pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Southwest Regional Office**
**CLEAN WATER PROGRAM**

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0026891** |
| Facility Type | **Municipal** | APS ID | **808129** |
| Major / Minor | **Major** | Authorization ID | **1231658** |

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **The Authority of the Borough of Charleroi** | Facility Name | **Charleroi STP** |
| Applicant Address | PO Box 211 | Facility Address | 1002 Railway Way |
| | Charleroi, PA 15022-0211 | | Charleroi, PA 15022 |
| Applicant Contact | Charles Cardinale, General Manager | Facility Contact | Kevin Strelick, Plant Superintendent |
| Applicant Phone | (724) 483-3585 | Facility Phone | (724) 483-4833 |
| Applicant Email | CharlesCardinale@ABCwater.org | Facility Email | KevinStrelick@ABCwater.org |
| Client ID | 64399 | Site ID | 257871 |
| Ch 94 Load Status | Not Overloaded | Municipality | Charleroi Borough |
| Connection Status | | County | Washington |
| Date Application Received | June 5, 2018 | EPA Waived? | No |
| Date Application Accepted | June 7, 2018 | If No, Reason | Major Facility |

Purpose of Application: NPDES permit renewal for discharges of treated sewage from a publicly owned treatment works.

## Summary of Review

On behalf of The Authority of the Borough of Charleroi (ABC), KLH Engineers, Inc. submitted an application dated June 1, 2018 to renew NPDES Permit PA0026891 for discharges from the Charleroi Sewage Treatment Plant (Charleroi STP). The application was received by DEP on June 4, 2018. The current permit was issued on November 18, 2013 with an effective date of December 1, 2013 and an expiration date of November 30, 2018. The renewal application was submitted at least 180 days before the permit expired, so the terms and conditions of the 2013 permit have been automatically extended.

On July 8, 2021, DEP received a revised renewal application sent by KLH Engineers on ABC's behalf. The revised application requests the addition of a new 24-inch diameter combined sewer overflow outfall to the permit (CSO-014).

Changes for this NPDES permit renewal include the following:

- marginal reductions in the mass loading limits for CBOD5 and TSS at Outfall 001 consistent with DEP's rounding guidelines
- a monthly reporting requirement for *E. coli* is added to Outfall 001 based on new water quality criteria for *E. coli* in 25 Pa. Code Chapter 93 (approved by U.S. EPA in March 2021) and related permitting policy updates
- CSO-014 is added to the permit for discharges from a new wet weather combined sewage treatment system in Speers Borough, which is designed to eliminate CSO events at CSO-009 and CSO-013 for the typical year storm event
- CSO-008 is again identified as a Combined Sewer Overflow in the permit pursuant to a 2018 LTCP update

Sludge use and disposal description and location(s): Waste solids are stabilized using two anaerobic digesters and one secondary anaerobic digester. Class B biosolids are produced through anaerobic digestion and the stabilized sludge is dewatered via a belt filter press and disposed of at the Greenridge Reclamation Landfill (Solid Waste Permit No. 100281).

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Ryan C. Decker<br>Ryan C. Decker, P.E. / Environmental Engineer | June 10, 2022 |
| X | | James M. Vanek for<br>Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager | June 13, 2022 |

**Summary of Review**

**Combined Sewer Overflows (CSOs)**

CSOs from ABC's collection system for the Charleroi STP are identified in the following table.

| Outfall No. | Description | Latitude | Longitude | Receiving Water |
|---|---|---|---|---|
| 002 | Diversion Chamber A, Second St. and Railroad Way | 40° 08′ 11″ | -79° 53′ 32″ | Monongahela River |
| 003 | Diversion Chamber B, Third Street and Railroad Way | 40° 08′ 16″ | -79° 53′ 35″ | Monongahela River |
| 004 | Diversion Chamber C, Fourth St. and Railroad Way | 40° 08′ 21″ | -79° 53′ 38″ | Monongahela River |
| 005 | Diversion Chamber D, Chamber Parking Lot | 40° 08′ 23″ | -79° 53′ 40″ | Monongahela River |
| 006 | Diversion Chamber E, Seventh St. and Bosom | 40° 08′ 33″ | -79° 53′ 50″ | Monongahela River |
| 007 | Diversion Chamber F, Tenth Street and Railroad Way | 40° 08′ 42″ | -79° 54′ 02″ | Monongahela River |
| 008 | Diversion Chamber G, Twelfth St. at Sewage Treatment Plant | 40° 08′ 48″ | -79° 54′ 16″ | Monongahela River |
| 009 | Diversion Chamber H, at Speers Pump Station | 40° 07′ 34″ | -79° 52′ 41″ | Monongahela River |
| 011 | Diversion Chamber J, Seventh St. and East Center Alley | 40° 08′ 57″ | -79° 54′ 15″ | Monongahela River |
| 012 | Diversion Chamber A, Fifth Street and Monongahela Avenue | 40° 09′ 02″ | -79° 54′ 17″ | Monongahela River |
| 013 | Diversion Chamber A, Dunlevy Pump Station | 40° 07′ 26″ | -79° 52′ 25″ | Monongahela River |
| 014 | Wet Weather Combined Sewage Treatment System in Speers Borough | 40° 07′ 35″ | -79° 53′ 45″ | Monongahela River |

Long-Term Control Plan (LTCP) for ABC's CSOs

25 Pa. Code § 92a.47(b) requires dischargers of sewage from a CSO to implement nine minimum controls (NMCs) and a long-term control plan (LTCP)—as approved by DEP—to minimize or eliminate the CSO discharge impact on the water quality of the receiving surface water.

DEP conditionally approved ABC's November 1, 2016 LTCP by letter dated January 11, 2017. Phases 1 and 2 of the LTCP were approved. DEP did not approve ABC's implementation measures for the CSO Control Policy's Nine Minimum Controls (NMCs). Such approval was conditional on a DEP review of ABC's compiled NMC documentation materials and the completion of an on-site system inspection by DEP. DEP has since conducted an inspection of ABC's facilities. Phase 3 of the LTCP regarding a proposal to direct excess combined sewer system wet weather flows received at the Charleroi STP to CSO-007 as a potential CSO-related bypass also was not approved. Approval for Phase 3 is contingent on the results of Phases 1 and 2 of the LTCP and ABC's compliance with the CSO Control Policy at that time.

During Phase 1 of the LTCP, ABC proposed to construct 1) a new Dunlevy Pump Station with submersible pumps to pump all flow up to 350% of dry weather flow to the Speers Pump Station through existing force main and gravity sewers; 2) a new Speers Pump Station with submersible pumps to pump all flow up to 350% of dry weather flow from Speers and Dunlevy to the Maple Creek Pump Station through the existing force main and gravity sewers; and 3) a new wet weather treatment system consisting of a WWETCO Bio-FlexFilter with ultraviolet disinfection as a CSO outfall satellite treatment facility to provide primary treatment of the Dunlevy and Speers wet weather discharges, which currently discharge to the Monongahela River through CSO Outfalls 013 and 009, respectively. The new Dunlevy and Speers Pump Stations will convey CSO-013 and CSO-009 wet weather flows to the WWETCO FlexFilter and UV disinfection system for discharge through new CSO Outfall 014.

During Phase 2 of the LTCP, ABC proposed to eliminate sanitary sewer overflow (SSO) discharges (which are prohibited by 25 Pa. Code § 92a.47(c)) from the Maple Creek Pump Station by converting the existing Maple Creek Pump Station to a submersible pump station with a peak design flow of 2.45 MGD and constructing a new 10-inch diameter force main; constructing a new submersible Western Flour Pump Station to replace the existing pump station with a peak design flow of 3.46 MGD and a new 20-inch diameter force main; converting the existing North Charleroi Pump Station to a submersible pump station with a peak design flow of 0.94 MGD; constructing a new submersible STP Wet Weather Pump Station with a peak design flow of 6.05 MGD and a new 14-inch diameter force main, which discharges to the existing CSO Outfall 008; constructing a new influent flow splitter box at the STP; and replacing approximately 1,500 linear feet of existing 10-inch diameter Map Creek Interceptor Sewer with new 18-inch diameter sewers. All pump station flows would be conveyed directly to the STP for full biological treatment. ABC is seeking funding for Phase 2 through the United States Department of Agriculture (USDA) Rural Utilities Service (RUS).

**Summary of Review**

SSOs are not addressed by the U.S. Environmental Protection Agency's CSO Control Policy, but SSO mitigation measures are included in ABC's LTCP.

On May 23, 2017, ABC entered into a Consent Order and Agreement (COA) with DEP. The COA memorialized the schedule for LTCP implementation. The COA also imposed requirements relating to SSO discharges from the Maple Creek Pump Station, including reporting requirements for SSO discharges, stipulated penalties for any SSO discharges, and a requirement to submit a revised plan to eliminate SSO discharges within 180 days of the first post-Phase 2 SSO discharge.

ABC's CSO Control Project is intended to meet the U.S. Environmental Protection Agency CSO Control Policy's Presumption Approach by reducing CSO volumes such that at least 85% of the combined sewage collected in the combined sewer system during precipitation events is captured and treated on a system-wide, annual average basis. In the LTCP, ABC estimated it would achieve 90.47% capture with its Phase 1 and Phase 2 improvements and 94.77% capture if ABC is authorized to proceed with Phase 3 improvements.

The LTCP schedule in DEP's January 11, 2017 LTCP approval letter was as follows:

| Task | Compliance Date |
|---|---|
| Complete WQM Permit application, receive WQM permit for Phase 1 construction | July 1, 2017 |
| Begin Phase 1 construction | September 1, 2017 |
| Complete Phase 1 construction | February 1, 2019 |
| Begin Phase 1 Post-Construction monitoring | March 1, 2019 |
| Complete Phase 2 design, receiving WQM permit for Phase 2 construction, begin Phase 2 construction | May 1, 2019 |
| Submit for Approval Post-Construction Compliance Monitoring Plan for Phase 2 | January 1, 2021 |
| Complete Phase 2 construction | May 1, 2021 |
| Begin Phase 2 Post-Construction Compliance Monitoring. | June 1, 2021 |
| Implement Phase 3 construction | Upon Department Approval |

A First Amendment to the COA was entered into by and between ABC and DEP on April 8, 2019. The First Amendment to the COA extended the deadline to complete Phase 1 construction to May 1, 2019; extended the deadline for completion of Phase 2 design to June 6, 2019; and extended the deadline for completion of Phase 2 construction to June 6, 2021.

<u>2018 LTCP Update</u>

By letter dated February 23, 2018, KLH Engineers, Inc. provided a CSO LTCP Update letter on behalf of ABC. The letter stated the following:

> The previously approved LTCP included work associated with elimination of the Maple Creek Pump Station SSO as part of the proposed Phase 2 work. This work consists of upgrading the existing Maple Creek Pump Station, constructing a new Maple Creek wet weather flow pump station, installing a new force main from the Maple Creek pump stations to the WWTP, and construction of a CSO pump station at the WWTP.
>
> As presented in the LTCP, dated October 2016, the initial plan was for the CSO pump station to pump to the CSO-007 outfall. Since completion of the LTCP, we have discovered that the outfall is 36-inch, not 48-inch; therefore the outfall will need to be upsized or the CSO pump station force main will need to be extended to the river. Unfortunately, the existing outfall discharges through the lock wall. Therefore, U.S. Army Corps of Engineers permitting will be required for this work, which will impact the project schedule.
>
> In order to reduce permitting requirements, maintain project and Consent Order schedules, and save on construction cost, we are now proposing discharge of the CSO pump station to the existing 72-inch storm water outfall which used to be permitted for CSO-008. Please review the attached exhibit.

**Summary of Review**

The proposed change is a physical relocation of the CSO pump station discharge location only. There will be no increase in discharge peak or volume, and there will be no change in the previously presented percent capture calculation. The pump station will have a magmeter for reliable CSO flow measurement and recording. Additionally, this CSO pump station will pump CSO flow from the combined sewer system during periods of wet weather only. All separate sewer system flow will be conveyed to the WWTP for full treatment.

We requested your consideration on amending the LTCP and adding of CSO-008 back onto ABC's NPDES Permit for WWTP CSO pump station flow only.

By letter dated May 30, 2018, DEP approved the 2018 LTCP Update subject to the following conditions:

1. ABC shall request to modify its NPDES permit to again be authorized to discharge from Outfall 008. Such a revision must be requested only through a NPDES permit amendment prior to CSS discharges to Outfall 008. ABC must submit an amendment and receive NPDES discharge authorization prior to the scheduled Phase 2 construction completion date of May 1, 2021.

2. Permanent continuous and recorded flow monitoring of all collection system flows must be conducted for both the sanitary and combined sewage entering the WWTP influent box and all flows discharged from the influent box; e.g., all flow to the STP and flow to Outfall 008.

3. Data collected from the permanent and continuous metering locations shall be utilized to determine if additional LTCP proposals (previously approved Phase 3) shall be implemented. This flow data shall be utilized in the required Post-Construction Compliance Monitoring Plan.

4. All other conditions established in the Department's January 11, 2017 LTCP approval remain in effect, including the LTCP compliance schedule as outlined therein.

LTCP Compliance Progress and 2022 LTCP Update

Facilities constructed under Phase 1 were permitted by WQM Permit 6316404 dated July 12, 2017. Construction was substantially complete in August 2020. ABC worked through various startup issues until February 24, 2021 when the facilities were brought online. As explained previously, Phase 1 includes new pump stations in Speers and Dunlevy, new Dunlevy force mains, and a CSO treatment facility in Speers to eliminate CSO events at CSO Outfalls 009 and 013 for the typical year storm event (i.e., an average annual rainfall of 41.52 inches, which exceeds the 2-year, 24-hour storm).

Phase 2 facilities were permitted by WQM Permit 6319405 dated November 7, 2019. At the time of this writing in June 2022, Phase 2 is not complete. DEP's October 19, 2021 inspection report indicates that ABC is waiting on a final review from the USDA's RUS for ABC's low interest loan for the project and that ABC has asked for an extension of the LTCP schedule. A revised LTCP schedule was proposed by ABC by letter dated January 7, 2022.

By letter dated May 20, 2022, DEP approved a revised LTCP schedule. The revised schedule includes later dates for incomplete Phase 2 tasks and new tasks and dates for Phase 2 Post-Construction Compliance Monitoring (PCCM) and for initiating Phase 3 of the LTCP based on whether the PCCM demonstrates compliance with the Presumption Approach. The changes are summarized in the tables below.

**LTCP Schedule – Completed Tasks**

| Task | Previous Compliance Date | Revised Compliance Date |
|---|---|---|
| Complete WQM Permit application, receive WQM permit for Phase 1 construction | July 1, 2017 | Completed July 12, 2017 |
| Begin Phase 1 Construction | September 1, 2017 | Commenced October 23, 2017 |
| Complete Phase 1 Construction | February 1, 2019 | Completed February 24, 2021 |
| Begin Phase 1 Post-Construction Monitoring | March 1, 2019 | Commenced February 24, 2021 |
| Complete Phase 2 Design and receive a WQM Permit for Phase 2 Construction | — | Completed November 7, 2019 |

**Summary of Review**

**LTCP Schedule – Incomplete Tasks**

| Task | Previous Compliance Date | Revised Compliance Date |
|---|---|---|
| Begin Phase 2 Construction | May 1, 2019 | June 1, 2022 |
| Submit for Approval a Post-Construction Compliance Monitoring Plan for Phase 2 Compliance Evaluation | January 1, 2021 | January 1, 2024 |
| Complete Phase 2 Construction | May 1, 2021 | June 1, 2024 |
| Begin Phase 2 Post-Construction Compliance Monitoring | June 1, 2021 | July 1, 2024 |
| Complete Phase 2 Post-Construction Compliance Monitoring | — | July 1, 2025 |
| Submit findings of Post-Construction Compliance Monitoring Plan to the Department | — | September 1, 2025 |
| If the findings of the Post-Construction Compliance Monitoring Plan indicate that Phase 1 and Phase 2 are not sufficient to meet the Presumption Approach requirements of the CSO Control Policy and the Department's compliance criteria, submit a Phase 3 plan to the Department designed to achieve ultimate compliance with the CSO Control Policy and all Water Quality Standards with an implementation schedule to complete Phase 3 in the fastest time reasonably practicable.† | — | December 31, 2025 |
| Implement Phase 3 Construction | Upon Department Approval | Upon Department approval |

† The Performance Standard for the Charleroi STP is the capture of 90.47% of the volume of the combined sewage collected in the combined sewer system during "typical year" precipitation events on a system-wide annual average basis.

A Second Amendment to the COA was entered into on April 12, 2022 incorporating the revised LTCP schedule into the COA.

The revised LTCP schedule will be included in the CSO condition of the renewed NPDES permit, but with minor additions to ensure that the schedule complies with 25 Pa. Code § 92a.51(b), which states:

> (b) If the period of time for compliance specified in subsection (a) exceeds 1 year, a schedule of compliance will be specified in the permit that will set forth interim requirements and the dates for their achievement. If the time necessary for completion of the interim requirement such as the construction of a treatment facility is more than 1 year and is not readily divided into stages for completion, interim dates will be specified for the submission of reports of progress towards completion of the interim requirement. The time between interim dates may not exceed 1 year.

