400	15.4	7,577	Chem Translator of 0.611 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	446	Chem Translator of 0.85 applied
Total Nickel	0	0		0	148.303	149	73,200	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	2,455	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	6,397	
Total Zinc	0	0		0	337.431	342	168,409	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	1,476	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	63,974	
Benzene	0	0		0	130	130	63,974	
Bromoform	0	0		0	370	370	182,079	
Carbon Tetrachloride	0	0		0	560	560	275,579	
Chlorobenzene	0	0		0	240	240	118,105	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	1,722,366	
Chloroform	0	0		0	390	390	191,921	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	1,525,525	
1,1-Dichloroethylene	0	0		0	1,500	1,500	738,157	
1,2-Dichloropropane	0	0		0	2,200	2,200	1,082,630	
1,3-Dichloropropylene	0	0		0	61	61.0	30,018	
Ethylbenzene	0	0		0	580	580	285,421	
Methyl Bromide	0	0		0	110	110	54,132	
Methyl Chloride	0	0		0	5,500	5,500	2,706,576	
Methylene Chloride	0	0		0	2,400	2,400	1,181,051	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	103,342	
Tetrachloroethylene	0	0		0	140	140	68,895	
Toluene	0	0		0	330	330	162,395	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	688,947	
1,1,1-Trichloroethane	0	0		0	610	610	300,184	
1,1,2-Trichloroethane	0	0		0	680	680	334,631	
Trichloroethylene	0	0		0	450	450	221,447	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	54,132	
2,4-Dichlorophenol	0	0		0	340	340	167,316	
2,4-Dimethylphenol	0	0		0	130	130	63,974	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	7,874	
2,4-Dinitrophenol	0	0		0	130	130	63,974	
2-Nitrophenol	0	0		0	1,600	1,600	787,368	
4-Nitrophenol	0	0		0	470	470	231,289	
p-Chloro-m-Cresol	0	0		0	500	500	246,052	
Pentachlorophenol	0	0		0	20.090	20.1	9,886	

Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	91	91.0	44,782
Acenaphthene	0	0		0	17	17.0	8,366
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	59	59.0	29,034
Benzo(a)Anthracene	0	0		0	0.1	0.1	49.2
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	2,952,628
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	447,815
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	26,574
Butyl Benzyl Phthalate	0	0		0	35	35.0	17,224
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	160	160	78,737
1,3-Dichlorobenzene	0	0		0	69	69.0	33,955
1,4-Dichlorobenzene	0	0		0	150	150	73,816
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	800	800	393,684
Dimethyl Phthalate	0	0		0	500	500	246,052
Di-n-Butyl Phthalate	0	0		0	21	21.0	10,334
2,4-Dinitrotoluene	0	0		0	320	320	157,474
2,6-Dinitrotoluene	0	0		0	200	200	98,421
1,2-Diphenylhydrazine	0	0		0	3	3.0	1,476
Fluoranthene	0	0		0	40	40.0	19,684
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	984
Hexachlorocyclopentadiene	0	0		0	1	1.0	492
Hexachloroethane	0	0		0	12	12.0	5,905
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	2,100	2,100	1,033,420
Naphthalene	0	0		0	43	43.0	21,161
Nitrobenzene	0	0		0	810	810	398,605
n-Nitrosodimethylamine	0	0		0	3,400	3,400	1,673,156
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	59	59.0	29,034
Phenanthrene	0	0		0	1	1.0	492
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	26	26.0	12,795
Aldrin	0	0		0	0.1	0.1	49.2
alpha-BHC	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	1,300	1,300	639,736	
Free Cyanide	0	0		0	4	4.0	1,968	
Dissolved Iron	0	0		0	300	300	147,631	
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	492,105	
Total Mercury	0	0		0	0.012	0.012	5.91	
Total Nickel	0	0		0	610	610	300,184	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	2,465	WQC applied at RMI 945.38 with a design stream flow of 1035 cfs
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	118	
Total Zinc	0	0		0	7,400	7,400	3,641,575	
Acrolein	0	0		0	3	3.0	1,476	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	49,210	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	2,805	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	16,239	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	33,463	
Methyl Bromide	0	0		0	47	47.0	23,129	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	28,050	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	49,210	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	4,921,047	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	14,763	
2,4-Dichlorophenol	0	0		0	10	10.0	4,921	
2,4-Dimethylphenol	0	0		0	100	100.0	49,210	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	984	

