

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

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

Application No. PA0012211
APS ID 34603
Authorization ID 1330659

Applicant and Facility Information

Applicant Name	<u>Boyertown Foundry Company</u>	Facility Name	<u>Boyertown Foundry Company</u>
Applicant Address	<u>PO Box 443 9th & Rothermel Drive</u> <u>New Berlinville, PA 19545-0443</u>	Facility Address	<u>9th & Rothermel Drive</u> <u>New Berlinville, PA 19545</u>
Applicant Contact	<u>Mark Reinsmith</u>	Facility Contact	<u>Mark Reinsmith</u>
Applicant Phone	<u>(610) 473-1000</u>	Facility Phone	<u>(215) 473-1000</u>
Client ID	<u>121910</u>	Site ID	<u>238992</u>
SIC Code	<u>3321</u>	Municipality	<u>Boyertown Borough</u>
SIC Description	<u>Manufacturing - Gray And Ductile Iron Foundries</u>	County	<u>Berks</u>
Date Application Received	<u>October 14, 2020</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>March 23, 2021</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES Renewal.</u>		

Summary of Review

Boyertown Foundry Company (BFC) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on April 20, 2016 and became effective on May 1, 2016. The permit expired on April 30, 2021.

Based on the review, it is recommended that the permit be drafted.

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.

Ppc plan; process wastewater/sanitary wastewater, well water (no city water), plant operations.

Approve	Deny	Signatures	Date
X		<i>Jinsu Kim</i> Jinsu Kim / Environmental Engineering Specialist	November 28, 2021
x		<i>Maria D. Bebenek for Daniel W. Martin</i> Daniel W. Martin, P.E. / Environmental Engineer Manager	November 30, 2021
x		<i>Maria D. Bebenek</i> Maria D. Bebenek, P.E. / Program Manager	November 30, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.048</u>
Latitude	<u>40° 20' 17"</u>	Longitude	<u>75° 38' 01"</u>
Quad Name	<u>Boyertown</u>	Quad Code	<u>1640</u>
Wastewater Description: <u>Non-contact cooling water & Stormwater</u>			
Receiving Waters	<u>Unnamed Tributary (UNT) to Swamp Creek</u>	Stream Code	<u>01337 (Net Stream 54438)</u>
NHD Com ID	<u>25964946</u>	RMI	<u>1.5</u>
Drainage Area	<u>0.33 sq. miles</u>	Yield (cfs/mi ²)	<u>0.3</u>
Q7-10 Flow (cfs)	<u>0.0912</u>	Q7-10 Basis	<u>USGS StreamStats</u>
Elevation (ft)	<u>370</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>3-E</u>	Chapter 93 Class.	<u>TSF, MF</u>
Existing Use	<u>-</u>	Existing Use Qualifier	<u>-</u>
Exceptions to Use	<u>-</u>	Exceptions to Criteria	<u>-</u>
Assessment Status	<u>Impaired for aquatic life and recreational use</u>		
Cause(s) of Impairment	<u>Cause Unknown, Siltation and Pathogens</u>		
Source(s) of Impairment	<u>Urban Runoff/Storm Sewers</u>		
TMDL Status	<u>Pending</u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>		<u></u>
Temperature (°F)	<u></u>		<u></u>
Hardness (mg/L)	<u></u>		<u></u>
Other:	<u></u>		<u></u>
Nearest Downstream Public Water Supply Intake	<u>Aqua PA at Lower Merion, Montgomery County</u>		
PWS Waters	<u>Perkiomen Creek</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u>Approx. 1.0</u>	Distance from Outfall (mi)	<u>> 25 miles</u>

Drainage Area

The discharge is to an unnamed tributary to Swamp Creek at RM 1.5. A drainage area upstream of the discharge point is estimated to be 0.33 sq.mi. according to USGS StreamStats available at <https://streamstats.usgs.gov/ss/>.

Streamflow

StreamStats produced a Q7-10 flow of 0.0912 cfs at the point of discharge.

Unnamed Tributary to Swamp Creek

Under 25 Pa Code §93.9e, the entire basin of Swamp Creek has a designated protected water use of trout stocking and migratory fishes. No special protection water is impacted by this discharge. According to the latest DEP's integrated water quality report finalized in 2020, the receiving stream is impaired for siltation as a result of urban runoff and storm sewers. No TMDL has been developed to address this impairment.

Public Water Supply Intake

The fact sheet developed for the last permit renewal indicates that the nearest downstream public water supply intake is Aqua PA, located on the Perkiomen Creek more than 25 miles from the discharge. Given the distance, the discharge is not expected to impact the water supply.

Facility Description

BFC located at 9th and Rothermel Drive, New Berlinville, PA 19545 is a gray iron casting manufacturer (SIC code 3321). Scrap iron is melted in a furnace and poured into molds made of sand and resin. The castings are cleaned by shaking and shot blasting, not by rinsing with water. The site includes a foundry, machine shop, material storage, office, warehouse, and parking lots.

No process wastewater is generated during industrial operations and sanitary wastewater is sent to the local municipal treatment plant. The only wastewater discharged is from non-contact cooling water from an air compressor. This noncontact cooling water, according to the fact sheet developed for the last permit renewal, is used to cool the furnace located in the cupola. It is evaporated or re-circulated through heat exchangers and the compressor. The fact sheet also stated the following:

According to site water records, and verified by site staff, source water is separately conveyed to both the compressor and to the water tower. Some of the compressor discharge is sent to the water tower as make-up water and some is discharged to internal monitoring point (IMP) 101. Per both the application and Mr. Reinsmith, Manufacturing Services Director, during the December 16 site visit, the discharge at IMP 101 is from the compressor and not directly from the cooling tower; the noncontact cooling water system is continuous but the discharge is intermittent; and there is no blowdown, flushing of the system to remove scale, or chemical additives used. Wastewater from the Venturi wet scrubber, used to treat the melting furnace exhaust gas, is held in a pit, recycled for re-use in the wet scrubber, then hauled off-site for disposal. Slag piles are surrounded by impermeable barriers to prevent stormwater contact and runoff. The slag piles are reportedly covered by their waste permit.