The time between the interim compliance dates to Begin Phase 2 Construction (June 1, 2022) and to Submit for Approval a Post-Construction Compliance Monitoring Plan for Phase 2 Compliance Evaluation (January 1, 2024) exceeds one year. Phase 2 Construction was not divided into stages for completion. Therefore, the requirements to submit annual CSO status reports with Chapter 94 reports and to submit monthly DMR Supplemental Reports for CSO discharges are added to the schedule and will function as progress reports as directed by § 92a.51(b).

| Task | Previous Compliance Date | Revised Compliance Date |
|---|---|---|
| Submit Annual CSO Status Report with Chapter 94 Report | March 31 of each year | March 31 of each year |
| Submit DMR Supplemental Reports for CSOs | Within 28 days of the end of a month | Within 28 days of the end of each month |

The requirements to submit Annual CSO Status Reports and monthly DMR Supplemental Reports for CSOs are existing obligations in ABC's current permit and are required by the narrative sections of the existing permit's CSO condition (Part C.II.D) and the new permit's CSO condition (also Part C.II.D), so their inclusion in the LTCP schedule does not represent new obligations for ABC; the additions merely serve to ensure the LTCP schedule complies with 25 Pa. Code § 92a.51(b).

**Summary of Review**

ABC's NPDES permit renewal application includes a request to reauthorize CSO discharges from Outfall 008 in accordance with DEP's May 30, 2018 LTCP update approval letter.

ABC continues to report SSOs from the Maple Creek Pump Station.

Pretreatment Program

ABC does not have a pretreatment program and does not meet the specific regulatory criteria in 40 CFR § 403.8(a) that require POTWs to establish pretreatment programs because the design flow of the Charleroi STP is 3.0 MGD, which is less than the 5.0 MGD threshold in § 403.8(a). In addition, ABC reported on the NPDES permit application that it does not have any industrial users. However, one of the NMCs requires permittees with CSOs to review and modify pretreatment requirements to assure CSO impacts are minimized. ABC is in the process of developing a pretreatment program to demonstrate compliance with the pretreatment NMC. The renewed NPDES permit requires ABC to develop and implement a pretreatment program.

Summary of Whole Effluent Toxicity (WET) Tests

The NPDES permit issued in 2013 for the Charleroi STP required ABC to collect discharge samples and perform WET tests to generate chronic survival and reproduction data for the cladoceran (water flea), *Ceriodaphnia dubia* and chronic survival and growth data for the fathead minnow, *Pimephales promelas*. The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) used to analyze the results was 2.0%.

As summarized in the Whole Effluent Toxicity (WET) section of this Fact Sheet, ABC passed all of its most recent WET tests conducted in October 2018, December 2019, November 2020, and November 2021, so no WET limits will be imposed in the permit.

The TIWC in the renewed permit will be 1.0%. The dilution series in the renewed permit will be the same as the previous permit: 100%, 60%, 30%, 2%, and 1%. Annual WET testing will be required.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

| Discharge, Receiving Waters and Water Supply Information | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 3.0 (avg.); 9.0 (peak) |
| Latitude | 40° 8' 51.00" | Longitude | -79° 54' 10.00" |
| Quad Name | Monongahela | Quad Code | 1706 |
| Wastewater Description: | Treated sewage effluent | | |
| Receiving Waters | Monongahela River (WWF) | Stream Code | 37185 |
| NHD Com ID | 99409776 | RMI | 41.35 |
| Drainage Area | 5,210 sq. mi. | Yield (cfs/mi$^2$) | |
| $Q_{7-10}$ Flow (cfs) | 550 | $Q_{7-10}$ Basis | US. Army Corps. of Engrs. |
| Elevation (ft) | 727 (738 downstream) | Slope (ft/ft) | |
| Watershed No. | 19-C | Chapter 93 Class. | WWF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Impaired (Fish Consumption) | | |
| Cause(s) of Impairment | Polychlorinated Biphenyls (PCBs) | | |
| Source(s) of Impairment | Source unknown | | |
| TMDL Status | Final (4/9/2001) | Name | Monongahela River TMDL |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.5 | WQN Station 702 – Monongahela River at Charleroi |
| Temperature (°F) | 25.0 | WQN Station 702 – Monongahela River at Charleroi |
| Hardness (mg/L) | | |
| Other: | | |

| Nearest Downstream Public Water Supply Intake | | Pennsylvania American Water Company – Pittsburgh | |
|---|---|---|---|
| PWS ID | 5020039 | PWS Withdrawal (MGD) | 60.0 (safe yield) |
| PWS Waters | Monongahela River | Flow at Intake (cfs) | 550 |
| PWS RMI | 25.33 | Distance from Outfall (mi) | 16.02 |

Changes Since Last Permit Issuance: None

Other Comments:

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 101 | Design Flow (MGD) | Variable |
| Latitude | 40° 8' 51.00" | Longitude | -79° 54' 10.00" |
| Quad Name | Monongahela | Quad Code | 1706 |
| Wastewater Description: | Storm water | | |

| | | | |
|---|---|---|---|
| Receiving Waters | Monongahela River (WWF) | Stream Code | 37185 |
| NHD Com ID | 99409776 | RMI | 41.35 |
| Drainage Area | 5,210 sq. mi. | Yield (cfs/mi$^2$) | |
| $Q_{7-10}$ Flow (cfs) | 550 | $Q_{7-10}$ Basis | US Army Corps. of Engrs. |
| Elevation (ft) | | Slope (ft/ft) | |
| Watershed No. | 19-C | Chapter 93 Class. | WWF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | Polychlorinated Biphenyls (PCBs) | | |
| Source(s) of Impairment | Source unknown | | |
| TMDL Status | Final | Name | Monongahela River TMDL |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.5 | WQN Station 702 – Monongahela River at Charleroi |
| Temperature (°F) | 25.0 | WQN Station 702 – Monongahela River at Charleroi |
| Hardness (mg/L) | | |
| Other: | | |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | | Pennsylvania American Water Company – Pittsburgh | |
| PWS ID | 5020039 | PWS Withdrawal (MGD) | 60.0 (safe yield) |
| PWS Waters | Monongahela River | Flow at Intake (cfs) | 550 |
| PWS RMI | 25.33 | Distance from Outfall (mi) | 16.02 |

Changes Since Last Permit Issuance: None

Other Comments:

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 108 | Design Flow (MGD) | Variable |
| Latitude | 40° 8' 48.00" | Longitude | -79° 54' 16.00" |
| Quad Name | Monongahela | Quad Code | 1706 |
| Wastewater Description: | Storm water | | |

| | | | |
|---|---|---|---|
| Receiving Waters | Monongahela River (WWF) | Stream Code | 37185 |
| NHD Com ID | 99409776 | RMI | 41.35 |
| Drainage Area | 5,210 sq. mi. | Yield (cfs/mi$^2$) | |
| $Q_{7-10}$ Flow (cfs) | 550 | $Q_{7-10}$ Basis | US Army Corps. of Engrs. |
| Elevation (ft) | | Slope (ft/ft) | |
| Watershed No. | 19-C | Chapter 93 Class. | WWF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | Polychlorinated Biphenyls (PCBs) | | |
| Source(s) of Impairment | Source unknown | | |
| TMDL Status | Final | Name | Monongahela River |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.5 | WQN Station 702 – Monongahela River at Charleroi |
| Temperature (°C) | 25.0 | WQN Station 702 – Monongahela River at Charleroi |
| Hardness (mg/L) | | |
| Other: | | |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | | Pennsylvania American Water Company – Pittsburgh | |
| PWS ID | 5020039 | PWS Withdrawal (MGD) | 60.0 (safe yield) |
| PWS Waters | Monongahela River | Flow at Intake (cfs) | 550 |
| PWS RMI | 25.33 | Distance from Outfall (mi) | 16.02 |

Changes Since Last Permit Issuance: None

Other Comments:

**Discharge, Receiving Waters and Water Supply Information**

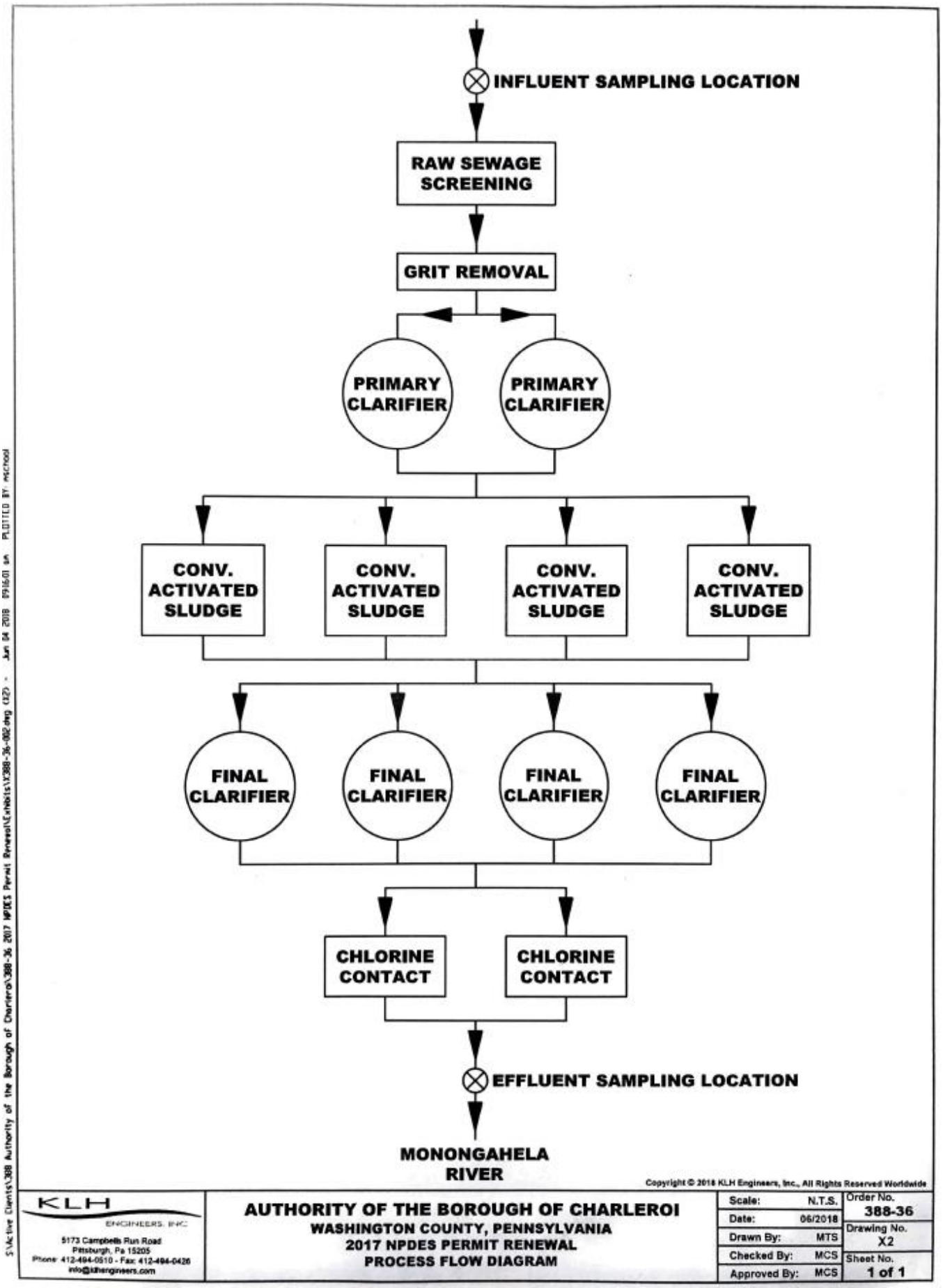
| | | | |
|---|---|---|---|
| Outfall No. | 014 | Design Flow (MGD) | 9.0 |
| Latitude | 40° 7' 35.0" | Longitude | -79° 53' 45" |
| Quad Name | Monongahela | Quad Code | 1706 |
| Wastewater Description: | Treated CSOs from a wet weather combined sewage treatment system in Speers Borough | | |
| Receiving Waters | Monongahela River (WWF) | Stream Code | 37185 |
| NHD Com ID | 99410014 | RMI | 43.24 |
| Drainage Area | 5,210 sq. mi. | Yield (cfs/mi$^2$) | |
| $Q_{7-10}$ Flow (cfs) | 550 | $Q_{7-10}$ Basis | US Army Corps. of Engrs. |
| Elevation (ft) | | Slope (ft/ft) | |
| Watershed No. | 19-C | Chapter 93 Class. | WWF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | Polychlorinated Biphenyls (PCBs) | | |
| Source(s) of Impairment | Source Unknown | | |
| TMDL Status | Final | Name | Monongahela River TMDL |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.5 | WQN Station 702 – Monongahela River at Charleroi |
| Temperature (°F) | 25.0 | WQN Station 702 – Monongahela River at Charleroi |
| Hardness (mg/L) | | |
| Other: | | |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | | Pennsylvania American Water Company – Pittsburgh | |
| PWS ID | 5020039 | PWS Withdrawal (MGD) | 60.0 (safe yield) |
| PWS Waters | Monongahela River | Flow at Intake (cfs) | 550 |
| PWS RMI | 25.33 | Distance from Outfall (mi) | 17.91 |

Changes Since Last Permit Issuance: New outfall

Other Comments:


INFLUENT SAMPLING LOCATION
RAW SEWAGE SCREENING
GRIT REMOVAL
PRIMARY CLARIFIER
PRIMARY CLARIFIER
CONV. ACTIVATED SLUDGE
CONV. ACTIVATED SLUDGE
CONV. ACTIVATED SLUDGE
CONV. ACTIVATED SLUDGE
FINAL CLARIFIER
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CHLORINE CONTACT
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EFFLUENT SAMPLING LOCATION
MONONGAHELA RIVER
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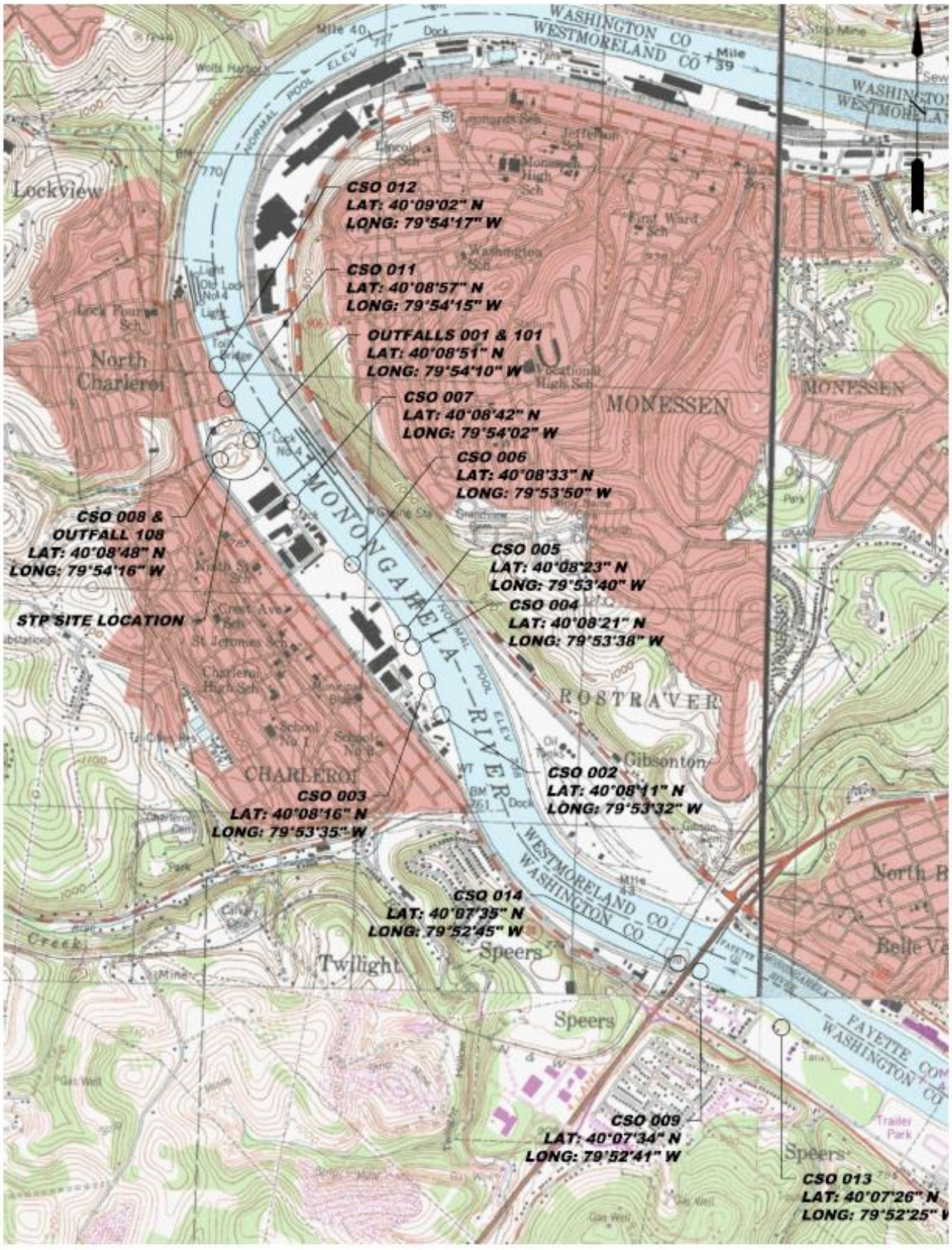
AUTHORITY OF THE BOROUGH OF CHARLEROI
WASHINGTON COUNTY, PENNSYLVANIA
2017 NPDES PERMIT RENEWAL
PROCESS FLOW DIAGRAM
Scale: N.T.S.
Date: 06/2018
Drawn By: MTS
Checked By: MCS
Approved By: MCS
Order No. 388-36
Drawing No. X2
Sheet No. 1 of 1
S:\Active Clients\388 Authority of the Borough of Charleroi\388-36 2017 NPDES Permit Renewal\Exhibits\X388-36-002.dwg (X2) - Jun 04 2018 09:16:01 am PLOTTED BY: mcrool