2,4-Dinitrophenol	0	0		0	10	10.0	4,921	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	1,968,419	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	34,447	
Anthracene	0	0		0	300	300	147,631	
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	98,421	
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	49.2	
2-Chloronaphthalene	0	0		0	800	800	393,684	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	206,684	
1,3-Dichlorobenzene	0	0		0	7	7.0	3,445	
1,4-Dichlorobenzene	0	0		0	63	63.0	31,003	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	295,263	
Dimethyl Phthalate	0	0		0	2,000	2,000	984,209	
Di-n-Butyl Phthalate	0	0		0	20	20.0	9,842	
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	9,842	
Fluorene	0	0		0	50	50.0	24,605	
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	1,968	
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	16,732	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	4,921	
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	

Total Barium	0	0		0	N/A	N/A	N/A
Total Boron	0	0		0	N/A	N/A	N/A
Total Cadmium	0	0		0	N/A	N/A	N/A
Total Chromium (III)	0	0		0	N/A	N/A	N/A
Hexavalent Chromium	0	0		0	N/A	N/A	N/A
Total Cobalt	0	0		0	N/A	N/A	N/A
Total Copper	0	0		0	N/A	N/A	N/A
Free Cyanide	0	0		0	N/A	N/A	N/A
Dissolved Iron	0	0		0	N/A	N/A	N/A
Total Iron	0	0		0	N/A	N/A	N/A
Total Lead	0	0		0	N/A	N/A	N/A
Total Manganese	0	0		0	N/A	N/A	N/A
Total Mercury	0	0		0	N/A	N/A	N/A
Total Nickel	0	0		0	N/A	N/A	N/A
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A
Total Selenium	0	0		0	N/A	N/A	N/A
Total Silver	0	0		0	50	50.0	76,143
Total Thallium	0	0		0	N/A	N/A	N/A
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	N/A	N/A	N/A
Acrylamide	0	0		0	0.07	0.07	107
Acrylonitrile	0	0		0	0.051	0.051	77.7
Benzene	0	0		0	0.58	0.58	883
Bromoform	0	0		0	4.3	4.3	6,548
Carbon Tetrachloride	0	0		0	0.4	0.4	609
Chlorobenzene	0	0		0	N/A	N/A	N/A
Chlorodibromomethane	0	0		0	0.4	0.4	609
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	N/A	N/A	N/A
Dichlorobromomethane	0	0		0	0.55	0.55	838
1,2-Dichloroethane	0	0		0	0.38	0.38	579
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,2-Dichloropropane	0	0		0	0.5	0.5	761
1,3-Dichloropropylene	0	0		0	0.27	0.27	411
Ethylbenzene	0	0		0	N/A	N/A	N/A
Methyl Bromide	0	0		0	N/A	N/A	N/A
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	4.6	4.6	7,005
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	259
Tetrachloroethylene	0	0		0	0.69	0.69	1,051
Toluene	0	0		0	N/A	N/A	N/A
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A
1,1,2-Trichloroethane	0	0		0	0.55	0.55	838
Trichloroethylene	0	0		0	0.6	0.6	914