An on-site well is used to supply water used throughout the plant. According to the letter submitted by BFC, BFC was permitted to use water from the municipal water authority (city water) as an emergency backup. City water has not been used for a while and continue to not require to be used for non-contact cooling water according to BFC. This groundwater withdrawal is approved by Delaware River Basin Commission (DRBC) with the average and maximum demand of 0.043 MGD and 0.057 MGD, respectively.

No chemical additives are currently used by Boyertown according to the application.

The facility also utilizes outfalls receiving stormwater drained throughout the site.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	10/6/2020: Tracy Tomtishen, DEP Water Quality Specialist, conducted an administrative inspection to discuss cause of recent effluent violations for copper. BFC conducted a plumbing evaluation and did not find any copper piping. BFC is waiting for further sampling results.
Other Comments:	A notice of violation (NOV) letter was sent on January 7, 2021 for a number of effluent violations for Total Copper and Total Lead occurred from November 2016 through August 2020. DEP's database revealed there is no open violation associated with this permittee of facility.

Effluent Data

DMR Data for Outfall 001 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
pH (S.U.) Daily Maximum	7.65			7.78			7.84			7.72		
TSS (mg/L) Daily Maximum	7.8			< 3.30			< 3.00			39		
Oil and Grease (mg/L) Daily Maximum	< 5.0			< 5.2			< 5.0			< 5.1		
Total Aluminum (mg/L) Daily Maximum	1.0			< 0.30			< 0.30			< 0.30		
Total Cadmium (mg/L) Daily Maximum	< 0.0050			< 0.0050			< 0.0050			< 0.0050		
Hexavalent Chromium (mg/L) Daily Maximum	< 0.010			< 0.0050			< 0.010			< 0.010		
Total Copper (mg/L) Daily Maximum	< 0.020			< 0.020			< 0.020			< 0.020		
Total Iron (mg/L) Daily Maximum	0.88			< 0.20			< 0.20			1.3		
Total Lead (mg/L) Daily Maximum	< 0.015			< 0.015			< 0.015			< 0.015		
Total Zinc (mg/L) Daily Maximum	0.059			0.027			< 0.020			0.0514		

DMR Data for Outfall 002 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
pH (S.U.) Daily Maximum	7.72			7.62			7.62			7.81		
TSS (mg/L) Daily Maximum	13.0			< 3.30			14			< 3.5		
Oil and Grease (mg/L) Daily Maximum	< 5.1			< 5.2			< 5.1			< 5.2		
Total Aluminum (mg/L) Daily Maximum	1.6			< 0.30			< 0.30			< 0.30		
Total Cadmium (mg/L) Daily Maximum	< 0.0050			< 0.0050			< 0.0050			< 0.0050		

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Hexavalent Chromium (mg/L) Daily Maximum	< 0.010			< 0.0050			< 0.010			< 0.010		
Total Copper (mg/L) Daily Maximum	< 0.020			< 0.020			0.039			< 0.020		
Total Iron (mg/L) Daily Maximum	1.3			< 0.20			0.72			< 0.20		
Total Lead (mg/L) Daily Maximum	< 0.015			< 0.015			< 0.015			< 0.015		
Total Zinc (mg/L) Daily Maximum	0.070			0.020			0.13			0.035		

DMR Data for Outfall 101 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
Flow (MGD) Average Monthly	0.022	0.023	0.021	0.024	0.026	0.020	0.018	0.014	0.014	0.020	0.032	0.028
Flow (MGD) Daily Maximum	0.030	0.027	0.028	0.030	0.035	0.029	0.027	0.029	0.031	0.037	0.043	0.055
pH (S.U.) Minimum	7.55	7.49	7.60	7.49	7.49	7.69	7.59	7.59	7.49	7.46	7.52	7.31
pH (S.U.) Maximum	7.74	7.76	7.75	7.75	7.90	8.14	7.91	7.96	7.81	7.79	7.82	7.83
TRC (mg/L) Average Monthly	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.2	< 0.24	< 0.24
TRC (mg/L) Instantaneous Maximum	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.2	0.5	0.5
TSS (lbs/day) Average Monthly	< 0.7156	< 0.6539	< 0.6605	< 0.7473	< 0.7006	< 0.3378	< 0.3336	< 0.5630	< 0.3720	< 0.7088	< 0.7073	< 1.0213
TSS (lbs/day) Daily Maximum	< 0.7431	< 0.6672	< 0.6881	< 0.9341	< 0.8757	< 0.3503	< 0.4270	< 0.6505	0.5604	< 0.9907	0.7674	< 1.2016
TSS (mg/L) Average Monthly	< 3.30	< 3.20	< 3.30	< 3.20	< 3.00	< 3.00	< 3.20	< 3.00	< 4.35	< 3.3	< 3.55	< 4.5
TSS (mg/L) Daily Maximum	< 3.30	< 3.20	< 3.30	< 3.20	< 3.00	< 3.00	< 3.20	< 3.00	5.50	< 3.3	3.80	< 4.5
Total Copper (lbs/day) Average Monthly	0.0007	0.0011	0.0011	0.0009	0.0009	< 0.0003	< 0.0002	< 0.0003	< 0.0002	< 0.0004	0.0003	0.0021
Total Copper (lbs/day) Daily Maximum	0.0009	0.0013	0.0015	0.0009	0.0014	0.0004	0.0002	0.0003	< 0.0002	0.0005	0.0004	0.0026
Total Copper (mg/L) Average Monthly	0.0034	0.0053	0.0053	0.0039	0.0038	< 0.0024	< 0.0018	< 0.0011	< 0.0010	< 0.0025	0.0016	0.0095
Total Copper (mg/L) Daily Maximum	0.0038	0.0062	0.0072	0.0052	0.0048	0.0037	0.0026	0.0012	< 0.0010	0.0039	0.0022	0.010