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**AUTHORITY OF THE BOROUGH OF CHARLEROI**
**WASHINGTON COUNTY, PENNSYLVANIA**
**2017 NPDES PERMIT RENEWAL**
**CHARLEROI STP PA0026891**
**STORMWATER OUTFALL & CSO DISCHARGE LOCATION EXHIBIT**

| | | | |
|---|---|---|---|
| Scale: | 1" = 2000' | Order No. | 388-36 |
| Date: | 06/2018 | Drawing No. | X1 |
| Drawn By: | MTS | | |
| Checked By: | MCS | Sheet No. | 1 of 1 |
| Approved By: | MCS | | |

| Treatment Facility Summary | | |
|---|---|---|
| **Treatment Facility:** Charleroi Borough Authority STP – 3.0 MGD annual average daily flow, 9.0 MGD peak hourly flow | | |
| **WQM Permit No.** | **Issuance Date** | **Purpose** |
| 466592 (Replaced by 468S021) | February 17, 1967 | Permit issued by the Sanitary Water Board to the Authority of the Borough of Charleroi by the Sanitary Water Board for interceptor sewers, pumping stations, and force mains to convey sewage to a sewage treatment plant employing primary treatment (35% BOD removal). |
| 468S021 | May 2, 1968 | Permit issued by the Sanitary Water Board to the Authority of the Borough of Charleroi for a 1.65 MGD average daily dry weather flow, 5.67 MGD peak wet weather flow sewage treatment plant (2,916 lbs/day BOD; 3,220 lbs/day TSS influent loading) consisting of one (1) 24-inch wide mechanical bar screen with one-inch openings; one (1) bypass manual bar screen with one-inch openings; two (2) grit removal tanks (8' × 8'); two (2) aerated flumes with 150 cfs blowers; two (2) 101,000-gallon primary sedimentation tanks (73.0' × 19.5' × 9.5') with solids hopper; four (4) 100,000-gallon activated sludge aeration tanks (30' × 30' × 15'); two (2) 91,000-gallon final sedimentation tanks (35' × 35' × 10') with 600 gpm sludge airlifts; two (2) 28,800-gallon chlorine contact tanks (27' × 15' × 9.5') with two (2) 400-lb/day chlorine gas chlorinators; one (1) 21,164-gallon primary sludge digester (35'-0" diameter × 22'-0" deep) and one (1) 21,164-gallon secondary sludge digester; one (1) 150-sq. ft vacuum filter; and three 2.88 MGD effluent pumps |
| 468S021 A-1 | May 22, 1992 | Permit issued as a letter authorization to the Authority of the Borough of Charleroi by the Pennsylvania DER for the replacement of the hydraulic influent gate and the replacement of the manual bar screen with a mechanical bar screen. |
| 468S021 A-2 | September 20, 1995 | Permit issued to the Authority of the Borough of Charleroi by the Pennsylvania DER for an expansion of the Charleroi STP from 1.65 MGD to 3.00 MGD average daily hydraulic capacity and 5.67 MGD peak hydraulic capacity to 9.00 MGD. |
| 468S021 A-3 | February 1, 2007 | Permit issued as a letter authorization to the Authority of the Borough of Charleroi by the Pennsylvania DEP to replace the Charleroi STP's chlorine gas disinfection system with a liquid sodium hypochlorite (12.5% solution) disinfection system consisting of two 545-gallon HDPE storage tanks and two 280 gpd skid-mounted chemical metering pumps with calibration column, pulsation dampener, isolation ball values, and backpressure and pressure relief valves. |

| **Waste Type** | **Degree of Treatment** | **Process Type** | **Disinfection** | **Avg Annual Flow (MGD)** |
|---|---|---|---|---|
| Sewage | Secondary | Screening, grit removal, primary clarification, conventional activated sludge, final clarification, disinfection, effluent aeration | Sodium Hypochlorite | 1.693 |

| **Hydraulic Capacity (MGD)** | **Organic Capacity (lbs/day)** | **Load Status** | **Biosolids Treatment** | **Biosolids Use/Disposal** |
|---|---|---|---|---|
| 3.0 (Avg.)<br>9.0 (Peak) | 5,004 | Not Overloaded | Anaerobic digestion and dewatering with a belt filter press | Landfill |

| Treatment Facility Summary | | |
|---|---|---|
| **Treatment Facility:** Charleroi Borough Authority STP – CSO Control Project Phase 1 | | |
| **WQM Permit No.** | **Issuance Date** | **Purpose** |
| 6316404 | July 12, 2017 | Permit issued to the Authority of the Borough of Charleroi for the following:<br>• A sanitary pump station in Dunley Borough, 0.062 MGD average dry weather flow/0.216 peak dry weather flow, 3.0 MGD wet weather flow<br>• 2070 LF of 6" diameter HDPE DR11 dry weather force main for the Dunlevy pump station<br>• 5780 LF of 16" diameter HDPE DR11 wet weather force main for the Dunlevy pump station<br>• A sanitary pump station in Speers Borough, 0.252 MGD avg. dry weather flow/0.882 MGD peak dry weather flow, 6.0 MGD wet weather flow<br>• 50 LF of 30" diameter DIP force main at the Speers pump station<br>• 20 LF of 18" diameter DIP force main at the Speers pump station<br>• A 9.0 MGD WWETCO wet weather treatment system with a mechanical screen and UV disinfection |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Primary (minimum) | Compressible media filtration | Ultraviolet light | N/A |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| (see above) | N/A | N/A | N/A | N/A |

| Treatment Facility Summary | | |
|---|---|---|
| **Treatment Facility:** Charleroi Borough Authority STP – CSO Control Project Phase 2 | | |
| **WQM Permit No.** | **Issuance Date** | **Purpose** |
| 6319405 | November 7, 2019 | Permit issued to the Authority of the Borough of Charleroi for the following:<br>• Converting the existing Maple Creek Pump Station to a submersible pump station with a peak design flow of 2.45 MGD (1,700 gpm) and construction of a new 10-inch diameter force main.<br>• Construction of a new submersible Western Flour Pump Station to replace the existing pump station with a peak design flow of 3.46 MGD (2,400 gpm) and a new 20-inch diameter force main.<br>• Converting the existing North Charleroi Pump Station to a submersible pump station with a peak design flow of 0.94 MGD (650 gpm).<br>• Construction of a new submersible WWTP Wet Weather Pump Station with a peak design flow of 6.05 MGD (4,200 gpm) and a new 14-inch diameter force main, which discharges to the existing CSO Outfall 008.<br>• Construction of a new influent flow splitter box at the WWTP.<br>• Replacement of approximately 1,500 LF of existing 10-inch diameter Map Creek Interceptor Sewer with new 18-inch diameter sewers. |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | N/A | Pump Stations and Collection Systems | N/A | N/A |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 2.45; 3.46; 0.94; 6.05 | N/A | Not Overloaded | N/A | N/A |

## Compliance History

**DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)**

| Parameter | JAN-21 | DEC-20 | NOV-20 | OCT-20 | SEP-20 | AUG-20 | JUL-20 | JUN-20 | MAY-20 | APR-20 | MAR-20 | FEB-20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 1.439 | 1.893 | 1.216 | 1.193 | 1.144 | 1.231 | 1.091 | 1.205 | 1.689 | 2.159 | 2.240 | 2.215 |
| Flow (MGD) Daily Maximum | 4.301 | 4.725 | 2.656 | 3.549 | 2.407 | 4.213 | 2.118 | 1.951 | 3.655 | 5.025 | 4.692 | 4.843 |
| pH (S.U.) Minimum | 6.6 | 6.5 | 6.6 | 6.5 | 6.8 | 6.8 | 6.7 | 6.8 | 6.6 | 6.6 | 6.7 | 6.7 |
| pH (S.U.) Maximum | 7.0 | 6.9 | 7.1 | 7.1 | 7.1 | 7.1 | 7.2 | 7.2 | 7.1 | 7.2 | 7.2 | 7.2 |
| DO (mg/L) Minimum | 4.1 | 4.1 | 4.1 | 4.0 | 4.1 | 4.2 | 4.1 | 4.3 | 4.2 | 4.4 | 4.6 | 4.4 |
| TRC (mg/L) Average Monthly | 0.31 | 0.35 | 0.22 | 0.25 | 0.28 | 0.22 | 0.26 | 0.28 | 0.32 | 0.32 | 0.24 | 0.32 |
| TRC (mg/L) Instantaneous Maximum | 0.7 | 0.62 | 0.42 | 0.45 | 0.62 | 0.61 | 0.55 | 0.54 | 0.68 | 0.74 | 0.62 | 1.03 |
| CBOD5 (lbs/day) Average Monthly | 45 | 63 | 42 | 35 | 29 | 34 | 43 | 52 | 56 | 56 | 70 | 59 |
| CBOD5 (lbs/day) Weekly Average | 51 | 106 | 68 | 75 | 36 | 49 | 47 | 75 | 82 | 86 | 99 | 77 |
| CBOD5 (mg/L) Average Monthly | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 4.0 | 5.0 | 5.0 | 4.0 | 3.0 | 4.0 | 3.0 |
| CBOD5 (mg/L) Weekly Average | 6.0 | 5.0 | 4.0 | 3.0 | 4.0 | 4.0 | 5.0 | 7.0 | 7.0 | 4.0 | 7.0 | 4.0 |
| BOD5 (lbs/day) Raw Sewage Influent <br/> Average Monthly | 1658 | 1986 | 1819 | 2118 | 1522 | 1564 | 1811 | 1850 | 1902 | 1867 | 1752 | 1698 |
| BOD5 (lbs/day) Raw Sewage Influent <br/> Daily Maximum | 2302 | 3691 | 2655 | 4234 | 2557 | 1870 | 3442 | 2587 | 3525 | 2860 | 4612 | 2821 |
| BOD5 (mg/L) Raw Sewage Influent <br/> Average Monthly | 167 | 145 | 219 | 201 | 156 | 171 | 195 | 191 | 135 | 110 | 96 | 84 |
| TSS (lbs/day) Average Monthly | < 46 | < 77 | 48 | < 49 | < 45 | < 39 | < 40 | < 38 | < 56 | < 78 | < 71 | < 111 |
| TSS (lbs/day) Raw Sewage Influent <br/> Average Monthly | 1756 | 2739 | 2241 | 1900 | 1596 | 1440 | 2119 | 1890 | 2165 | 2390 | 1681 | 2292 |

| Parameter | JAN-21 | DEC-20 | NOV-20 | OCT-20 | SEP-20 | AUG-20 | JUL-20 | JUN-20 | MAY-20 | APR-20 | MAR-20 | FEB-20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TSS (lbs/day) Raw Sewage Influent <br/> Daily Maximum | 4277 | 8183 | 4643 | 3453 | 2992 | 4818 | 4484 | 2684 | 3867 | 5644 | 3243 | 4534 |
| TSS (lbs/day) Weekly Average | 51 | 115 | 55 | 69 | 77 | 51 | 46 | < 47 | 59 | 135 | < 95 | < 77 |
| TSS (mg/L) Average Monthly | < 4.0 | < 5.0 | 4.0 | < 5.0 | < 4 | < 4.0 | < 4.0 | < 4.0 | < 4 | < 4.0 | < 4.0 | < 4.0 |
| TSS (mg/L) Raw Sewage Influent <br/> Average Monthly | 167 | 175 | 203 | 186 | 165 | 150 | 233 | 185 | 165 | 136 | 93 | 110 |
| TSS (mg/L) Weekly Average | 5.0 | < 5.0 | 6.0 | 6.0 | 5.0 | 4.0 | 5.0 | 4.0 | 5.0 | 5.0 | 5.0 | < 5.0 |
| Fecal Coliform (CFU/100 ml) Geometric Mean | 13 | 35 | 59 | 14 | 23 | 43 | 18 | 8 | 20 | 28 | 377 | 49 |
| Fecal Coliform (CFU/100 ml) Instantaneous Maximum | 104 | 430 | 2225 | 131 | 680 | 360 | 210 | 84 | 68 | 960 | 995 | 820 |
| Total Nitrogen (mg/L) Daily Maximum | | 11.2 | | | 1268 | | | 5.91 | | | 4.693 | |
| Ammonia (mg/L) Average Monthly | < 0.803 | < 0.86 | < 0.91 | < 0.89 | < 0.8 | < 0.97 | < 1.19 | < 1.2 | < 1.07 | < 0.92 | < 0.937 | < 0.85 |
| Ammonia (mg/L) Weekly Average | < 0.811 | < 1.12 | < 1.26 | < 1.17 | 0.802 | < 1.5 | < 1.69 | < 2.3 | 1.56 | < 1.38 | < 1.135 | 0.91 |
| Total Phosphorus (mg/L) Daily Maximum | | 0.67 | | | 1.1 | | | 0.28 | | | 0.32 | |

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** 3.0
**Latitude** 40° 8' 51.00" **Longitude** -79° 54' 10.00"
**Wastewater Description:** Treated sewage effluent

The STP consists of two bar screens, grit removal, two primary clarifiers in parallel, four conventional activated sludge units in parallel, four final clarifiers in parallel, two chlorine contact tanks, and two effluent aeration tanks.

### 001.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:

**Table 1. Regulatory TBELs for Sanitary Wastewaters**

| Parameter | Average Monthly (mg/L) | Weekly Average (mg/L) | Instant. Max (mg/L) | Basis |
|---|---|---|---|---|
| CBOD5 | 25 | 40 † | 50 †† | 25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(a)(4)(i) & (ii) |
| Total Suspended Solids | 30 | 45 | 60 †† | 25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(b)(1) & (b)(2) |
| Fecal Coliform (No./100 mL) May 1 – September 30 | 200 (Geometric Mean) | N/A | 1,000 | 25 Pa. Code § 92a.47(a)(4) |
| Fecal Coliform (No./100 mL) October 1 – April 30 | 2,000 (Geometric Mean) | N/A | 10,000 | 25 Pa. Code § 92a.47(a)(5) |
| Total Residual Chlorine | 0.5 (or facility-specific) | N/A | 1.6 (or facility-specific) | 25 Pa. Code § 92a.47(a)(8) & § 92a.48(b)(2) |
| pH (s.u.) | not less than 6.0 and not greater than 9.0 | | | 25 Pa. Code § 92a.47(a)(7) & § 95.2(1), & 40 CFR § 133.102(c) |

† Outfall 001 is currently subject to a more stringent CBOD5 weekly average limit of 38 mg/L.

†† 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" [Doc. No. 362-0400-001].

The CBOD5, TSS, and pH limits in § 92a.47(a) are the same as those in EPA's secondary treatment regulation (40 CFR § 133.102). Outfall 001 is currently subject to a more stringent average weekly CBOD5 limit of 38 mg/L. That limit will be maintained in the renewed permit pursuant to EPA's anti-backsliding regulation (40 CFR § 122.44(l)).

Average monthly and maximum daily flows must be reported pursuant to 25 Pa. Code § 92a.61(d)(1). The existing minimum dissolved oxygen limit of 4.0 mg/L will be maintained at Outfall 001 pursuant to 40 CFR § 122.44(l) (regarding anti-backsliding) and 25 Pa. Code § 92a.61(b) (regarding reasonable 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, Version 1.9, March 24, 2021] and under the authority of 25 Pa. Code § 92a.61(b), quarterly 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. The SOP states that the monitoring frequencies for Total Nitrogen and Total Phosphorus should be equivalent to the monitoring frequencies for other conventional pollutants if the facility discharges to a nutrient-impaired water or potentially a lesser frequency if the receiving water is not nutrient-impaired. The Monongahela River is not impaired by nutrients, so DEP previously used its discretion to require quarterly monitoring for Total Nitrogen and Total Phosphorus, which will be maintained in the renewed permit.

Pursuant to that same SOP and under the authority of § 92a.61(b), a monthly reporting requirement for *E. coli* will be added to Outfall 001 because the design flow of the STP exceeds 1 MGD. *E. coli* was recently added to the bacteria water quality criteria in 25 Pa. Code § 93.7(a); the monitoring will be used to determine if *E. coli* require additional controls.

Mass Limits

In accordance with Table 5-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" and Section IV of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", mass limits are calculated for CBOD5 and TSS. Average monthly and average weekly mass limits (in units of pounds per day) are calculated using the concentration limits in Table 1 (apart from the more stringent 38 mg/L average weekly CBOD5 limit) and the Charleroi STP's 3.0 MGD design flow with the following formula:

*Design flow (average annual) (MGD) × concentration limit (mg/L) at design flow × conversion factor (8.34) = mass limit (lb/day)*

**Table 2. Mass TBELs for Sanitary Wastewaters**

| Parameter | Average Monthly (mg/L) | Average Weekly (mg/L) |
|---|---|---|
| CBOD5 | 625.0 | 950.0 |
| Total Suspended Solids | 750.0 | 1,125.0 |

Pursuant to Chapter 5, Section C.2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" mass limits for conventional pollutants with a magnitude greater than 60.0 are rounded down to the nearest 5.0 mg/L. The mass limits in Table 2 account for this rounding convention.