Vinyl Chloride	0	0		0	0.02	0.02	30.5
2-Chlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	0.030	0.03	45.7
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	2,132
Acenaphthene	0	0		0	N/A	N/A	N/A
Anthracene	0	0		0	N/A	N/A	N/A
Benzdine	0	0		0	0.000086	0.00009	0.13
Benzo(a)Anthracene	0	0		0	0.001	0.001	1.52
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.15
3,4-Benzofluoranthene	0	0		0	0.001	0.001	1.52
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	5.79
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	45.7
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	487
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	0.0038	0.004	5.79
Dibenzo(a,h)Anthracene	0	0		0	0.0001	0.0001	0.15
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	0.021	0.021	32.0
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	76.1
2,6-Dinitrotoluene	0	0		0	0.05	0.05	76.1
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	45.7
Fluoranthene	0	0		0	N/A	N/A	N/A
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.12
Hexachlorobutadiene	0	0		0	0.01	0.01	15.2
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A
Hexachloroethane	0	0		0	0.1	0.1	152
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	1.52
Isophorone	0	0		0	N/A	N/A	N/A

Total Thallium	118	µg/L	Discharge Conc < TQL
Total Zinc	36,098	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	316	µg/L	Discharge Conc ≤ 25% WQBEL
Acrylamide	107	µg/L	Discharge Conc ≤ 25% WQBEL
Benzene	883	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	6,548	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	609	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	49,210	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	609	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	1,722,366	µg/L	Discharge Conc < TQL
Chloroform	2,805	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	838	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,1-Dichloroethylene	16,239	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	411	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	33,463	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	23,129	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	2,706,576	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	7,005	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	259	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	1,051	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	28,050	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	49,210	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	300,184	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	838	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	914	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	14,763	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dichlorophenol	4,921	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dimethylphenol	49,210	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrophenol	4,921	µg/L	Discharge Conc ≤ 25% WQBEL
2-Nitrophenol	787,368	µg/L	Discharge Conc ≤ 25% WQBEL
4-Nitrophenol	231,289	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	16,869	µg/L	Discharge Conc < TQL
Pentachlorophenol	45.7	µg/L	Discharge Conc < TQL
Phenol	1,968,419	µg/L	Discharge Conc ≤ 25% WQBEL
2,4,6-Trichlorophenol	2,132	µg/L	Discharge Conc < TQL
Acenaphthene	8,366	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	147,631	µg/L	Discharge Conc ≤ 25% WQBEL
Benzdine	0.13	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS

Bis(2-Chloroethyl)Ether	45.7	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	98,421	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	26,574	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	49.2	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	393,684	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Dibenzo(a,h)Anthracene	0.15	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	78,737	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	3,445	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	31,003	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	32.0	µg/L	Discharge Conc < TQL
Diethyl Phthalate	295,263	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	246,052	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Butyl Phthalate	9,842	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	45.7	µg/L	Discharge Conc < TQL
Fluoranthene	9,842	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	24,605	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorocyclopentadiene	492	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	1.52	µg/L	Discharge Conc < TQL
Isophorone	16,732	µg/L	Discharge Conc < TQL
Naphthalene	14,761	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	4,921	µg/L	Discharge Conc ≤ 25% WQBEL
n-Nitrosodimethylamine	1.05	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	7.61	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	5,025	µg/L	Discharge Conc < TQL
Phenanthrene	492	µg/L	Discharge Conc ≤ 25% WQBEL
Pyrene	9,842	µg/L	Discharge Conc ≤ 25% WQBEL
Aldrin	0.001	µg/L	Discharge Conc < TQL
alpha-BHC	0.61	µg/L	Discharge Conc < TQL
beta-BHC	12.2	µg/L	Discharge Conc < TQL
gamma-BHC	0.95	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.0003	µg/L	Discharge Conc < TQL
4,4-DDT	0.00003	µg/L	Discharge Conc < TQL
4,4-DDE	0.00002	µg/L	Discharge Conc < TQL
4,4-DDD	0.0001	µg/L	Discharge Conc < TQL
Dieldrin	0.000001	µg/L	Discharge Conc < TQL
alpha-Endosulfan	23.2	µg/L	Discharge Conc < TQL
beta-Endosulfan	23.2	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	9,842	µg/L	Discharge Conc < TQL
Endrin	9.07	µg/L	Discharge Conc < TQL
Endrin Aldehyde	143	µg/L	Discharge Conc < TQL
Heptachlor	0.009	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.046	µg/L	Discharge Conc < TQL