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Total Lead (lbs/day) Average Monthly	<	0.00018	0.00020	0.00017	0.00030	<	<	0.0002	< 0.0001	< 0.0002	0.0003	< 0.0001
Total Lead (lbs/day) Daily Maximum	0.00014	0.00020	0.00025	0.00020	0.00026	0.00013	0.00007	0.0002	0.0001	< 0.0002	0.0004	< 0.0001
Total Lead (mg/L) Average Monthly	<	0.00087	0.00101	0.00075	0.00140	<	<	0.00078	<	<	0.00126	<
Total Lead (mg/L) Daily Maximum	0.00062	0.00095	0.00120	0.00082	0.00190	0.00080	0.00050	0.00083	0.00055	0.00050	0.0020	0.00050

Existing Permit Requirements

The tables below summarize effluent limits and monitoring requirements specified in the latest permit renewal.

Internal Monitoring Point 101

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD) Internal Monitoring Point	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.) Internal Monitoring Point	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine (TRC) Internal Monitoring Point	XXX	XXX	XXX	0.4	XXX	1.3	1/day	Grab
Total Suspended Solids Internal Monitoring Point	Report	Report	XXX	30	60	70	2/month	24-Hr Composite
Copper, Total Internal Monitoring Point	0.005	0.01	XXX	0.013	0.026	.033	2/month	24-Hr Composite
Lead, Total Internal Monitoring Point	0.002	0.003	XXX	0.004	0.008	.01	2/month	24-Hr Composite

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Cadmium, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Chromium, Hexavalent	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Lead, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Outfall 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Cadmium, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Chromium, Hexavalent	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Lead, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Development of Permit Requirements

Internal Monitoring Point IMP 101

The facility discharges non-contact cooling water into a surface water of the Commonwealth via Outfall 001. This outfall also receives stormwater drained from the site. Given that non-contact cooling water is mixed with stormwater before discharges, DEP has consistently established an internal monitoring point (Internal Monitoring Point 101; IMP 101) so that non-contact cooling water can be regulated separately. This approach is consistent with 40 CFR §122.45(h).

The application stated that the discharge of non-contact cooling water occurs continuously with the design flow of 0.04 MGD. Based on a review of past DMR data, this flow value seems reasonable to be used. The volume of non-contact cooling water at IMP 101 is calculated by reading the flow meter on the compressor discharge line and subtracting the reading of the flow meter on the pipeline to the water tower, the make-up water.

1. TBELs

In general, non-contact cooling water is not considered a process wastewater as water does not come in contact with any industrial materials and thus it typically does not produce toxic pollutants. No federal ELGs apply as there is no process wastewater discharged.

Non-contact cooling water is subject to state effluent standards for industrial waste found in 25 Pa Code §95.2 which requires effluent pH to be greater than 6.0 SU but less than 9.0 SU.

Because city water can be used as an emergency backup, the current permit contains effluent limits for Total Residual Chlorine (TRC). BFC however requested as part of this renewal existing effluent limits for TRC be removed as the facility does not use city water. Past DMR data shows that since 2017 TRC effluent levels were not detected, except for two sampling events and those samples showed TRC of 0.25 mg/L and 0.27 mg/L. As TRC is still detected, BFC is subject to Total Residual Chlorine (TRC) effluent standard of 0.5 mg/L (average monthly) in accordance with 25 Pa Code §92a.48.

The facility is also located within the Delaware River basin which requires Total Suspended Solids of 100 mg/L (average monthly).

These technology-based limitations apply, subject to water quality analysis and BPJ where applicable.

2. WQBELs

No WQM 7.0 model will be utilized for non-contact cooling water for CBOD5 and NH3-N as they are not pollutants of concern.

TRC_CALC spreadsheet was utilized using a half of the design flow as unchlorinated well water is used in addition to chlorinated city water. This approach was used in the water quality analysis performed for the last permit renewal and is still determined to be appropriate. The output showed WQBELs of 0.368 (0.37 mg/L) for monthly average and 1.2 mg/L for instantaneous maximum. These WQBELs are more stringent than the existing limits and therefore will be included in this permit renewal.

Although non-contact cooling water is not considered a process wastewater, heavy metals including Total Copper and Total Lead have been consistently determined to be pollutants of concern. A source of these pollutants has not been defined by BFC but these pollutants are present presumably given that the source of water is an onsite well. DEP's Toxic Management Spreadsheet (TMS) was utilized and the output shows that existing WQBELs are still appropriate and protective of water quality. Past DMR shows that the facility is able to meet existing WQBELs most of the time. No changes are therefore recommended.

Non-contact cooling water is generally considered a heated wastewater and is subject to temperature effluent limits or monitoring requirements. However, DEP previously determined that such requirements are not needed given that, according to the fact sheet developed during the last permit renewal, *1) the non-contact cooling water discharge has the opportunity to cool between IMP 101 and the point of entry into the municipal storm sewer and within the municipal storm sewer before being discharged to the stream, 2) no expansion of wastewater flow is being requested and indeed production has been cut back to one shift per Mr. Reinsmith (site representative), and 3) the facility has been discharging non-contact cooling water for decades while the designated use of the UNT stream and the 12 miles of Swamp Creek downstream from there has continuously been classified as "Trout*

Stocked Fishes, TSF” designated use. This is a reasonable approach; the permit will continue to not include temperature requirements unless the facility expansion (or facility production increase) occurs which would result in a discharge volume increase. No change is recommended.