**001.B. Water Quality-Based Effluent Limitations (WQBELs)**

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the Commonwealth. Therefore, WQBELs for CBOD-5 and ammonia-nitrogen are re-evaluated even though there have been no changes to discharges from the STP's primary outfall.

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD5"), ammonia-nitrogen, and dissolved oxygen ("D.O.") for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of CBOD5 and ammonia-nitrogen and compares calculated instream D.O. concentrations to D.O. water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

Water Quality Modeling with WQM 7.0

The WQM 7.0 model is run for Outfall 001 to determine whether WQBELs are necessary for $CBOD_5$, ammonia-nitrogen, and D.O. Input values for the WQM 7.0 model are shown in Table 3.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced D.O. levels also appear to increase ammonia toxicity and the maximum concentration of D.O. in water is lower at higher temperatures.

The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period. For the summer period, pursuant to DEP's "Implementation Guidance of Section 93.7 Ammonia Criteria" [Doc. No. 391-2000-013] (Ammonia Guidance) and in the absence of site-specific data, the discharge temperature is assumed to be 20°C. Per that same guidance, the site-specific stream temperature is 25°C based on the median temperature from July through September at Water Quality Network Station 702 – Monongahela River at Charleroi for the period of record lasting from September 1999 through August 2020. The site-specific stream pH is 7.5 s.u., which is the median pH at WQN Station 702 from that same period of record.

**Table 3. 001 WQM 7.0 Inputs**

| **Discharge Characteristics** | |
|---|---|
| **Parameter** | **Value** |
| River Mile Index | 41.5 |
| Discharge Flow (MGD) | 3.0 |
| Discharge Temp. (°C) (Summer) | 20.0 |
| Discharge Temp. (°C) (Winter) | 15.0 |
| **Basin/Stream Characteristics** | |
| **Parameter** | **Value** |
| Drainage Area (sq. mi.) | 5,210 |
| $Q_{7-10}$ (cfs) | 550 |
| Low-flow yield (cfs/mi$^2$) | 0.106 |
| Elevation (ft) | 727 |
| Slope (ft/ft) | 0.0001 |
| Stream Width (ft) | 650 |
| Stream Depth (ft) | 15.0 |
| Stream Temp. (°C) (Summer) | 25.0 |
| Stream Temp. (°C) (Winter) | 5.0 |
| Stream pH (s.u.) | 7.5 |

The $Q_{7-10}$ flow of the Monongahela River in the vicinity of Outfall 001 is regulated at minimum of about 550 cfs, which is entered into WQM 7.0 as the stream flow at river mile index 41.5. To ensure that mixing conditions are properly represented in WQM 7.0, the reach width and reach depth are approximated as 650 feet and 15 feet, respectively. The flow used for modeling is the average design flow (3.0 MGD). The input discharge concentrations are the model defaults: 25 mg/L for both CBOD5 and ammonia-nitrogen.

Downstream nodes are entered into WQM 7.0 at river miles 38.25 and 25.33. At RMI 38.25, the Mon Valley Sewer Authority (NPDES PA0026158) discharges treated sewage at an average rate of 4.96 MGD. At RMI 25.33, Pennsylvania American Water Company has a 70 MGD potable water supply withdrawal (PWS ID 5020039).

WQM 7.0 modeling returns the input discharge concentrations as the recommended limits (see **Attachment A**), which means that WQBELs are not needed for CBOD5 or ammonia-nitrogen. Pursuant to DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", for existing dischargers where modeling results for summer indicate that an average monthly limit of 25 mg/L for ammonia-nitrogen is acceptable, a year-round monitoring requirement for ammonia-nitrogen is established. Reporting of average monthly and average weekly ammonia-nitrogen concentrations was required at Outfall 001 in the previous permit. Reporting of average monthly ammonia-nitrogen concentrations will be maintained in the renewed permit but reporting of average weekly ammonia-nitrogen concentrations is no longer required and will be removed from the permit. However, pursuant to the SOP referenced above, reporting of average monthly ammonia-nitrogen mass loading is added to the permit. Reporting of IMAX concentrations also is changed to reporting of Daily Maximum concentrations because the sample type is 24-hour composite.

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.

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 RP 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 less than DEP's Target Quantitation Limits are eliminated as candidates for WQBELs and water quality-based monitoring.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on the maximum concentrations reported on the permit renewal application. The TMS model is run for Outfall 001 with the modeled discharge and receiving stream characteristics shown in Table 3 (excluding temperature which is not required for TMS analyses). Pollutants for which water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

Output from the TMS model run is included in **Attachment B**. 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. Based on the results of the TMS modeling, reporting for total copper will be required in the permit. No numerical WQBELs apply for other toxic and nonconventional pollutants.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of those average monthly TRC limitations is imposed in the permit.

The results of the modeling, included in **Attachment C**, indicate that no WQBELs are required for TRC, which is consistent with DEP's determinations for previous permits. Technology-based limits from 25 Pa. Code § 92a.47(a)(8) will control TRC.

Monongahela River Impairment and TMDL

The Monongahela River's fish consumption use is impaired by PCBs and chlordane. There is a final TMDL addressing PCBs and chlordane that was approved by EPA on April 9, 2001. The TMDL sets waste load allocations for point source discharges of PCBs and chlordane to zero because no point source discharges of PCBs and chlordane were identified during development of the TMDL. The TMDL only provides load allocations for non-point sources.

The Charleroi STP is not expected to discharge PCBs or chlordane and is otherwise prohibited by the TMDL from discharging those pollutants (as with all point source discharges to the river). Outfall 001 effluent analyses for the application confirm that chlordane is not detectable in the effluent. PCBs are not part of the required analyses for sewage discharges. Since the facility is not expected to discharge PCBs or chlordane, the facility will not contribute to the fish consumption use impairment caused by those pollutants and the facility is consequently unaffected by the TMDL. This rationale applies to all discharges from the Charleroi STP.

**001.C. Influent Monitoring**

Pursuant to Section IV.E.8 of DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications" [SOP No. BCW-PMT-002, Version 2.0, February 3, 2022], for POTWs with design flows greater than 2,000 GPD, influent $BOD_5$ and TSS monitoring is established in the permit with the same sample frequency and sample type used for the effluent. As explained below, ABC's effluent must be analyzed for CBOD5 and TSS 2/week using 24-hour composite sampling. Therefore, influent samples must be analyzed for $BOD_5$ and TSS 2/week using 24-hour composite sampling.

### 001.D. Effluent Limits and Monitoring Requirements for Outfall 001

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 40 CFR § 122.44(l)[1] (incorporated by reference in Pennsylvania regulations at 25 Pa. Code § 92a.44), effluent limits at Outfall 001 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. Applicable effluent limits and monitoring requirements are summarized in the table below.

**Table 4. Effluent Limits and Monitoring Requirements for Outfall 001**

| Parameter | Mass (pounds) | | Concentration (mg/L) | | | Basis |
|---|---|---|---|---|---|---|
| | Average Monthly | Weekly Average | Average Monthly | Weekly Average | Instant. Maximum | |
| Flow (MGD) | Report | Report (Daily Max) | — | — | — | 25 Pa. Code § 92a.61(h) |
| $CBOD_5$ | 625.0 | 950.0 | 25.0 | 38.0 | 50.0 | 25 Pa. Code § 92a.47(a)(1) |
| Total Suspended Solids | 750.0 | 1125.0 | 30.0 | 45.0 | 60.0 | 25 Pa. Code § 92a.47(a)(1) |
| BOD5 (Influent) | — | — | — | Report | Report | 25 Pa. Code § 92a.61(b) |
| TSS (Influent) | — | — | — | Report | Report | 25 Pa. Code § 92a.61(b) |
| Fecal Coliform (No. /100mL) May 1 – October 31 | — | — | 200 | — | 1000 | 25 Pa. Code § 92a.47(a)(4) & 40 CFR § 122.44(l) |
| Fecal Coliform (No. /100mL) November 1 – April 30 | — | — | 2000 | — | 10000 | 25 Pa. Code § 92a.47(a)(5) & 40 CFR § 122.44(l) |
| E. coli (No./100mL) | — | — | — | — | Report | 25 Pa. Code § 92a.61(b) |
| Dissolved Oxygen | — | — | 4.0 (Min.) | — | — | CWA § 402(a)(1); BPJ TBEL |
| Total Residual Chlorine | — | — | 0.5 | — | 1.6 | 25 Pa. Code § 92a.47(a)(8) |
| Ammonia-Nitrogen | Report | — | Report | Report (Daily Max) | — | 25 Pa. Code § 92a.61(b) |
| Total Nitrogen | — | — | — | Report (Daily Max) | — | 25 Pa. Code § 92a.61(b) |
| Total Phosphorus | — | — | — | Report (Daily Max) | — | 25 Pa. Code § 92a.61(b) |
| Copper, Total | — | — | Report | Report (Daily Max) | — | 25 Pa. Code § 92a.61(b) |
| pH (standard units) | not less than 6.0 nor greater than 9.0 standard units | | | | | 25 Pa. Code § 92a.47(a)(7) & § 95.2(1) |

Monitoring frequencies and sample types are established pursuant to Table 6-3 in DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits" and DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits". Dissolved oxygen, TRC, and pH must be sampled 1/day using grab sampling. CBOD5, TSS, and ammonia-nitrogen must be sampled 2/week using 24-hour composite sampling. Fecal coliform must be sampled 2/week using grab sampling. *E. coli* must be sampled 1/month using grab sampling. Total nitrogen and total phosphorus must be sampled 1/quarter using 24-hour composite sampling. Copper must be sampled 1/week using 24-hour composite sampling. Flow must be measured continuously using a flow meter.

[1] *Reissued permits.* (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.)

## Development of Effluent Limitations

| | | | |
|---|---|---|---|
| **Outfall Nos.** | 101 & 108 | **Design Flow (MGD)** | Variable |
| **Latitude** | 40° 8' 51.00"; 40° 8' 48.00" | **Longitude** | -79° 54' 10.00"; -79° 54' 16.00" |

**Wastewater Description:** Storm water

The permittee is authorized to discharge non-polluting stormwater from its site, alone or in combination with other wastewaters through Outfalls 101 and 108.

## Development of Effluent Limitations

**Outfall No.** 014 **Design Flow (MGD)** 9.0
**Latitude** 40° 8' 51.00" **Longitude** -79° 54' 10.00"
**Wastewater Description:** Treated CSOs from a wet weather combined sewage treatment system in Speers Borough

Outfall 014 is a new outfall that will discharge combined sewage from the Dunlevy and Speers pumps stations treated by a wet weather treatment system (CSO Treatment Facility). Under Phase 1 of ABC's LTCP, treated wet weather discharges from Outfall 014 are intended to eliminate untreated wet weather overflows from CSO-009 (Speers Pump Station) and CSO-013 (Dunlevy Pump Station) for typical year rainfall to protect a sensitive downstream potable water supply area. ABC's LTCP identifies "typical year" rainfall as 41.52 inches based on ABC's 2013 rainfall data. The design flows fall between those resulting from the 2-year, 24-hour storm and 5-year, 24-hour storm.

Water Quality Management Permit No. 6316404 dated July 12, 2017 authorized the construction of two new pump stations and the CSO Treatment Facility. One pump station will handle dry and wet weather flows from Dunlevy Borough and the second pump station will handle dry and wet weather flows from Speers Borough. Dry weather flows are directed to the Charleroi STP. Wet weather flows are directed through a 30" Ø ductile iron pipe to the CSO Treatment Facility. The permitted pump stations' specifications are summarized below.

| Specification | Dunlevy Borough | Speers Borough |
|---|---|---|
| Average Dry Weather Flow (MGD) | 0.062 | 0.252 |
| Peak Dry Weather Flow (MGD) | 0.216 | 0.883 |
| Dry Weather Force Main Diameter (in) / Length (feet) | 6 / 2070 | Will use existing force main |
| Dry Weather Pump Size (gpm) | 150 | 613 |
| Dry Weather Pump TDH (feet) | 40 | 43 |
| No. of Dry Weather Pumps | 2 | 2 |
| Peak Wet Weather Flow (MGD) | 3.0 | 6.0 |
| Wet Weather Force Main Diameter (in) / Length (feet) | 16 / 5780 | 18 / 20 & 30 / 50 |
| Wet Weather Pump Size (gpm) | 1050 | 2431 |
| Wet Weather Pump TDH (feet) | 70 | 58 |
| No. of Wet Weather Pumps. | 3 | 3 |

The permitted CSO Treatment Facility consists of a mechanical bar screen, a WWETCO Bio-FlexFilter, and an ultraviolet disinfection system. The WWETCO Bio-FlexFilter has five bladder filters and fibrous polyethylene media cells that remove much of the TSS and BOD in the combined sewage. The WWETCO filter uses the pressure of the influent flow to squeeze the bladders and compress the media. While the media is compressed, the combined sewage flows by gravity through the media and into the UV system. When the head loss becomes large enough, flow stops entering the media and an air scour backwash cleans the media. The backwash is sent back to the mechanical bar screen or to the Speers dry weather pump station. The CSO Treatment Facility discharges through a 24" Ø ductile iron pipe to the Monongahela River through new Outfall 014.

The design flow of the CSO Treatment Facility is 9.0 MGD, which provides treatment for 3.0 MGD peak wet weather flow from Dunlevy and 6.0 MGD peak wet weather flow from Speers. The design flow of the treatment system is based on the 2-year, 24-hour storm event from the hydraulic system characterization report in ABC's approved LTCP.

### 014.A. Technology-Based Effluent Limitations (TBELs)

According to EPA's CSO Control Policy (1994), CSOs are not subject to the secondary treatment regulations that apply to publicly owned treatment works (*Montgomery Environmental Coalition vs. Costle*. 646 F.2d 568 [DC. Cir.1980)) but are subject to BAT/BCT based on best professional judgement.

Regulatory Requirements for Case-by-Case Effluent Limitations Using Best Professional Judgment

Sections 304(b)(2)(B), 304(b)(4)(B), and 402(a)(1) of the Clean Water Act allow for the establishment of effluent limits on a case-by-case basis using Best Professional Judgment (BPJ). Regulations under 40 CFR 125.3(d) require that certain factors be considered when developing case-by-case effluent limitations using BPJ for the levels of technology-based control described in the Clean Water Act including: Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Control Technology Economically Achievable (there is no BPJ for New Source Performance Standards). The required factors are described below.

*General Considerations*

(i) The appropriate technology for the category or class of point sources of which the applicant is a member, based upon all available information
(ii) Any unique factors relating to the applicant

*Best Practicable Control Technology Currently Available (BPT); 40 CFR § 125.3(d)(1):*

(i) The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application;
(ii) The age of equipment and facilities involved
(iii) The process employed
(iv) The engineering aspects of the application of various types of control techniques
(v) Process changes
(vi) Non-water quality environmental impact (including energy requirements)

*Best Conventional Pollutant Control Technology (BCT); 40 CFR 125.3(d)(2):*

(i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived
(ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources
(iii) The age of equipment and facilities involved
(iv) The process employed
(v) The engineering aspects of the application of various types of control techniques
(vi) Process changes
(vii) Non-water quality environmental impact (including energy requirements)

*Best Available Technology Economically Achievable (BAT); 40 CFR § 125.3(d)(3):*

(i) The age of equipment and facilities involved
(ii) The process employed
(iii) The engineering aspects of the application of various types of control techniques
(iv) Process changes
(v) The cost of achieving such effluent reduction
(vi) Non-water quality environmental impact (including energy requirements).

DEP identifies the permitted CSO Treatment Facility—a mechanical bar screen with WWETCO FlexFilter compressed media filter and UV disinfection—as BAT/BCT for Outfall 014's discharges in accordance with ABC's approved LTCP, EPA's CSO Control Policy, DEP's authorization to construct the CSO Treatment Facility under WQM Permit 6316404, and the following factors:

Equipment and Facility Age – Facility and equipment age impacts the feasibility, cost, and reasonableness of modifying existing systems to implement a technology. Older facilities may be subject to more costly modifications (e.g., upgrading/replacing old treatment units to make them current or to make them compatible with new treatment systems). The CSO Treatment Facility is fed by new pump stations and collection systems that were built as part of Phase 1 of the approved LTCP. Since the CSO Treatment Facility and new collection systems are already constructed, equipment and facility age are not inhibitory factors.

Processes Employed – This factor relates to the nature and capabilities of existing treatment processes. As explained in the LTCP, the Charleroi STP is not organically or hydraulically overloaded. The capacity of the collection system is the primary limiting factor for the treatment of wet weather flows. The CSO Control Policy allows CSO-related bypasses of secondary treatment if the bypasses receive primary clarification with solids and floatables disposal and disinfection that meets water quality standards. The CSO Treatment Facility (as a satellite treatment facility) will facilitate end-of-pipe screening, primary treatment, and disinfection of the CSO-related bypasses routed from CSO-009 and CSO-013 to Outfall 014.

Engineering Aspects of Control Techniques – Technology-based performance criteria must be limited to technologies or process modifications that are feasible from an engineering standpoint. The CSO Treatment Facility employs a bar screen, a compressible media filter, and a UV disinfection system. Bar screening is employed universally by sewage treatment plants to remove floatables and bulk materials from sewage. The WWETCO FlexFilter compressible media filter has been pilot tested at the Charleroi STP and at other sewage treatment facilities in the United States and has been demonstrated to operate effectively as primary treatment for CSOs. UV disinfection is a well-established disinfection technology. All technologies comprising the CSO Treatment Facility are feasible from an engineering standpoint.

Process Changes – Consideration of process changes relates to the feasibility of any modifications that reduce the quantity or toxicity of a discharge. ABC is working toward volume reductions as part of implementing the approved LTCP and the Presumption Approach's minimum 85% capture goal. Toxicity reduction is inherent to the combination of raw sewage and storm water. Dilution is not recognized as a technology-based control according to 40 CFR § 125.3(f): "Technology-based treatment requirements cannot be satisfied through the use of "non-treatment" techniques such as flow augmentation and in-stream mechanical aerators." However, any dilution and corresponding reduction in toxicity afforded by storm water flows is circumstantial to the design of the combined sewer system and implicitly acknowledged by the CSO Control Policy, which does not require sewer separation to eliminate the diluting effects of storm water.

Non-Water Quality Environmental Impacts (Including Energy Requirements) – Non-water quality environmental impacts associated with proposed treatment technologies that must be considered include air pollution, solid waste generation, radiation exposure, and energy requirements. Non-water quality impacts for the CSO Treatment Facility are inherently minimized because the facility is an on-demand treatment system with automated operation in response to combined sewage flows and limited manual operations for maintenance/cleaning purposes.

Costs – Since the CSO Treatment Facility was proposed by ABC and was already constructed, the costs of the CSO Treatment Facility are presumed to be reasonable. Additionally, the costs of primary treatment and the conventional pollutant reductions achievable by the CSO Treatment Facility are directly comparable to the costs of primary treatment and conventional pollutant reductions achievable by POTWs because both are treating sewage—raw sewage for a POTW and dilute sewage for a CSO from a POTW.

Treatment Performance

ABC reported in the WQM permit application for the CSO Treatment Facility that a WWTECO FlexFilter treating CSOs at a location in Springfield, OH (OH0027481) achieved secondary treatment standards with an average TSS of 16 mg/L and an average CBOD of 20 mg/L. ABC conducted its own pilot test of the technology at the Charleroi STP. The results of the pilot test were summarized in the WQM permit application as follows:

1. The pilot ran unmanned for 6 months and operated automatically to treat elevated wet weather CSO flows at the Charleroi WWTP including automatic collection of samples for performance analysis.

2. The average filter effluent TSS and CBOD for the 15 events was 24 mg/L and 25 mg/L, respectively. Median values were 19 mg/L and 25 mg/L, respectively. These levels are considered secondary treatment criteria. These values are also comparable to the effluent from the full-scale FlexFilter EHRT (enhanced high-rate treatment) in Springfield, Ohio (average TSS 16 mg/L; average CBOD 20 mg/L).

3. TSS removed ranged from 0.6 to 2.23 pounds per square foot of filter surface area per filter run. Higher removals are seen during flush conditions (higher influent TSS concentrations). Higher removals are also seen when the hydraulic loading rates are lower. These data are comparable to removals found in Springfield, OH and in other CSO testing.

4. Event average influent TSS ranged between 104 and 340 mg/L TSS with the average at 200 mg/L and the median at 196 mg/L. These values are typical of CSO discharges including flush conditions and dilute conditions.

5. The average TSS and CBOD removals were 87% and 70% respectively. These are comparable to removals found in the Springfield, Ohio EHRT.

6. The average hydraulic loading rates of the 15 events tested was 9.02 gpm/sq. ft. (median at 9.6 gpm/sq. ft.). These values are typical of the recommended peak design loading rate. Controls will allow lower hydraulic loading rates during flush conditions which will increase the overall removal efficiency. This indicates that the 10 hydraulic loading rate at peak flow design is conservative.

7. Event durations ranged from 4 hours to 30 hours. The average event was 12.8 hours.

8. The WWTP flow during testing was near its peak daily value of 5 MGD, indicating the testing was conducted during CSO conditions.

9. UV disinfection was tested for 4 legitimate events and the average fecal coliform effluent was 361/100mL (median at 157/100mL). Full scale UV disinfection of CSOs for 8 years in the Columbus, Georgia following filtration was found to be <100/100 mL fecal coliform.

Since the treatment system for Outfall 014 is a wet weather treatment system for combined sewage, influent concentrations to the WWETCO FlexFilter can vary significantly depending on the proportions of sewage and storm water contributing to any combined discharge event. Such variability does not lead DEP to conclude that concentration-based TBELs for CBOD and TSS at Outfall 014 are warranted, at least not until the performance of the CSO Treatment Facility and the variability of its effluent are adequately quantified through effluent monitoring.[2] Nevertheless, WQM Permit 6316404 requires ABC to properly operate and maintain the CSO Treatment Facility so that it performs as it was designed. Additionally, pursuant to ABC's selection of the 85% capture alternative of the CSO Control Policy's Presumption Approach (Paragraph II.C.4.a.ii) and requirements for CSO-related bypasses, combined sewer flows remaining after implementation of the nine minimum controls and within the criteria specified at II.C.4.a.ii of the CSO Control Policy should receive a minimum of:

- Primary clarification (Removal of floatables and settleable solids may be achieved by any combination of treatment technologies or methods that are shown to be equivalent to primary clarification.);
- Solids and floatables disposal; and
- Disinfection of effluent, if necessary, to meet WQS, protect designated uses and protect human health, including removal of harmful disinfection chemical residuals, where necessary.

Combined sewer flows directed to Outfall 014 are part of ABC's minimum 85% capture goal, so the minimum treatment processes listed above must be provided for those flows. In consideration of the CSO Control Policy requirements described above, the permit requirement for ABC to properly operate and maintain the CSO Treatment Facility, and the need for DEP to have a metric to evaluate proper operation and maintenance of the CSO Treatment Facility, minimum percent-removal requirements for CBOD and TSS will be imposed at Outfall 014 based on the general performance of primary treatment. Full-scale site-specific performance may be used to revise Outfall 014's effluent limits in the future, which may lead to more stringent percent-removal requirements and/or mass and concentration-based limits.

Primary Treatment Standards

The Design Engineer's Report for Phase 1 facilities stated the following for the WWETCO FlexFilter:

> "A 9.0 MGD WWETCO Bio-FlexFilter CSO treatment facility, as manufactured by WesTech Engineering, Inc. of Salt Lake City, Utah, will be constructed to treat CSO flow from CSO-009 and CSO-013 in Speers and Dunlevy, respectively. The treatment system will include screening, BOD and TSS removal at efficiencies higher than primary treatment (see pilot test results below), and ultraviolet (UV) disinfection prior to discharge to the Monongahela River. The filter and pump system will be designed for 10.0 MGD in order to accommodate 1.0 MGD of filter backwash recycle.
>
> The WWETCO Bio-FlexFilter, highlighted in EPA's Emerging Technologies guidance, combines a fixed film biological treatment with physical straining of particles producing an effluent capable of meeting NPDES permit limits. […] Primary treatment BOD and TSS removal efficiencies are typically around 40% and 60% respectively. ABC conducted a WWETCO Bio-FlexFilter pilot test from December 2015 through June 2016. The pilot plant was setup at the WWTP. Primary clarifier influent flow was diverted through a pilot unit, and performance was monitored. BOD removal efficiencies were 70% on average, and TSS removal efficiencies were 87% on average."

Among the 15 overflow events sampled for the pilot plant, CBOD removal efficiencies ranged from 50.9% to 79.98% and TSS removal efficiencies ranged from 74.35% to 94.71%.

ABC's general statements in the Design Engineer's Report regarding the performance of primary treatment are corroborated by Metcalf and Eddy, Inc., et al. in *Wastewater Engineering: Treatment and Reuse*, Fourth Edition (2003), p.396, which states that "[e]fficiently designed and operated primary sedimentation tanks should remove from 50 to 70 percent of the suspended solids and from 25 to 40 percent of the BOD."

[2] TSS concentrations and the effectiveness of UV disinfection are negatively correlated; increased TSS concentrations reduce the effectiveness of UV disinfection. TSS concentrations will need to be below the UV system's maximum TSS threshold for the UV system to operate effectively. The WQM application appears to identify the UV system's maximum TSS concentration threshold as 60 mg/L; however, DEP will not impose 60 mg/L as the maximum TSS concentration limit at this time.

Additionally, Section 62.21 of DEP's Domestic Waste Facilities Manual pertaining to design standards for primary settling tanks (i.e., primary clarification) states the following: "A BOD removal of 30 percent to 35 percent will indicate efficient primary treatment."

Based on the preceding references and DEP's BPJ, Outfall 014's "CBOD5 Minimum % Removal" limit will be 35% and the "TSS Minimum % Removal" limit will be 60%. The percent-removals must be calculated using influent and effluent CBOD5 and TSS concentrations for the CSO Treatment Facility. Therefore, influent and effluent monitoring for CBOD5 and TSS will be required.

Limiting percent-removals avoids the potential problem of evaluating treatment performance and treatment system operation and maintenance based on effluent quality alone whereby effluent concentrations that comply with concentration limits could represent dilution of sewage by storm water and not pollutant removal by treatment. Based on pilot plant data, DEP expects ABC to comply with the percent-removal limits.

Disinfection

Effluent standards for fecal coliform bacteria from 25 Pa. Code §§ 92a.47(a)(4) and 92a.47(a)(5) will be imposed at Outfall 014. Monitoring for UV transmittance also will be required. DEP notes that UV transmittance is the percent-penetration of UV light into the effluent stream and not bulb output percentage.

Other 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, Version 1.9, March 24, 2021] and under the authority of 25 Pa. Code § 92a.61(b), 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. The SOP states that the monitoring frequencies for Total Nitrogen and Total Phosphorus should be equivalent to the monitoring frequencies for other conventional pollutants if the facility discharges to a nutrient-impaired water or potentially a lesser frequency if the receiving water is not nutrient-impaired. The Monongahela River is not impaired by nutrients, so quarterly reporting of Total Nitrogen and Total Phosphorus will be required at Outfall 014.

Pursuant to that same SOP and under the authority of § 92a.61(b), a monthly reporting requirement for *E. coli* will be added to Outfall 014 because the design flow of the CSO Treatment Facility exceeds 1 MGD. *E. coli* was recently added to the bacteria water quality criteria in 25 Pa. Code § 93.7(a); the monitoring will be used to determine if *E. coli* require additional controls.

No TBELs are imposed for ammonia-nitrogen, but ammonia-nitrogen reporting will be required pursuant to § 92a.61(b). The minimum measurement frequency will be equivalent to the measurement frequency of Outfall 014's conventional pollutants (see Section 014.C below).

**014.B. Water Quality-Based Effluent Limitations (WQBELs)**

ABC's CSO Control Project is intended to meet the CSO Control Policy's Presumption Approach by reducing CSO volumes such that no less than 85% of the combined sewage collected in the combined sewer system during precipitation events is captured and treated on a system-wide, annual average basis.

A program that meets the minimum 85% capture criterion is presumed to provide an adequate level of control to meet the water quality-based requirements of the Clean Water Act, provided DEP determines that the presumption is reasonable in light of the data and analysis conducted in the characterization, monitoring, and modeling of the system and the consideration of sensitive areas.

Post-construction compliance monitoring will confirm whether implementation of Phases 1 and 2 of the LTCP will achieve at least 85% capture (90.47% is the percent-capture estimated by ABC following Phase 2) and whether the presumption of compliance with water quality standards is appropriate. If the requirements of the Presumption Approach are not achieved, then ABC will need to implement Phase 3 of the LTCP.

Minimum and maximum effluent limits for pH (6.0 and 9.0) will be imposed at Outfall 014 to ensure compliance with water quality criteria for pH.

### 014.C. Effluent Limits and Monitoring Requirements for Outfall 014

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Outfall 014 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal. Applicable effluent limits and monitoring requirements are summarized in the table below.

**Table 5. Effluent Limits and Monitoring Requirements for Outfall 014**

| Parameter | Mass (pounds) | | Concentration (mg/L) | | | Basis |
|---|---|---|---|---|---|---|
| | Average Monthly | Daily Maximum | Instant. Minimum | Average Monthly | Instant. Maximum | |
| Flow (MGD) | Report | Report | — | — | — | 25 Pa. Code § 92a.61(d)(1) |
| CBOD5 | — | — | — | Report | Report | 25 Pa. Code § 92a.47(a)(1) |
| TSS | — | — | — | Report | Report | 25 Pa. Code § 92a.47(a)(1) |
| CBOD5 (Influent) | — | — | — | Report | Report | 25 Pa. Code § 92a.61(b) |
| TSS (Influent) | — | — | — | Report | Report | 25 Pa. Code § 92a.61(b) |
| $CBOD_5$ Minimum % Removal | — | — | 35.0 | — | — | 40 CFR § 125.3(d) & BPJ |
| TSS Minimum % Removal | — | — | 60.0 | — | — | 40 CFR § 125.3(d) & BPJ |
| Fecal Coliform (No. /100mL) May 1 – October 31 | — | — | | 200 (Geo. Mean) | 1,000 | 25 Pa. Code § 92a.47(a)(4) |
| Fecal Coliform (No. /100mL) November 1 – April 30 | — | — | — | 2,000 (Geo. Mean) | 10,000 | 25 Pa. Code § 92a.47(a)(5) |
| UV light transmittance (%) | — | — | Report | — | — | 25 Pa. Code § 92a.61(b) |
| E. coli (No./100mL) | — | — | — | — | Report | 25 Pa. Code § 92a.61(b) |
| Ammonia-Nitrogen | — | — | — | Report | Report | 25 Pa. Code § 92a.61(b) |
| Total Nitrogen | — | — | — | — | Report | 25 Pa. Code § 92a.61(b) |
| Total Phosphorus | — | — | — | — | Report | 25 Pa. Code § 92a.61(b) |
| pH (standard units) | — | — | 6.0 | — | 9.0 | WQBELs; 25 Pa. Code §§ 92a.12(a)(1), 93.7, & 96.4(b) |

Table 6-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" requires daily monitoring of CBOD, TSS, pH, fecal coliform, and other limited/monitored parameters using 24-hour composite sampling for sewage discharges with design flows between 5.0 and 25.0 MGD (ABC's CSO treatment facility is designed for 9.0 MGD). However, CSO discharges are intermittent wet weather-induced events that, while partially consisting of sewage, are not discussed in the narrative guidance accompanying Table 6-3. Therefore, monitoring frequencies and sample types can be adjusted from the requirements of the guidance.

The monitoring frequencies for all parameters at Outfall 014 except Total Nitrogen, Total Phosphorus, and *E. coli* will be "Weekly when Discharging". Weekly sampling of intermittent discharges of combined sewage of up to 9.0 MGD is reasonable and balances the costs of ABC's sampling burden with DEP's need to evaluate the performance of the treatment system to ensure ABC complies with effluent limits and the CSO Control Policy.

Total Nitrogen and Total Phosphorus must be sampled 1/quarter using grab sampling. *E. coli* must be sampled monthly when discharging using grab sampling.

Minimum percent-removals must be calculated weekly from the weekly influent and effluent CBOD5 and TSS concentrations. The sample type for all other parameters will be 'grab'. Flow must be measured weekly.

In addition to Outfall 014's effluent limits, the CSO reporting requirements that apply to ABC's untreated CSO outfalls also apply to Outfall 014.

## Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☐ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: Annually throughout the permit term.

The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 2.0%.

**Summary of Four Most Recent Test Results**

TST Data Analysis

*(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).*

| Test Date | *Ceriodaphnia* Results (Pass/Fail) | | *Pimephales* Results (Pass/Fail) | |
|---|---|---|---|---|
| | Survival | Reproduction | Survival | Growth |
| October 2, 2018 | PASS | PASS | PASS | PASS |
| December 10, 2019 | PASS | PASS | PASS | PASS |
| November 3, 2020 | PASS | PASS | PASS | PASS |
| November 1, 2021 | PASS | PASS | — | — |
| November 2, 2021 | — | — | PASS | PASS |

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

**Comments:** None

**Evaluation of Test Type, IWC and Dilution Series for Renewed Permit**

Acute Partial Mix Factor (PMFa): **0.124** Chronic Partial Mix Factor (PMFc): **0.857**

**1. Determine IWC – Acute (IWCa)**:

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(3.0 MGD x 1.547) / ((550 cfs x 0.124) + (3.0 MGD x 1.547))] x 100 = **6.39%**

Is IWCa < 1%? ☐ **YES** ☒ **NO (YES - Acute Tests Required OR NO - Chronic Tests Required)**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

**N/A**

**Type of Test for Permit Renewal**: **Chronic**

**2a. Determine Target IWCa (If Acute Tests Required)**

**TIWCa =** IWCa / 0.3 = **% — ACUTE TEST NOT REQUIRED**

**2b. Determine Target IWCc (If Chronic Tests Required)**

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(3.0 MGD x 1.547) / ((550 cfs x 0.857) + (3.0 MGD x 1.547))] x 100 = **0.97% ≈ 1.0%**

**3. Determine Dilution Series**

*(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).*

Dilution Series = 100%, 60%, 30%, 2%, and 1%.