3. BPJ Limits

The existing permit’s limits for Total Suspended Solids (TSS) will be continued. The fact sheet developed for the last permit renewal indicates the following: The TSS limits are the same as those required in Chapter 92a.47 of the PA Code for sewage discharges and considered achievable: 30 mg/l as a monthly average. As mentioned already, a Total Maximum Daily Load (TMDL) is planned for this waterway. The TMDL could require future changes to permit limits. In assessments, siltation was noted as a problem in this waterway.

Outfalls 001 and 002

Stormwater drained from the site is discharged via Outfall 001 (40° 20' 17.00", -75° 38' 1.00") and Outfall 002 (40° 20' 17.00", -75° 38' 1.00"). Based on the site map provided by Outfall 001 receives stormwater drained from parking lot, foundry, chemical/limestone/coke storage areas, unloading/loading areas and machine shop and Outfall 002 receives stormwater drained from office, warehouse, and material storage areas. Effluent from Outfall 001 enters a municipal storm sewer which travels under Spring Street. Stormwater from the other end of the facility is collected by an on-site storm sewer which empties to a swale which empties into a municipal storm sewer outside of their fence. All outfall monitoring is performed on-site before the flows enter the municipal storm sewers.

BFC is currently monitored for pH, TSS, Oil/Grease, Total Aluminum, Total Cadmium, Hexavalent Chromium, Total Copper, Total Iron, Total Lead, and Total Zinc on a quarterly basis for both Outfalls 001 and 002. A review of past DMR data since 2016 showed that Total Cadmium, Hexavalent Chromium, and Oil/Grease have been consistently not detected. This long-term data shows that these pollutants are no longer pollutants of concern for stormwater discharged from BFC. DEP’s NPDES PAG-03 General Permit for Industrial Stormwater also indicates that facilities under SIC code 3321 would be required to monitor for TSS, Total Aluminum, Total Zinc, Total Copper, Total Iron, and Total Lead. It is recommended that existing quarterly monitoring requirements for Total Cadmium, Oil/Grease and Hexavalent Chromium be removed from the permit. While the PAG-03 General Permit does not specify a monitoring requirement for pH, it is recommended that the existing monitoring requirement for pH be maintained in the permit. The data shows pH levels have not been consistent.

Other Considerations

Flow Monitoring

Flow monitoring remains unchanged and is recommended by the permit guidance and is also required by 25 PA Code §§ 92a.27 and 92a.61.

Delaware River Basin Commission (DRBC) Water Quality Regulations

The discharge is located within the Delaware River basin; and therefore, the discharge is subject to the DRBC’s Water Quality Regulations. However, because the discharge volume is below the DRBC docket threshold; therefore, the draft permit will not be sent to DRBC for the review.

Total Residual Chlorine

Since TRC is present only when city water is used. It is not reasonable to monitor for TRC on a daily basis when a source of water is an on-site well. Therefore, the monitoring frequency has changed from 1/day to “see permit” in which the following footnote will be included in the permit to allow the permittee to collect samples for TRC only when city water is used.

“A minimum of one grab sample must be collected per day and analyzed for Total Residual Chlorine only when city water (water from the municipal water authority) is used, either separately or in combination with water from an on-site well, as the source of the water used for non-contact cooling water”

Anti-Backsliding

Unless specified otherwise in this fact sheet with rationales, pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

Class A Wild Trout Streams

No Class A Wild Trout Fishery is impacted by this discharge.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

IMP 101, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD) Internal Monitoring Point	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.) Internal Monitoring Point	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine (TRC) Internal Monitoring Point	XXX	XXX	XXX	0.37	XXX	1.2	See Permit	Grab
Total Suspended Solids Internal Monitoring Point	Report	Report	XXX	30	60	70	2/month	24-Hr Composite
Copper, Total Internal Monitoring Point	0.005	0.01	XXX	0.013	0.026	.033	2/month	24-Hr Composite
Lead, Total Internal Monitoring Point	0.002	0.003	XXX	0.004	0.008	.01	2/month	24-Hr Composite

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (SU)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Lead, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (SU)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Copper, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Lead, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Zinc, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 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, 391-2000-002, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 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, 391-2000-007, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 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, 391-2000-024, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP: [redacted]
<input type="checkbox"/>	Other: [redacted]