**WET Limits**

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

**NOT APPLICABLE**

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

**NOT APPLICABLE**

## 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.

**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 | Weekly Average | Instant. Minimum | Average Monthly | Weekly Average | Instant. Maximum | | |
| Flow (MGD) | Report | Report Daily Max | XXX | XXX | XXX | XXX | Continuous | Metered |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | XXX | 9.0 | 1/day | Grab |
| Dissolved Oxygen | XXX | XXX | 4.0 | XXX | XXX | XXX | 1/day | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 1/day | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | 625.0 | 950.0 | XXX | 25.0 | 38.0 | 50.0 | 2/week | 24-Hr Composite |
| Biochemical Oxygen Demand (BOD5) Raw Sewage Influent | Report | Report Daily Max | XXX | Report | XXX | XXX | 2/week | 24-Hr Composite |
| Total Suspended Solids Raw Sewage Influent | Report | Report Daily Max | XXX | Report | XXX | XXX | 2/week | 24-Hr Composite |
| Total Suspended Solids | 750.0 | 1125.0 | XXX | 30.0 | 45.0 | 60.0 | 2/week | 24-Hr Composite |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 2/week | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 2/week | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | XXX | Report | 1/month | Grab |
| Total Nitrogen | XXX | XXX | XXX | XXX | Report Daily Max | XXX | 1/quarter | 24-Hr Composite |
| Ammonia-Nitrogen | Report | XXX | XXX | Report | Report Daily Max | XXX | 2/week | 24-Hr Composite |
| Total Phosphorus | XXX | XXX | XXX | XXX | Report Daily Max | XXX | 1/quarter | 24-Hr Composite |
| Copper, Total | XXX | XXX | XXX | Report | Report Daily Max | XXX | 1/week | 24-Hr Composite |

## 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.

**Outfall 014, Effective Period: Permit Effective Date through Permit Expiration Date.**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) | Required |
| | Average Monthly | Daily Maximum | Instant. Minimum | Average Monthly | Weekly Average | Instant. Maximum | Measurement Frequency | Sample Type |
| Flow (MGD) | Report | Report | XXX | XXX | XXX | XXX | Weekly when Discharging | Metered |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | XXX | 9.0 | Weekly when Discharging | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | XXX | XXX | XXX | Report | XXX | Report | Weekly when Discharging | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent | XXX | XXX | XXX | Report | XXX | Report | Weekly when Discharging | Grab |
| CBOD5 Minimum % Removal (%) | XXX | XXX | 35.0 | XXX | XXX | XXX | Weekly when Discharging | Calculation |
| Total Suspended Solids | XXX | XXX | XXX | Report | XXX | Report | Weekly when Discharging | Grab |
| Total Suspended Solids Raw Sewage Influent | XXX | XXX | XXX | Report | XXX | Report | Weekly when Discharging | Grab |
| Total Suspended Solids Minimum % Removal (%) | XXX | XXX | 60.0 | XXX | XXX | XXX | Weekly when Discharging | Calculation |
| Fecal Coliform (No./100 ml) Nov 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | Weekly when Discharging | Grab |
| Fecal Coliform (No./100 ml) May 1 - Oct 31 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | Weekly when Discharging | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | XXX | Report | Monthly when Discharging | Grab |
| Ultraviolet light transmittance (%) | XXX | XXX | Report | XXX | XXX | XXX | Weekly when Discharging | Measured |
| Total Nitrogen | XXX | XXX | XXX | XXX | XXX | Report | 1/quarter | Grab |
| Ammonia-Nitrogen | XXX | XXX | XXX | Report | XXX | Report | Weekly when Discharging | Grab |
| Total Phosphorus | XXX | XXX | XXX | XXX | XXX | Report | 1/quarter | Grab |

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☒ | WQM for Windows Model (see Attachment A) |
| ☒ | Toxics Management Spreadsheet (see Attachment B) |
| ☒ | TRC Model Spreadsheet (see Attachment C) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☐ | Water Quality Toxics Management Strategy, 361-0100-003, 4/06. |
| ☒ | Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97. |
| ☐ | Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98. |
| ☐ | Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96. |
| ☐ | Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97. |
| ☐ | Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97. |
| ☒ | Pennsylvania CSO Policy, 385-2000-011, 9/08. |
| ☐ | Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03. |
| ☐ | Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97. |
| ☐ | Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97. |
| ☐ | Implementation Guidance Design Conditions, 391-2000-006, 9/97. |
| ☐ | Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004. |
| ☐ | Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997. |
| ☐ | Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99. |
| ☐ | Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004. |
| ☐ | Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97. |
| ☐ | Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008. |
| ☐ | Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994. |
| ☐ | Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09. |
| ☐ | Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97. |
| ☐ | Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97. |
| ☐ | Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99. |
| ☐ | Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999. |
| ☐ | Design Stream Flows, 391-2000-023, 9/98. |
| ☐ | Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98. |
| ☐ | Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97. |
| ☐ | Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07. |
| ☒ | Domestic Wastewater Facilities Manual: A Guide for the Preparation of Applications, Reports and Plans, 362-0300-001, 10/97. |
| ☒ | Standard Operating Procedure (SOP) for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits, SOP No. BCW-PMT-033, Version 1.9, March 22, 2021 |
| ☒ | Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications, SOP No. BCW-PMT-002, Version 2.0, February 3, 2022 |
| ☒ | Other: Metcalf and Eddy, Inc., et al., Wastewater Engineering: Treatment and Reuse, Fourth Edition (2003). |

# ATTACHMENT A

# WQM 7.0 Modeling Results

# Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER | 41.500 | 727.00 | 5210.00 | 0.00010 | 0.00 | ☑ |

## Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.100 | 0.00 | 550.00 | 0.000 | 0.000 | 0.0 | 650.00 | 15.00 | 25.00 | 7.50 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

## Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Outfall 001 | PA0026891 | 3.0000 | 0.0000 | 0.0000 | 0.000 | 25.00 | 7.00 |

## Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 4.00 | 8.38 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.00 | 0.00 | 0.70 |

## Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER | 38.250 | 726.80 | 5213.00 | 0.00010 | 0.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.100 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 650.00 | 15.00 | 25.00 | 7.50 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

### Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Outfall 001 | PA0026158 | 4.9600 | 0.0000 | 0.0000 | 0.000 | 25.00 | 7.00 |

### Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 4.00 | 8.38 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.00 | 0.00 | 0.70 |

## Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER | 25.330 | 726.50 | 5330.00 | 0.00010 | 70.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.100 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 650.00 | 15.00 | 25.00 | 7.50 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

### Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| | | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.00 | 7.00 |

### Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.00 | 0.00 | 0.70 |

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER |

| RMI | Stream Flow (cfs) | PWS With (cfs) | Net Stream Flow (cfs) | Disc Analysis Flow (cfs) | Reach Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Reach Trav Time (days) | Analysis Temp (°C) | Analysis pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10 Flow** | | | | | | | | | | | | |
| 41.500 | 550.00 | 0.00 | 550.00 | 4.641 | 0.00010 | 15 | 650 | 43.33 | 0.06 | 3.491 | 25.00 | 7.49 |
| 38.250 | 550.30 | 0.00 | 550.30 | 12.3141 | 0.00010 | 15 | 650 | 43.33 | 0.06 | 13.683 | 25.00 | 7.48 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 41.500 | 352.00 | 0.00 | 352.00 | 4.641 | 0.00010 | NA | NA | NA | 0.04 | 5.430 | 25.00 | 7.49 |
| 38.250 | 352.19 | 0.00 | 352.19 | 12.3141 | 0.00010 | NA | NA | NA | 0.04 | 21.119 | 25.00 | 7.47 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 41.500 | 748.00 | 0.00 | 748.00 | 4.641 | 0.00010 | NA | NA | NA | 0.08 | 2.573 | 25.00 | 7.49 |
| 38.250 | 748.41 | 0.00 | 748.41 | 12.3141 | 0.00010 | NA | NA | NA | 0.08 | 10.120 | 25.00 | 7.49 |

# WQM 7.0 Modeling Specifications

| | | | |
|---|---|---|---|
| Parameters | Both | Use Inputted Q1-10 and Q30-10 Flows | ☑ |
| WLA Method | EMPR | Use Inputted W/D Ratio | ☑ |
| Q1-10/Q7-10 Ratio | 0.64 | Use Inputted Reach Travel Times | ☑ |
| Q30-10/Q7-10 Ratio | 1.36 | Temperature Adjust Kr | ☐ |
| D.O. Saturation | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 5 | | |

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER |

## NH3-N Acute Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 41.500 | Outfall 001 | 6.21 | 50 | 6.21 | 50 | 0 | 0 |
| 38.250 | Outfall 001 | 6.28 | 50 | 6.39 | 50 | 0 | 0 |

## NH3-N Chronic Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 41.500 | Outfall 001 | 1.01 | 25 | 1.01 | 25 | 0 | 0 |
| 38.250 | Outfall 001 | 1.02 | 25 | 1.02 | 25 | 0 | 0 |

## Dissolved Oxygen Allocations

| RMI | Discharge Name | CBOD5 | | NH3-N | | Dissolved Oxygen | | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 41.50 | Outfall 001 | 25 | 25 | 25 | 25 | 4 | 4 | 0 | 0 |
| 38.25 | Outfall 001 | 25 | 25 | 25 | 25 | 4 | 4 | 0 | 0 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 41.500 | 3.000 | 25.000 | 7.492 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 650.000 | 15.000 | 43.333 | 0.057 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 2.19 | 0.021 | 0.21 | 1.029 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 8.343 | 0.053 | O'Connor | 5 |
| **Reach Travel Time (days)** | | | |
| 3.491 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.349 | 2.17 | 0.15 | 7.54 |
| 0.698 | 2.15 | 0.10 | 7.54 |
| 1.047 | 2.13 | 0.07 | 7.54 |
| 1.397 | 2.11 | 0.05 | 7.53 |
| 1.746 | 2.09 | 0.03 | 7.45 |
| 2.095 | 2.07 | 0.02 | 7.39 |
| 2.444 | 2.06 | 0.02 | 7.35 |
| 2.793 | 2.04 | 0.01 | 7.32 |
| 3.142 | 2.02 | 0.01 | 7.29 |
| 3.491 | 2.00 | 0.01 | 7.28 |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 38.250 | 7.960 | 25.000 | 7.480 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 650.000 | 15.000 | 43.333 | 0.058 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 2.31 | 0.008 | 0.35 | 1.029 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 7.232 | 0.053 | O'Connor | 5 |
| **Reach Travel Time (days)** | | | |
| 13.683 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 1.368 | 2.28 | 0.08 | 6.12 |
| 2.737 | 2.25 | 0.02 | 5.95 |
| 4.105 | 2.21 | 0.01 | 6.01 |
| 5.473 | 2.18 | 0.00 | 6.11 |
| 6.841 | 2.15 | 0.00 | 6.22 |
| 8.210 | 2.12 | 0.00 | 6.33 |
| 9.578 | 2.09 | 0.00 | 6.42 |
| 10.946 | 2.06 | 0.00 | 6.52 |
| 12.315 | 2.03 | 0.00 | 6.61 |
| 13.683 | 2.00 | 0.00 | 6.69 |

# WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19A | 37185 | MONONGAHELA RIVER |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 41.500 | Outfall 001 | PA0026891 | 3.000 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 4 |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 38.250 | Outfall 001 | PA0026158 | 4.960 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 4 |

# ATTACHMENT B

# Toxics Management Spreadsheet for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

# Discharge Information

Instructions | Discharge | Stream

Facility: Charleroi STP NPDES Permit No.: PA0026891 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Treated sewage

| Discharge Characteristics | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Design Flow (MGD)* | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) | | | | Complete Mix Times (min) | |
| | | | AFC | CFC | THH | CRL | $Q_{7-10}$ | $Q_h$ |
| 3 | 169 | 7 | | | | | | |