Attachments

1. StreamStats

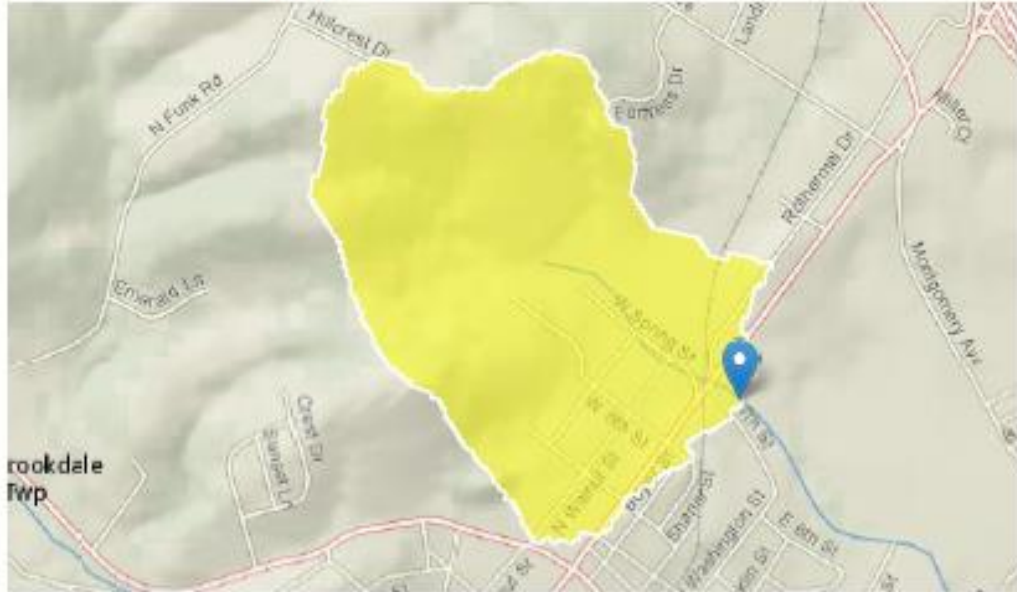
11/24/21, 3:42 PM

StreamStats

Rec
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 PDF

StreamStats Report

Region ID: PA
 Workspace ID: PA20211124204023098000
 Clicked Point (Latitude, Longitude): 40.33739, -75.63254
 Time: 2021-11-24 15:40:44 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.33	square miles
BSLOPD	Mean basin slope measured in degrees	4.8686	degrees
ROCKDEP	Depth to rock	5.1	feet
URBAN	Percentage of basin with urban development	39.4715	percent

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Description	Value	Unit

<https://streamstats.usgs.gov/ss/>

1/3

11/24/21, 3:42 PM

StreamStats

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.33	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.8686	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5.1	feet	4.13	5.21
URBAN	Percent Urban	39.4715	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.178	ft ³ /s
30 Day 2 Year Low Flow	0.224	ft ³ /s
7 Day 10 Year Low Flow	0.0912	ft ³ /s
30 Day 10 Year Low Flow	0.118	ft ³ /s
90 Day 10 Year Low Flow	0.173	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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11/27/21, 10:06 AM

StreamStats

StreamStats Report

Region ID: PA
 Workspace ID: PA20211127145333664000
 Clicked Point (Latitude, Longitude): 40.32895, -75.60991
 Time: 2021-11-27 09:53:51 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.98	square miles
BSLOPD	Mean basin slope measured in degrees	2.9388	degrees
ROCKDEP	Depth to rock	4.5	feet
URBAN	Percentage of basin with urban development	41.9468	percent

Low-Flow Statistics Parameters [Low Flow Region 1]

11/27/21, 10:08 AM

StreamStats

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.98	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	2.9388	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.5	feet	4.13	5.21
URBAN	Percent Urban	41.9468	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.171	ft ³ /s
30 Day 2 Year Low Flow	0.256	ft ³ /s
7 Day 10 Year Low Flow	0.0688	ft ³ /s
30 Day 10 Year Low Flow	0.108	ft ³ /s
90 Day 10 Year Low Flow	0.216	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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2. Toxics Management Spreadsheet



Toxics Management Spreadsheet
 Version 1.3, March 2021

Discharge Information

Instructions Discharge Stream

Facility: Boyertown Foundry Company NPDES Permit No.: PA0012211 Outfall No.: 101

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: NCCW

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q ₁₋₁₀	Q ₅
0.048	132	7						

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									
	Chloride (PWS)	mg/L									
	Bromide	mg/L									
	Sulfate (PWS)	mg/L									
	Fluoride (PWS)	mg/L									
Group 2	Total Aluminum	µg/L									
	Total Antimony	µg/L									
	Total Arsenic	µg/L									
	Total Barium	µg/L									
	Total Beryllium	µg/L									
	Total Boron	µg/L									
	Total Cadmium	µg/L									
	Total Chromium (III)	µg/L									
	Hexavalent Chromium	µg/L									
	Total Cobalt	µg/L									
	Total Copper	µg/L	13								
	Free Cyanide	µg/L									
	Total Cyanide	µg/L									
	Dissolved Iron	µg/L									
	Total Iron	µg/L									
	Total Lead	µg/L	4								
	Total Manganese	µg/L									
	Total Mercury	µg/L									
	Total Nickel	µg/L									
	Total Phenols (Phenolics) (PWS)	µg/L									
	Total Selenium	µg/L									
	Total Silver	µg/L									
	Total Thallium	µg/L									
Total Zinc	µg/L										
Total Molybdenum	µg/L										
Acrolein	µg/L	<									
Acrylamide	µg/L	<									
Acrylonitrile	µg/L	<									
Benzene	µg/L	<									
Bromofom	µg/L	<									



Stream / Surface Water Information

Boyertown Foundry Company, NPDES Permit No. PA0012211, Outfall 101

Instructions Discharge Stream

Receiving Surface Water Name: Unnamed Tributary to Swamp Creek

No. Reaches to Model: 1

- Statewide Criteria
- Great Lakes Criteria
- ORSANCO Criteria

Location	Stream Code	RMI	Elevation (ft)	DA (m ²)	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria
Point of Discharge	001337	1.5	370	0.33			Yes
End of Reach 1	001337	0	363	0.98			Yes

Q₁₀

Location	RMI	LFY (cfs/m ²)	Flow (cfs)		WD Ratio	Width (ft)	Depth (ft)	Velocity (ft/s)	RRR Time (hours)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.5	0.1	0.0912									100	7		
End of Reach 1	0	0.1	0.296												

Q₅

Location	RMI	LFY (cfs/m ²)	Flow (cfs)		WD Ratio	Width (ft)	Depth (ft)	Velocity (ft/s)	RRR Time (hours)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.5														
End of Reach 1	0														