| | | | | | *0 if left blank* | | *0.5 if left blank* | | *0 if left blank* | | | *1 if left blank* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Discharge Pollutant | Units | Max Discharge Conc | | Trib Conc | Stream Conc | Daily CV | Hourly CV | Stream CV | Fate Coeff | FOS | Criteria Mod | Chem Transl |
| Group 1 | Total Dissolved Solids (PWS) | mg/L | | 462 | | | | | | | | | |
| | Chloride (PWS) | mg/L | | 98.1 | | | | | | | | | |
| | Bromide | mg/L | < | 0.064 | | | | | | | | | |
| | Sulfate (PWS) | mg/L | | 93.7 | | | | | | | | | |
| | Fluoride (PWS) | mg/L | | | | | | | | | | | |
| Group 2 | Total Aluminum | µg/L | | 120 | | | | | | | | | |
| | Total Antimony | µg/L | | 1 | | | | | | | | | |
| | Total Arsenic | µg/L | | 2 | | | | | | | | | |
| | Total Barium | µg/L | | 40 | | | | | | | | | |
| | Total Beryllium | µg/L | < | 0.24 | | | | | | | | | |
| | Total Boron | µg/L | | 240 | | | | | | | | | |
| | Total Cadmium | µg/L | | 0.19 | | | | | | | | | |
| | Total Chromium (III) | µg/L | | 0.506 | | | | | | | | | |
| | Hexavalent Chromium | µg/L | < | 0.25 | | | | | | | | | |
| | Total Cobalt | µg/L | | 0.54 | | | | | | | | | |
| | Total Copper | µg/L | | 15 | | | | | | | | | |
| | Free Cyanide | µg/L | < | 2.4 | | | | | | | | | |
| | Total Cyanide | µg/L | < | 2.4 | | | | | | | | | |
| | Dissolved Iron | µg/L | | 47.2 | | | | | | | | | |
| | Total Iron | µg/L | | 158 | | | | | | | | | |
| | Total Lead | µg/L | | 1 | | | | | | | | | |
| | Total Manganese | µg/L | | 31 | | | | | | | | | |
| | Total Mercury | µg/L | < | 0.059 | | | | | | | | | |
| | Total Nickel | µg/L | | 2.6 | | | | | | | | | |
| | Total Phenols (Phenolics) (PWS) | µg/L | | 0.09 | | | | | | | | | |
| | Total Selenium | µg/L | < | 2.9 | | | | | | | | | |
| | Total Silver | µg/L | < | 0.07 | | | | | | | | | |
| | Total Thallium | µg/L | < | 1 | | | | | | | | | |
| | Total Zinc | µg/L | | 34.9 | | | | | | | | | |
| | Total Molybdenum | µg/L | | 2.2 | | | | | | | | | |
| | Acrolein | µg/L | < | 4.65 | | | | | | | | | |
| | Acrylamide | µg/L | < | | | | | | | | | | |
| | Acrylonitrile | µg/L | < | 2.4 | | | | | | | | | |
| | Benzene | µg/L | < | 1.05 | | | | | | | | | |
| | Bromoform | µg/L | < | 2.15 | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group 3 | Carbon Tetrachloride | µg/L | < | 2.05 | | | | | | | | | | |
| | Chlorobenzene | µg/L | < | 1.3 | | | | | | | | | | |
| | Chlorodibromomethane | µg/L | | 1.01 | | | | | | | | | | |
| | Chloroethane | µg/L | < | 1.6 | | | | | | | | | | |
| | 2-Chloroethyl Vinyl Ether | µg/L | < | 26.4 | | | | | | | | | | |
| | Chloroform | µg/L | | 6.9 | | | | | | | | | | |
| | Dichlorobromomethane | µg/L | | 3.8 | | | | | | | | | | |
| | 1,1-Dichloroethane | µg/L | < | 1.5 | | | | | | | | | | |
| | 1,2-Dichloroethane | µg/L | < | 2 | | | | | | | | | | |
| | 1,1-Dichloroethylene | µg/L | < | 1.45 | | | | | | | | | | |
| | 1,2-Dichloropropane | µg/L | < | 1.85 | | | | | | | | | | |
| | 1,3-Dichloropropylene | µg/L | < | 1.25 | | | | | | | | | | |
| | 1,4-Dioxane | µg/L | < | 3.7 | | | | | | | | | | |
| | Ethylbenzene | µg/L | < | 1.5 | | | | | | | | | | |
| | Methyl Bromide | µg/L | < | 2.4 | | | | | | | | | | |
| | Methyl Chloride | µg/L | < | 2.2 | | | | | | | | | | |
| | Methylene Chloride | µg/L | < | 1.65 | | | | | | | | | | |
| | 1,1,2,2-Tetrachloroethane | µg/L | < | 2.25 | | | | | | | | | | |
| | Tetrachloroethylene | µg/L | < | 1.85 | | | | | | | | | | |
| | Toluene | µg/L | < | 0.95 | | | | | | | | | | |
| | 1,2-trans-Dichloroethylene | µg/L | < | 2.2 | | | | | | | | | | |
| | 1,1,1-Trichloroethane | µg/L | < | 2.1 | | | | | | | | | | |
| | 1,1,2-Trichloroethane | µg/L | < | 1.25 | | | | | | | | | | |
| | Trichloroethylene | µg/L | < | 2.1 | | | | | | | | | | |
| | Vinyl Chloride | µg/L | < | 1.45 | | | | | | | | | | |
| Group 4 | 2-Chlorophenol | µg/L | < | 0.101 | | | | | | | | | | |
| | 2,4-Dichlorophenol | µg/L | < | 0.141 | | | | | | | | | | |
| | 2,4-Dimethylphenol | µg/L | < | 0.101 | | | | | | | | | | |
| | 4,6-Dinitro-o-Cresol | µg/L | < | 0.192 | | | | | | | | | | |
| | 2,4-Dinitrophenol | µg/L | < | 0.263 | | | | | | | | | | |
| | 2-Nitrophenol | µg/L | < | 0.111 | | | | | | | | | | |
| | 4-Nitrophenol | µg/L | < | 0.616 | | | | | | | | | | |
| | p-Chloro-m-Cresol | µg/L | < | 0.101 | | | | | | | | | | |
| | Pentachlorophenol | µg/L | < | 0.273 | | | | | | | | | | |
| | Phenol | µg/L | | 0.09 | | | | | | | | | | |
| | 2,4,6-Trichlorophenol | µg/L | | 0.13 | | | | | | | | | | |
| Group 5 | Acenaphthene | µg/L | < | 0.313 | | | | | | | | | | |
| | Acenaphthylene | µg/L | < | 0.0404 | | | | | | | | | | |
| | Anthracene | µg/L | < | 0.0202 | | | | | | | | | | |
| | Benzidine | µg/L | < | 0.222 | | | | | | | | | | |
| | Benzo(a)Anthracene | µg/L | | 0.09 | | | | | | | | | | |
| | Benzo(a)Pyrene | µg/L | < | 0.0505 | | | | | | | | | | |
| | 3,4-Benzofluoranthene | µg/L | < | 0.101 | | | | | | | | | | |
| | Benzo(ghi)Perylene | µg/L | < | 0.0505 | | | | | | | | | | |
| | Benzo(k)Fluoranthene | µg/L | < | 0.172 | | | | | | | | | | |
| | Bis(2-Chloroethoxy)Methane | µg/L | < | 0.101 | | | | | | | | | | |
| | Bis(2-Chloroethyl)Ether | µg/L | < | 0.101 | | | | | | | | | | |
| | Bis(2-Chloroisopropyl)Ether | µg/L | < | 0.0505 | | | | | | | | | | |
| | Bis(2-Ethylhexyl)Phthalate | µg/L | | 0.26 | | | | | | | | | | |
| | 4-Bromophenyl Phenyl Ether | µg/L | < | 0.101 | | | | | | | | | | |
| | Butyl Benzyl Phthalate | µg/L | | 0.24 | | | | | | | | | | |
| | 2-Chloronaphthalene | µg/L | | 0.06 | | | | | | | | | | |
| | 4-Chlorophenyl Phenyl Ether | µg/L | < | 0.111 | | | | | | | | | | |
| | Chrysene | µg/L | | 0.06 | | | | | | | | | | |
| | Dibenzo(a,h)Anthrancene | µg/L | < | 0.111 | | | | | | | | | | |
| | 1,2-Dichlorobenzene | µg/L | < | 0.0808 | | | | | | | | | | |
| | 1,3-Dichlorobenzene | µg/L | < | 0.101 | | | | | | | | | | |
| | 1,4-Dichlorobenzene | µg/L | < | 0.0808 | | | | | | | | | | |
| | 3,3-Dichlorobenzidine | µg/L | < | 0.232 | | | | | | | | | | |
| | Diethyl Phthalate | µg/L | | 0.23 | | | | | | | | | | |
| | Dimethyl Phthalate | µg/L | < | 0.0707 | | | | | | | | | | |
| | Di-n-Butyl Phthalate | µg/L | | 0.97 | | | | | | | | | | |
| | 2,4-Dinitrotoluene | µg/L | < | 0.172 | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2,6-Dinitrotoluene | µg/L | < | 0.111 | | | | | | | | | | |
| | Di-n-Octyl Phthalate | µg/L | | 0.06 | | | | | | | | | | |
| | 1,2-Diphenylhydrazine | µg/L | < | 0.162 | | | | | | | | | | |
| | Fluoranthene | µg/L | < | 0.0202 | | | | | | | | | | |
| | Fluorene | µg/L | < | 0.0606 | | | | | | | | | | |
| | Hexachlorobenzene | µg/L | < | 0.182 | | | | | | | | | | |
| | Hexachlorobutadiene | µg/L | < | 0.162 | | | | | | | | | | |
| | Hexachlorocyclopentadiene | µg/L | < | 0.192 | | | | | | | | | | |
| | Hexachloroethane | µg/L | < | 0.111 | | | | | | | | | | |
| | Indeno(1,2,3-cd)Pyrene | µg/L | < | 0.0707 | | | | | | | | | | |
| | Isophorone | µg/L | | 0.09 | | | | | | | | | | |
| | Naphthalene | µg/L | | 0.11 | | | | | | | | | | |
| | Nitrobenzene | µg/L | < | 0.121 | | | | | | | | | | |
| | n-Nitrosodimethylamine | µg/L | < | 0.434 | | | | | | | | | | |
| | n-Nitrosodi-n-Propylamine | µg/L | | 0.14 | | | | | | | | | | |
| | n-Nitrosodiphenylamine | µg/L | < | 0.162 | | | | | | | | | | |
| | Phenanthrene | µg/L | | 0.06 | | | | | | | | | | |
| | Pyrene | µg/L | < | 0.0505 | | | | | | | | | | |
| | 1,2,4-Trichlorobenzene | µg/L | < | 0.101 | | | | | | | | | | |
| Group 6 | Aldrin | µg/L | < | 0.0064 | | | | | | | | | | |
| | alpha-BHC | µg/L | < | 0.0066 | | | | | | | | | | |
| | beta-BHC | µg/L | < | 0.0092 | | | | | | | | | | |
| | gamma-BHC | µg/L | < | 0.0146 | | | | | | | | | | |
| | delta BHC | µg/L | < | 0.0084 | | | | | | | | | | |
| | Chlordane | µg/L | < | 0.174 | | | | | | | | | | |
| | 4,4-DDT | µg/L | < | 0.011 | | | | | | | | | | |
| | 4,4-DDE | µg/L | < | 0.0082 | | | | | | | | | | |
| | 4,4-DDD | µg/L | < | 0.0092 | | | | | | | | | | |
| | Dieldrin | µg/L | < | 0.0098 | | | | | | | | | | |
| | alpha-Endosulfan | µg/L | < | 0.0066 | | | | | | | | | | |
| | beta-Endosulfan | µg/L | < | 0.0092 | | | | | | | | | | |
| | Endosulfan Sulfate | µg/L | < | 0.0164 | | | | | | | | | | |
| | Endrin | µg/L | < | 0.0088 | | | | | | | | | | |
| | Endrin Aldehyde | µg/L | < | 0.0086 | | | | | | | | | | |
| | Heptachlor | µg/L | < | 0.0064 | | | | | | | | | | |
| | Heptachlor Epoxide | µg/L | < | 0.008 | | | | | | | | | | |
| | PCB-1016 | µg/L | < | | | | | | | | | | | |
| | PCB-1221 | µg/L | < | | | | | | | | | | | |
| | PCB-1232 | µg/L | < | | | | | | | | | | | |
| | PCB-1242 | µg/L | < | | | | | | | | | | | |
| | PCB-1248 | µg/L | < | | | | | | | | | | | |
| | PCB-1254 | µg/L | < | | | | | | | | | | | |
| | PCB-1260 | µg/L | < | | | | | | | | | | | |
| | PCBs, Total | µg/L | < | | | | | | | | | | | |
| | Toxaphene | µg/L | < | 0.385 | | | | | | | | | | |
| | 2,3,7,8-TCDD | ng/L | < | | | | | | | | | | | |
| Group 7 | Gross Alpha | pCi/L | | | | | | | | | | | | |
| | Total Beta | pCi/L | < | | | | | | | | | | | |
| | Radium 226/228 | pCi/L | < | | | | | | | | | | | |
| | Total Strontium | µg/L | < | | | | | | | | | | | |
| | Total Uranium | µg/L | < | | | | | | | | | | | |
| | Osmotic Pressure | mOs/kg | | | | | | | | | | | | |
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pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

# Stream / Surface Water Information

Charleroi STP, NPDES Permit No. PA0026891, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Monongahela River

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

| Location | Stream Code* | RMI* | Elevation (ft)* | DA (mi²)* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|---|---|---|---|---|---|---|---|
| Point of Discharge | 031785 | 41.5 | 727 | 5210 | 0.0001 | | Yes |
| End of Reach 1 | 031785 | 40 | 726.8 | 5220 | 0.0001 | | Yes |

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

| Location | RMI | LFY (cfs/mi²)* | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness* | pH* | Hardness | pH |
| Point of Discharge | 41.5 | 0.1 | 550 | | | 650 | 15 | | | | | 100 | 7 | | |
| End of Reach 1 | 40 | 0.1 | | | | | | | | | | | | | |

$Q_h$

| Location | RMI | LFY (cfs/mi²) | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness | pH | Hardness | pH |
| Point of Discharge | 41.5 | | | | | | | | | | | | | | |
| End of Reach 1 | 40 | | | | | | | | | | | | | | |

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Toxics Management Spreadsheet
Version 1.3, March 2021

# Model Results

Charleroi STP, NPDES Permit No. PA0026891, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 15 PMF: 0.124 Analysis Hardness (mg/l): 104.41 Analysis pH: 7.00

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | 750 | 750 | 11,745 | |
| Total Antimony | 0 | 0 | | 0 | 1,100 | 1,100 | 17,226 | |
| Total Arsenic | 0 | 0 | | 0 | 340 | 340 | 5,324 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 21,000 | 21,000 | 328,862 | |
| Total Boron | 0 | 0 | | 0 | 8,100 | 8,100 | 126,847 | |
| Total Cadmium | 0 | 0 | | 0 | 2.100 | 2.23 | 34.9 | Chem Translator of 0.942 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 590.243 | 1,868 | 29,251 | Chem Translator of 0.316 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 16 | 16.3 | 255 | Chem Translator of 0.982 applied |
| Total Cobalt | 0 | 0 | | 0 | 95 | 95.0 | 1,488 | |
| Total Copper | 0 | 0 | | 0 | 13.996 | 14.6 | 228 | Chem Translator of 0.96 applied |
| Free Cyanide | 0 | 0 | | 0 | 22 | 22.0 | 345 | |
| 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 | 67.683 | 86.3 | 1,351 | Chem Translator of 0.785 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 1.400 | 1.65 | 25.8 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 485.631 | 487 | 7,620 | 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 | 3.464 | 4.08 | 63.8 | Chem Translator of 0.85 applied |
| Total Thallium | 0 | 0 | | 0 | 65 | 65.0 | 1,018 | |
| Total Zinc | 0 | 0 | | 0 | 121.541 | 124 | 1,946 | Chem Translator of 0.978 applied |
| Acrolein | 0 | 0 | | 0 | 3 | 3.0 | 47.0 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Acrylonitrile | 0 | 0 | | 0 | 650 | 650 | 10,179 | |
| Benzene | 0 | 0 | | 0 | 640 | 640 | 10,022 | |
| Bromoform | 0 | 0 | | 0 | 1,800 | 1,800 | 28,188 | |
| Carbon Tetrachloride | 0 | 0 | | 0 | 2,800 | 2,800 | 43,848 | |
| Chlorobenzene | 0 | 0 | | 0 | 1,200 | 1,200 | 18,792 | |
| Chlorodibromomethane | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2-Chloroethyl Vinyl Ether | 0 | 0 | | 0 | 18,000 | 18,000 | 281,882 | |
| Chloroform | 0 | 0 | | 0 | 1,900 | 1,900 | 29,754 | |
| Dichlorobromomethane | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 1,2-Dichloroethane | 0 | 0 | | 0 | 15,000 | 15,000 | 234,902 | |
| 1,1-Dichloroethylene | 0 | 0 | | 0 | 7,500 | 7,500 | 117,451 | |
| 1,2-Dichloropropane | 0 | 0 | | 0 | 11,000 | 11,000 | 172,261 | |
| 1,3-Dichloropropylene | 0 | 0 | | 0 | 310 | 310 | 4,855 | |
| Ethylbenzene | 0 | 0 | | 0 | 2,900 | 2,900 | 45,414 | |
| Methyl Bromide | 0 | 0 | | 0 | 550 | 550 | 8,613 | |
| Methyl Chloride | 0 | 0 | | 0 | 28,000 | 28,000 | 438,483 | |
| Methylene Chloride | 0 | 0 | | 0 | 12,000 | 12,000 | 187,921 | |
| 1,1,2,2-Tetrachloroethane | 0 | 0 | | 0 | 1,000 | 1,000 | 15,660 | |
| Tetrachloroethylene | 0 | 0 | | 0 | 700 | 700 | 10,962 | |
| Toluene | 0 | 0 | | 0 | 1,700 | 1,700 | 26,622 | |
| 1,2-trans-Dichloroethylene | 0 | 0 | | 0 | 6,800 | 6,800 | 106,489 | |
| 1,1,1-Trichloroethane | 0 | 0 | | 0 | 3,000 | 3,000 | 46,980 | |
| 1,1,2-Trichloroethane | 0 | 0 | | 0 | 3,400 | 3,400 | 53,244 | |
| Trichloroethylene | 0 | 0 | | 0 | 2,300 | 2,300 | 36,018 | |
| Vinyl Chloride | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2-Chlorophenol | 0 | 0 | | 0 | 560 | 560 | 8,770 | |
| 2,4-Dichlorophenol | 0 | 0 | | 0 | 1,700 | 1,700 | 26,622 | |
| 2,4-Dimethylphenol | 0 | 0 | | 0 | 660 | 660 | 10,336 | |
| 4,6-Dinitro-o-Cresol | 0 | 0 | | 0 | 80 | 80.0 | 1,253 | |
| 2,4-Dinitrophenol | 0 | 0 | | 0 | 660 | 660 | 10,336 | |
| 2-Nitrophenol | 0 | 0 | | 0 | 8,000 | 8,000 | 125,281 | |
| 4-Nitrophenol | 0 | 0 | | 0 | 2,300 | 2,300 | 36,018 | |
| p-Chloro-m-Cresol | 0 | 0 | | 0 | 160 | 160 | 2,506 | |
| Pentachlorophenol | 0 | 0 | | 0 | 8.723 | 8.72 | 137 | |
| Phenol | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2,4,6-Trichlorophenol | 0 | 0 | | 0 | 460 | 460 | 7,204 | |
| Acenaphthene | 0 | 0 | | 0 | 83 | 83.0 | 1,300 | |
| Anthracene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Benzidine | 0 | 0 | | 0 | 300 | 300 | 4,698 | |
| Benzo(a)Anthracene | 0 | 0 | | 0 | 0.5 | 0.5 | 7.83 | |
| 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 | 469,803 | |
| Bis(2-Chloroisopropyl)Ether | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Bis(2-Ethylhexyl)Phthalate | 0 | 0 | | 0 | 4,500 | 4,500 | 70,471 | |
| 4-Bromophenyl Phenyl Ether | 0 | 0 | | 0 | 270 | 270 | 4,228 | |
| Butyl Benzyl Phthalate | 0 | 0 | | 0 | 140 | 140 | 2,192 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2-Chloronaphthalene | 0 | 0 | | 0 | N/A | N/A | N/A |
| Chrysene | 0 | 0 | | 0 | N/A | N/A | N/A |
| Dibenzo(a,h)Anthrancene | 0 | 0 | | 0 | N/A | N/A | N/A |
| 1,2-Dichlorobenzene | 0 | 0 | | 0 | 820 | 820 | 12,841 |
| 1,3-Dichlorobenzene | 0 | 0 | | 0 | 350 | 350 | 5,481 |
| 1,4-Dichlorobenzene | 0 | 0 | | 0 | 730 | 730 | 11,432 |
| 3,3-Dichlorobenzidine | 0 | 0 | | 0 | N/A | N/A | N/A |
| Diethyl Phthalate | 0 | 0 | | 0 | 4,000 | 4,000 | 62,640 |
| Dimethyl Phthalate | 0 | 0 | | 0 | 2,500 | 2,500 | 39,150 |
| Di-n-Butyl Phthalate | 0 | 0 | | 0 | 110 | 110 | 1,723 |
| 2,4-Dinitrotoluene | 0 | 0 | | 0 | 1,600 | 1,600 | 25,056 |
| 2,6-Dinitrotoluene | 0 | 0 | | 0 | 990 | 990 | 15,504 |
| 1,2-Diphenylhydrazine | 0 | 0 | | 0 | 15 | 15.0 | 235 |
| Fluoranthene | 0 | 0 | | 0 | 200 | 200 | 3,132 |
| 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 | 157 |
| Hexachlorocyclopentadiene | 0 | 0 | | 0 | 5 | 5.0 | 78.3 |
| Hexachloroethane | 0 | 0 | | 0 | 60 | 60.0 | 940 |
| Indeno(1,2,3-cd)Pyrene | 0 | 0 | | 0 | N/A | N/A | N/A |
| Isophorone | 0 | 0 | | 0 | 10,000 | 10,000 | 156,601 |
| Naphthalene | 0 | 0 | | 0 | 140 | 140 | 2,192 |
| Nitrobenzene | 0 | 0 | | 0 | 4,000 | 4,000 | 62,640 |
| n-Nitrosodimethylamine | 0 | 0 | | 0 | 17,000 | 17,000 | 266,222 |
| n-Nitrosodi-n-Propylamine | 0 | 0 | | 0 | N/A | N/A | N/A |
| n-Nitrosodiphenylamine | 0 | 0 | | 0 | 300 | 300 | 4,698 |
| Phenanthrene | 0 | 0 | | 0 | 5 | 5.0 | 78.3 |
| Pyrene | 0 | 0 | | 0 | N/A | N/A | N/A |
| 1,2,4-Trichlorobenzene | 0 | 0 | | 0 | 130 | 130 | 2,036 |
| Aldrin | 0 | 0 | | 0 | 3 | 3.0 | 47.0 |
| 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 | 14.9 |
| Chlordane | 0 | 0 | | 0 | 2.4 | 2.4 | 37.6 |
| 4,4-DDT | 0 | 0 | | 0 | 1.1 | 1.1 | 17.2 |
| 4,4-DDE | 0 | 0 | | 0 | 1.1 | 1.1 | 17.2 |
| 4,4-DDD | 0 | 0 | | 0 | 1.1 | 1.1 | 17.2 |
| Dieldrin | 0 | 0 | | 0 | 0.24 | 0.24 | 3.76 |
| alpha-Endosulfan | 0 | 0 | | 0 | 0.22 | 0.22 | 3.45 |
| beta-Endosulfan | 0 | 0 | | 0 | 0.22 | 0.22 | 3.45 |
| Endosulfan Sulfate | 0 | 0 | | 0 | N/A | N/A | N/A |
| Endrin | 0 | 0 | | 0 | 0.086 | 0.086 | 1.35 |
| Endrin Aldehyde | 0 | 0 | | 0 | N/A | N/A | N/A |
| Heptachlor | 0 | 0 | | 0 | 0.52 | 0.52 | 8.14 |
| Heptachlor Epoxide | 0 | 0 | | 0 | 0.5 | 0.5 | 7.83 |
| Toxaphene | 0 | 0 | | 0 | 0.73 | 0.73 | 11.4 |