Model Results

Boyertown Foundry Company, NPDES Permit No. PA0012211, Outfall 101

Instructions Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

All

Inputs

Results

Limits

Hydrodynamics

Wasteload Allocations

AFC

OCT (min): 0.678

PMF: 1

Analysis Hardness (mg/l): 114.36

Analysis pH: 7.00

Pollutants	Conc (ug/L)	Stream CV	Tri Conc (ug/L)	Fate Coef	WQC (ug/L)	WQ Ob (ug/L)	WLA (ug/L)	Comments
Total Copper	0	0	0	0	15.250	15.3	35.4	Chem Translator of 0.36 applied
Total Lead	0	0	0	0	74.718	90.3	218	Chem Translator of 0.771 applied

CFC

OCT (min): 0.678

PMF: 1

Analysis Hardness (mg/l): 114.36

Analysis pH: 7.00

Pollutants	Conc (ug/L)	Stream CV	Tri Conc (ug/L)	Fate Coef	WQC (ug/L)	WQ Ob (ug/L)	WLA (ug/L)	Comments
Total Copper	0	0	0	0	10.044	10.5	23.3	Chem Translator of 0.96 applied
Total Lead	0	0	0	0	2.912	3.77	8.41	Chem Translator of 0.771 applied

THH

OCT (min): 0.678

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Conc (ug/L)	Stream CV	Tri Conc (ug/L)	Fate Coef	WQC (ug/L)	WQ Ob (ug/L)	WLA (ug/L)	Comments
Total Copper	0	0	0	0	N/A	N/A	N/A	
Total Lead	0	0	0	0	N/A	N/A	N/A	

CRL

OCT (min): 0.585

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Conc (ug/L)	Stream CV	Tri Conc (ug/L)	Fate Coef	WQC (ug/L)	WQ Ob (ug/L)	WLA (ug/L)	Comments
Total Copper	0	0	0	0	N/A	N/A	N/A	
Total Lead	0	0	0	0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

Pollutants	Mass Limits		Concentration Limits			Units	Governing WQBEL	WQBEL Basis	Comments
	AML (lb/day)	MDL (lb/day)	AML	MDL	IMAX				
Total Copper	0.009	0.014	22.7	35.4	56.7	µg/L	22.7	APC	Discharge Conc ≤ 50% WQBEL (RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	5.41	CPC	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., or Target DL).

Pollutants	Governing WQBEL	Units	Comments

3. TRC_CALC

TRC_CALC

1A	B	C	D	E	F	G
2	TRC EVALUATION					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.0912	= Q stream (cfs)		0.6	= CV Daily	
5	0.024	= Q discharge (MGD)		0.6	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		16	= AFC_Criteria Compliance Time (min)	
9	0.4	= BAT/BJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			= Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.III	WLA_afc = 0.803		1.3.2.III	WLA_cfc = 0.776
12	PENTOXSD TRG	6.1a	LTAMULT_afc = 0.373		6.1c	LTAMULT_cfc = 0.681
13	PENTOXSD TRG	6.1b	LTA_afc = 0.299		6.1d	LTA_cfc = 0.461
14						
15	Source	Effluent Limit Calculations				
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.368		AFC	
18			INST MAX LIMIT (mg/l) = 1.204			
	WLA_afc	$(.019/e^{-(k \cdot AFC_tc)}) + [(AFC_Yc \cdot Qs \cdot 0.019 / Qd \cdot e^{-(k \cdot AFC_tc)}) \dots$ $\dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$				
	LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$				
	LTA_afc	$wla_afc \cdot LTAMULT_afc$				
	WLA_cfc	$(.011/e^{-(k \cdot CFC_tc)}) + [(CFC_Yc \cdot Qs \cdot 0.011 / Qd \cdot e^{-(k \cdot CFC_tc)}) \dots$ $\dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$				
	LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$				
	LTA_cfc	$wla_cfc \cdot LTAMULT_cfc$				
	AML MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.6 \cdot LN(cvd^2 / no_samples + 1))$				
	AVG MON LIMIT	$MIN(BAT_BPJ, MIN(LTA_afc, LTA_cfc) \cdot AML_MULT)$				
	INST MAX LIMIT	$1.6 \cdot ((av_mon_limit / AML_MULT) / LTAMULT_afc)$				

4. Outfall 001 and 002 DMR data

		Outfall 001		Outfall 002		Outfall 001		Outfall 002		Outfall 001		Outfall 002	
Jul-16	Aluminum, Total	0.354	0.243	Jul-16	Iron, Total	0.471	0.339	Jul-16	Total Suspended Solids	< 9.00	< 15.0		
Oct-16	Aluminum, Total	1.57	1.01	Oct-16	Iron, Total	4.95	1.51	Oct-16	Total Suspended Solids	30.8	12.2		
Jan-17	Aluminum, Total	0.484	0.708	Jan-17	Iron, Total	1.44	1.8	Jan-17	Total Suspended Solids	16.9	18		
Apr-17	Aluminum, Total	0.561	9.24	Apr-17	Iron, Total	1.07	37	Apr-17	Total Suspended Solids	6.42	207		
Jul-17	Aluminum, Total	0.252	< 0.200	Jul-17	Iron, Total	0.762	< 0.200	Jul-17	Total Suspended Solids	15.5	16.9		
Oct-17	Aluminum, Total	0.445	2.3	Oct-17	Iron, Total	2.31	9.9	Oct-17	Total Suspended Solids	14.2	63.2		
Jan-18	Aluminum, Total	1.26	0.768	Jan-18	Iron, Total	2.45	2.24	Jan-18	Total Suspended Solids	15.5	19.8		
Apr-18	Aluminum, Total	0.293	0.451	Apr-18	Iron, Total	0.512	1.44	Apr-18	Total Suspended Solids	16	10.9		
Jul-18	Aluminum, Total	< 0.300	< 0.300	Jul-18	Iron, Total	< 0.200	0.273	Jul-18	Total Suspended Solids	< 3.00	< 3.00		
Oct-18	Aluminum, Total	0.508	6.23	Oct-18	Iron, Total	4.1	21.1	Oct-18	Total Suspended Solids	30.8	113		
Jan-19	Aluminum, Total	0.544	< 0.300	Jan-19	Iron, Total	1.99	0.518	Jan-19	Total Suspended Solids	39	19		
Apr-19	Aluminum, Total	< 0.300	< 0.300	Apr-19	Iron, Total	0.293	0.358	Apr-19	Total Suspended Solids	< 3.00	< 3.00		
Jul-19	Aluminum, Total	< 0.300	< 0.300	Jul-19	Iron, Total	< 0.200	< 0.200	Jul-19	Total Suspended Solids	< 3.00	< 3.00		
Oct-19	Aluminum, Total	1.88	1.78	Oct-19	Iron, Total	5.51	4.25	Oct-19	Total Suspended Solids	82.9	77		
Jan-20	Aluminum, Total	0.176	0.186	Jan-20	Iron, Total	0.314	0.308	Jan-20	Total Suspended Solids	7.61	5.67		
Apr-20	Aluminum, Total	< 0.200	0.324	Apr-20	Iron, Total	< 0.200	1.53	Apr-20	Total Suspended Solids	5.07	40.5		
Jul-20	Aluminum, Total	< 0.20	< 0.20	Jul-20	Iron, Total	0.023	0.43	Jul-20	Total Suspended Solids	< 4.5	< 4.5		
Oct-20	Aluminum, Total	< 0.30	< 0.30	Oct-20	Iron, Total	1.3	< 0.20	Oct-20	Total Suspended Solids	39	< 3.5		
Jan-21	Aluminum, Total	< 0.30	< 0.30	Jan-21	Iron, Total	< 0.20	0.72	Jan-21	Total Suspended Solids	< 3.00	14		
Apr-21	Aluminum, Total	< 0.30	< 0.30	Apr-21	Iron, Total	< 0.20	< 0.20	Apr-21	Total Suspended Solids	< 3.30	< 3.30		
Jul-21	Aluminum, Total	1	1.6	Jul-21	Iron, Total	0.88	1.3	Jul-21	Total Suspended Solids	7.8	13		
Jul-16	Cadmium, Total	< 0.00500	< 0.00500	Jul-16	Lead, Total	< 0.0150	< 0.0150	Jul-16	Zinc, Total	0.031	0.0331		
Oct-16	Cadmium, Total	< 0.0050	< 0.0050	Oct-16	Lead, Total	0.0628	< 0.0150	Oct-16	Zinc, Total	0.0652	0.0685		
Jan-17	Cadmium, Total	< 0.00500	< 0.00500	Jan-17	Lead, Total	< 0.0150	< 0.0150	Jan-17	Zinc, Total	0.0663	0.068		
Apr-17	Cadmium, Total	< 0.0050	< 0.0050	Apr-17	Lead, Total	< 0.0150	0.58	Apr-17	Zinc, Total	0.0332	0.471		
Jul-17	Cadmium, Total	< 0.0050	< 0.0050	Jul-17	Lead, Total	0.139	0.112	Jul-17	Zinc, Total	0.651	0.542		
Oct-17	Cadmium, Total	< 0.0050	< 0.0050	Oct-17	Lead, Total	< 0.0150	0.176	Oct-17	Zinc, Total	0.0574	0.177		
Jan-18	Cadmium, Total	< 0.0050	< 0.0050	Jan-18	Lead, Total	< 0.0150	0.0523	Jan-18	Zinc, Total	0.0498	0.0562		
Apr-18	Cadmium, Total	< 0.0050	< 0.0050	Apr-18	Lead, Total	< 0.0150	0.0259	Apr-18	Zinc, Total	0.0626	0.054		
Jul-18	Cadmium, Total	< 0.0050	< 0.0050	Jul-18	Lead, Total	< 0.0150	< 0.0150	Jul-18	Zinc, Total	< 0.0200	< 0.0200		
Oct-18	Cadmium, Total	< 0.0050	< 0.0050	Oct-18	Lead, Total	< 0.0150	0.0821	Oct-18	Zinc, Total	< 0.0200	0.208		
Jan-19	Cadmium, Total	< 0.0050	< 0.0050	Jan-19	Lead, Total	0.0325	0.0191	Jan-19	Zinc, Total	0.221	0.238		
Apr-19	Cadmium, Total	< 0.0050	< 0.0050	Apr-19	Lead, Total	< 0.0150	< 0.0150	Apr-19	Zinc, Total	0.0261	0.0984		
Jul-19	Cadmium, Total	< 0.0050	< 0.0050	Jul-19	Lead, Total	< 0.0150	< 0.0150	Jul-19	Zinc, Total	0.0397	0.0346		
Oct-19	Cadmium, Total	< 0.0050	< 0.0050	Oct-19	Lead, Total	0.016	< 0.0150	Oct-19	Zinc, Total	0.142	0.109		
Jan-20	Cadmium, Total	< 0.0050	< 0.0050	Jan-20	Lead, Total	< 0.0150	< 0.0150	Jan-20	Zinc, Total	0.0812	0.0841		
Apr-20	Cadmium, Total	< 0.0050	< 0.0050	Apr-20	Lead, Total	< 0.0150	< 0.0150	Apr-20	Zinc, Total	0.0355	0.0929		
Jul-20	Cadmium, Total	< 0.0050	< 0.0050	Jul-20	Lead, Total	< 0.015	< 0.015	Jul-20	Zinc, Total	0.027	0.029		
Oct-20	Cadmium, Total	< 0.0050	< 0.0050	Oct-20	Lead, Total	< 0.015	< 0.015	Oct-20	Zinc, Total	0.0514	0.035		
Jan-21	Cadmium, Total	< 0.0050	< 0.0050	Jan-21	Lead, Total	< 0.015	< 0.015	Jan-21	Zinc, Total	< 0.020	0.13		
Apr-21	Cadmium, Total	< 0.0050	< 0.0050	Apr-21	Lead, Total	< 0.015	< 0.015	Apr-21	Zinc, Total	0.027	0.02		
Jul-21	Cadmium, Total	< 0.0050	< 0.0050	Jul-21	Lead, Total	< 0.015	< 0.015	Jul-21	Zinc, Total	0.059	0.07		
Jul-16	Chromium, Hexavalent	< 0.00500	< 0.00500	Jul-16	Oil and Grease	< 5.0	< 5.00						
Oct-16	Chromium, Hexavalent	< 0.0050	< 0.0050	Oct-16	Oil and Grease	< 5.00	< 5.00						
Jan-17	Chromium, Hexavalent	< 0.00500	< 0.00500	Jan-17	Oil and Grease	< 5.00	< 5.00						
Apr-17	Chromium, Hexavalent	< 0.0050	< 0.0050	Apr-17	Oil and Grease	< 5.0	< 5.0						
Jul-17	Chromium, Hexavalent	< 0.0050	< 0.0050	Jul-17	Oil and Grease	< 5.0	< 5.0						
Oct-17	Chromium, Hexavalent	< 0.0050	< 0.0050	Oct-17	Oil and Grease	< 5.0	< 5.0						
Jan-18	Chromium, Hexavalent	< 0.0050	< 0.0050	Jan-18	Oil and Grease	< 5.0	< 5.0						
Apr-18	Chromium, Hexavalent	< 0.0050	< 0.0050	Apr-18	Oil and Grease	< 5.0	< 5.0						
Jul-18	Chromium, Hexavalent	< 0.0050	< 0.0050	Jul-18	Oil and Grease	< 5.0	< 5.0						
Oct-18	Chromium, Hexavalent	< 0.0050	< 0.0050	Oct-18	Oil and Grease	< 5.0	< 5.0						
Jan-19	Chromium, Hexavalent	< 0.0050	< 0.0050	Jan-19	Oil and Grease	< 5.0	< 5.0						
Apr-19	Chromium, Hexavalent	< 0.0050	< 0.0050	Apr-19	Oil and Grease	< 5.0	< 5.0						
Jul-19	Chromium, Hexavalent	< 0.0050	< 0.0050	Jul-19	Oil and Grease	< 5.0	< 5.0						
Oct-19	Chromium, Hexavalent	< 0.0050	< 0.0050	Oct-19	Oil and Grease	< 5.0	< 5.0						
Jan-20	Chromium, Hexavalent	< 0.0050	< 0.0050	Jan-20	Oil and Grease	< 5.0	< 5.0						
Apr-20	Chromium, Hexavalent	< 0.0050	< 0.0050	Apr-20	Oil and Grease	< 5.0	< 5.0						
Jul-20	Chromium, Hexavalent	< 0.00050	< 0.00050	Jul-20	Oil and Grease	< 5.1	< 5.2						
Oct-20	Chromium, Hexavalent	< 0.010	< 0.010	Oct-20	Oil and Grease	< 5.1	< 5.2						
Jan-21	Chromium, Hexavalent	< 0.010	< 0.010	Jan-21	Oil and Grease	< 5.0	< 5.1						
Apr-21	Chromium, Hexavalent	< 0.0050	< 0.0050	Apr-21	Oil and Grease	< 5.2	< 5.2						
Jul-21	Chromium, Hexavalent	< 0.010	< 0.010	Jul-21	Oil and Grease	< 5.0	< 5.1						
Jul-16	Copper, Total	< 0.0100	< 0.0100	Jul-16	pH	6.83	6.9						
Oct-16	Copper, Total	0.0205	0.0115	Oct-16	pH	7.05	6.96						
Jan-17	Copper, Total	0.014	0.0156	Jan-17	pH	7.2	7.1						
Apr-17	Copper, Total	< 0.0100	0.131	Apr-17	pH	7.74	7.32						
Jul-17	Copper, Total	1.18	0.993	Jul-17	pH	7.62	7.78						
Oct-17	Copper, Total	0.013	0.0401	Oct-17	pH	7.86	7.91						
Jan-18	Copper, Total	< 0.0100	0.0141	Jan-18	pH	7.76	7.67						
Apr-18	Copper, Total	0.0148	0.0148	Apr-18	pH	7.69	7.76						
Jul-18	Copper, Total	< 0.0200	< 0.0200	Jul-18	pH	7.46	7.67						
Oct-18	Copper, Total	< 0.0200	0.0354	Oct-18	pH	7.71	7.14						
Jan-19	Copper, Total	0.0545	0.0339	Jan-19	pH	7.78	7.61						
Apr-19	Copper, Total	< 0.0200	< 0.0200	Apr-19	pH	7.39	7.53						
Jul-19	Copper, Total	0.0201	< 0.0200	Jul-19	pH	7.58	7.68						
Oct-19	Copper, Total	< 0.0200	< 0.0200	Oct-19	pH	7.05	7.49						
Jan-20	Copper, Total	< 0.0200	< 0.0200	Jan-20	pH	7.71	7.58						
Apr-20	Copper, Total	< 0.0200	0.0258	Apr-20	pH	7.76	7.68						
Jul-20	Copper, Total	0.021	0.023	Jul-20	pH	7.71	7.63						
Oct-20	Copper, Total	< 0.020	< 0.020	Oct-20	pH	7.72	7.81						
Jan-21	Copper, Total	< 0.020	0.039	Jan-21	pH	7.84	7.62						
Apr-21	Copper, Total	< 0.020	< 0.020	Apr-21	pH	7.78	7.62						
Jul-21	Copper, Total	< 0.020	< 0.020	Jul-21	pH	7.65	7.72						