☑ *CFC* CCT (min): 720 PMF: 0.857 Analysis Hardness (mg/l): 100.67 Analysis pH: 7.00

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 220 | 220 | 22,565 | |
| Total Arsenic | 0 | 0 | | 0 | 150 | 150 | 15,385 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 4,100 | 4,100 | 420,530 | |
| Total Boron | 0 | 0 | | 0 | 1,600 | 1,600 | 164,109 | |
| Total Cadmium | 0 | 0 | | 0 | 0.247 | 0.27 | 27.9 | Chem Translator of 0.909 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 74.523 | 86.7 | 8,888 | Chem Translator of 0.86 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 10 | 10.4 | 1,066 | Chem Translator of 0.962 applied |
| Total Cobalt | 0 | 0 | | 0 | 19 | 19.0 | 1,949 | |
| Total Copper | 0 | 0 | | 0 | 9.007 | 9.38 | 962 | Chem Translator of 0.96 applied |
| Free Cyanide | 0 | 0 | | 0 | 5.2 | 5.2 | 533 | |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | 1,500 | 1,500 | 179,263 | WQC = 30 day average; PMF = 1 |
| Total Lead | 0 | 0 | | 0 | 2.535 | 3.21 | 329 | Chem Translator of 0.79 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 0.770 | 0.91 | 92.9 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 52.302 | 52.5 | 5,381 | 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 | 512 | 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 | 1,333 | |
| Total Zinc | 0 | 0 | | 0 | 118.812 | 120 | 12,359 | Chem Translator of 0.986 applied |
| Acrolein | 0 | 0 | | 0 | 3 | 3.0 | 308 | |
| Acrylonitrile | 0 | 0 | | 0 | 130 | 130 | 13,334 | |
| Benzene | 0 | 0 | | 0 | 130 | 130 | 13,334 | |
| Bromoform | 0 | 0 | | 0 | 370 | 370 | 37,950 | |
| Carbon Tetrachloride | 0 | 0 | | 0 | 560 | 560 | 57,438 | |
| Chlorobenzene | 0 | 0 | | 0 | 240 | 240 | 24,616 | |
| Chlorodibromomethane | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2-Chloroethyl Vinyl Ether | 0 | 0 | | 0 | 3,500 | 3,500 | 358,989 | |
| Chloroform | 0 | 0 | | 0 | 390 | 390 | 40,002 | |
| Dichlorobromomethane | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 1,2-Dichloroethane | 0 | 0 | | 0 | 3,100 | 3,100 | 317,962 | |
| 1,1-Dichloroethylene | 0 | 0 | | 0 | 1,500 | 1,500 | 153,852 | |
| 1,2-Dichloropropane | 0 | 0 | | 0 | 2,200 | 2,200 | 225,650 | |
| 1,3-Dichloropropylene | 0 | 0 | | 0 | 61 | 61.0 | 6,257 | |
| Ethylbenzene | 0 | 0 | | 0 | 580 | 580 | 59,490 | |
| Methyl Bromide | 0 | 0 | | 0 | 110 | 110 | 11,283 | |
| Methyl Chloride | 0 | 0 | | 0 | 5,500 | 5,500 | 564,125 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methylene Chloride | 0 | 0 | | 0 | 2,400 | 2,400 | 246,164 | |
| 1,1,2,2-Tetrachloroethane | 0 | 0 | | 0 | 210 | 210 | 21,539 | |
| Tetrachloroethylene | 0 | 0 | | 0 | 140 | 140 | 14,360 | |
| Toluene | 0 | 0 | | 0 | 330 | 330 | 33,848 | |
| 1,2-trans-Dichloroethylene | 0 | 0 | | 0 | 1,400 | 1,400 | 143,596 | |
| 1,1,1-Trichloroethane | 0 | 0 | | 0 | 610 | 610 | 62,567 | |
| 1,1,2-Trichloroethane | 0 | 0 | | 0 | 680 | 680 | 69,746 | |
| Trichloroethylene | 0 | 0 | | 0 | 450 | 450 | 46,156 | |
| Vinyl Chloride | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2-Chlorophenol | 0 | 0 | | 0 | 110 | 110 | 11,283 | |
| 2,4-Dichlorophenol | 0 | 0 | | 0 | 340 | 340 | 34,873 | |
| 2,4-Dimethylphenol | 0 | 0 | | 0 | 130 | 130 | 13,334 | |
| 4,6-Dinitro-o-Cresol | 0 | 0 | | 0 | 16 | 16.0 | 1,641 | |
| 2,4-Dinitrophenol | 0 | 0 | | 0 | 130 | 130 | 13,334 | |
| 2-Nitrophenol | 0 | 0 | | 0 | 1,600 | 1,600 | 164,109 | |
| 4-Nitrophenol | 0 | 0 | | 0 | 470 | 470 | 48,207 | |
| p-Chloro-m-Cresol | 0 | 0 | | 0 | 500 | 500 | 51,284 | |
| Pentachlorophenol | 0 | 0 | | 0 | 6.693 | 6.69 | 686 | |
| Phenol | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2,4,6-Trichlorophenol | 0 | 0 | | 0 | 91 | 91.0 | 9,334 | |
| Acenaphthene | 0 | 0 | | 0 | 17 | 17.0 | 1,744 | |
| Anthracene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Benzidine | 0 | 0 | | 0 | 59 | 59.0 | 6,052 | |
| Benzo(a)Anthracene | 0 | 0 | | 0 | 0.1 | 0.1 | 10.3 | |
| 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 | 615,409 | |
| Bis(2-Chloroisopropyl)Ether | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Bis(2-Ethylhexyl)Phthalate | 0 | 0 | | 0 | 910 | 910 | 93,337 | |
| 4-Bromophenyl Phenyl Ether | 0 | 0 | | 0 | 54 | 54.0 | 5,539 | |
| Butyl Benzyl Phthalate | 0 | 0 | | 0 | 35 | 35.0 | 3,590 | |
| 2-Chloronaphthalene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chrysene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Dibenzo(a,h)Anthrancene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 1,2-Dichlorobenzene | 0 | 0 | | 0 | 160 | 160 | 16,411 | |
| 1,3-Dichlorobenzene | 0 | 0 | | 0 | 69 | 69.0 | 7,077 | |
| 1,4-Dichlorobenzene | 0 | 0 | | 0 | 150 | 150 | 15,385 | |
| 3,3-Dichlorobenzidine | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Diethyl Phthalate | 0 | 0 | | 0 | 800 | 800 | 82,055 | |
| Dimethyl Phthalate | 0 | 0 | | 0 | 500 | 500 | 51,284 | |
| Di-n-Butyl Phthalate | 0 | 0 | | 0 | 21 | 21.0 | 2,154 | |
| 2,4-Dinitrotoluene | 0 | 0 | | 0 | 320 | 320 | 32,822 | |
| 2,6-Dinitrotoluene | 0 | 0 | | 0 | 200 | 200 | 20,514 | |
| 1,2-Diphenylhydrazine | 0 | 0 | | 0 | 3 | 3.0 | 308 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 0 | 0 | | 0 | 40 | 40.0 | 4,103 | |
| 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 | 205 | |
| Hexachlorocyclopentadiene | 0 | 0 | | 0 | 1 | 1.0 | 103 | |
| Hexachloroethane | 0 | 0 | | 0 | 12 | 12.0 | 1,231 | |
| Indeno(1,2,3-cd)Pyrene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Isophorone | 0 | 0 | | 0 | 2,100 | 2,100 | 215,393 | |
| Naphthalene | 0 | 0 | | 0 | 43 | 43.0 | 4,410 | |
| Nitrobenzene | 0 | 0 | | 0 | 810 | 810 | 83,080 | |
| n-Nitrosodimethylamine | 0 | 0 | | 0 | 3,400 | 3,400 | 348,732 | |
| n-Nitrosodi-n-Propylamine | 0 | 0 | | 0 | N/A | N/A | N/A | |
| n-Nitrosodiphenylamine | 0 | 0 | | 0 | 59 | 59.0 | 6,052 | |
| Phenanthrene | 0 | 0 | | 0 | 1 | 1.0 | 103 | |
| Pyrene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 1,2,4-Trichlorobenzene | 0 | 0 | | 0 | 26 | 26.0 | 2,667 | |
| Aldrin | 0 | 0 | | 0 | 0.1 | 0.1 | 10.3 | |
| 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 | 0.44 | |
| 4,4-DDT | 0 | 0 | | 0 | 0.001 | 0.001 | 0.1 | |
| 4,4-DDE | 0 | 0 | | 0 | 0.001 | 0.001 | 0.1 | |
| 4,4-DDD | 0 | 0 | | 0 | 0.001 | 0.001 | 0.1 | |
| Dieldrin | 0 | 0 | | 0 | 0.056 | 0.056 | 5.74 | |
| alpha-Endosulfan | 0 | 0 | | 0 | 0.056 | 0.056 | 5.74 | |
| beta-Endosulfan | 0 | 0 | | 0 | 0.056 | 0.056 | 5.74 | |
| Endosulfan Sulfate | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Endrin | 0 | 0 | | 0 | 0.036 | 0.036 | 3.69 | |
| Endrin Aldehyde | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Heptachlor | 0 | 0 | | 0 | 0.0038 | 0.004 | 0.39 | |
| Heptachlor Epoxide | 0 | 0 | | 0 | 0.0038 | 0.004 | 0.39 | |
| Toxaphene | 0 | 0 | | 0 | 0.0002 | 0.0002 | 0.021 | |

☑ ***THH*** CCT (min): 720 PMF: 0.857 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 | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 5.6 | 5.6 | 574 | |
| Total Arsenic | 0 | 0 | | 0 | 10 | 10.0 | 1,026 | |
| Total Barium | 0 | 0 | | 0 | 2,400 | 2,400 | 246,164 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Total Boron | 0 | 0 | | 0 | 3,100 | 3,100 | 317,962 | |
| 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 | 410 | |
| Dissolved Iron | 0 | 0 | | 0 | 300 | 300 | 30,770 | |
| 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 | 102,568 | |
| Total Mercury | 0 | 0 | | 0 | 0.050 | 0.05 | 5.13 | |
| Total Nickel | 0 | 0 | | 0 | 610 | 610 | 62,567 | |
| 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 | 24.6 | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Acrolein | 0 | 0 | | 0 | 3 | 3.0 | 308 | |
| 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 | 10,257 | |
| 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 | N/A | N/A | N/A | |
| 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 | 3,385 | |
| 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 | 6,975 | |
| Methyl Bromide | 0 | 0 | | 0 | 100 | 100.0 | 10,257 | |
| 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 | 5,846 | |
| 1,2-trans-Dichloroethylene | 0 | 0 | | 0 | 100 | 100.0 | 10,257 | |
| 1,1,1-Trichloroethane | 0 | 0 | | 0 | 10,000 | 10,000 | 1,025,682 | |
| 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 | 3,077 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | 0 | 0 | | 0 | 10 | 10.0 | 1,026 |
| 2,4-Dimethylphenol | 0 | 0 | | 0 | 100 | 100.0 | 10,257 |
| 4,6-Dinitro-o-Cresol | 0 | 0 | | 0 | 2 | 2.0 | 205 |
| 2,4-Dinitrophenol | 0 | 0 | | 0 | 10 | 10.0 | 1,026 |
| 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 | 410,273 |
| 2,4,6-Trichlorophenol | 0 | 0 | | 0 | N/A | N/A | N/A |
| Acenaphthene | 0 | 0 | | 0 | 70 | 70.0 | 7,180 |
| Anthracene | 0 | 0 | | 0 | 300 | 300 | 30,770 |
| 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 | 20,514 |
| 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 | 10.3 |
| 2-Chloronaphthalene | 0 | 0 | | 0 | 800 | 800 | 82,055 |
| Chrysene | 0 | 0 | | 0 | N/A | N/A | N/A |
| Dibenzo(a,h)Anthrancene | 0 | 0 | | 0 | N/A | N/A | N/A |
| 1,2-Dichlorobenzene | 0 | 0 | | 0 | 1,000 | 1,000 | 102,568 |
| 1,3-Dichlorobenzene | 0 | 0 | | 0 | 7 | 7.0 | 718 |
| 1,4-Dichlorobenzene | 0 | 0 | | 0 | 300 | 300 | 30,770 |
| 3,3-Dichlorobenzidine | 0 | 0 | | 0 | N/A | N/A | N/A |
| Diethyl Phthalate | 0 | 0 | | 0 | 600 | 600 | 61,541 |
| Dimethyl Phthalate | 0 | 0 | | 0 | 2,000 | 2,000 | 205,136 |
| Di-n-Butyl Phthalate | 0 | 0 | | 0 | 20 | 20.0 | 2,051 |
| 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 | 2,051 |
| Fluorene | 0 | 0 | | 0 | 50 | 50.0 | 5,128 |
| 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 | 410 |
| 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 | 3,487 |
| Naphthalene | 0 | 0 | | 0 | N/A | N/A | N/A |
| Nitrobenzene | 0 | 0 | | 0 | 10 | 10.0 | 1,026 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 | 2,051 | |
| 1,2,4-Trichlorobenzene | 0 | 0 | | 0 | 0.07 | 0.07 | 7.18 | |
| 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 | 431 | |
| 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 | 2,051 | |
| beta-Endosulfan | 0 | 0 | | 0 | 20 | 20.0 | 2,051 | |
| Endosulfan Sulfate | 0 | 0 | | 0 | 20 | 20.0 | 2,051 | |
| Endrin | 0 | 0 | | 0 | 0.03 | 0.03 | 3.08 | |
| Endrin Aldehyde | 0 | 0 | | 0 | 1 | 1.0 | 103 | |
| Heptachlor | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Heptachlor Epoxide | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Toxaphene | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ *CRL* CCT (min): ###### 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 | |
| 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 | |
| Acrylonitrile | 0 | 0 | | 0 | 0.06 | 0.06 | 23.9 | |
| Benzene | 0 | 0 | | 0 | 0.58 | 0.58 | 231 | |
| Bromoform | 0 | 0 | | 0 | 7 | 7.0 | 2,790 | |
| Carbon Tetrachloride | 0 | 0 | | 0 | 0.4 | 0.4 | 159 | |
| Chlorobenzene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chlorodibromomethane | 0 | 0 | | 0 | 0.8 | 0.8 | 319 | |
| 2-Chloroethyl Vinyl Ether | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloroform | 0 | 0 | | 0 | 5.7 | 5.7 | 2,272 | |
| Dichlorobromomethane | 0 | 0 | | 0 | 0.95 | 0.95 | 379 | |
| 1,2-Dichloroethane | 0 | 0 | | 0 | 9.9 | 9.9 | 3,946 | |
| 1,1-Dichloroethylene | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 1,2-Dichloropropane | 0 | 0 | | 0 | 0.9 | 0.9 | 359 | |
| 1,3-Dichloropropylene | 0 | 0 | | 0 | 0.27 | 0.27 | 108 | |
| 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 | 7,972 | |
| 1,1,2,2-Tetrachloroethane | 0 | 0 | | 0 | 0.2 | 0.2 | 79.7 | |
| Tetrachloroethylene | 0 | 0 | | 0 | 10 | 10.0 | 3,986 | |
| 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 | 219 | |
| Trichloroethylene | 0 | 0 | | 0 | 0.6 | 0.6 | 239 | |
| Vinyl Chloride | 0 | 0 | | 0 | 0.02 | 0.02 | 7.97 | |
| 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 | 12.0 | |
| Phenol | 0 | 0 | | 0 | N/A | N/A | N/A | |
| 2,4,6-Trichlorophenol | 0 | 0 | | 0 | 1.5 | 1.5 | 598 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 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 | 0.04 |
| Benzo(a)Anthracene | 0 | 0 | | 0 | 0.001 | 0.001 | 0.4 |
| Benzo(a)Pyrene | 0 | 0 | | 0 | 0.0001 | 0.0001 | 0.04 |
| 3,4-Benzofluoranthene | 0 | 0 | | 0 | 0.001 | 0.001 | 0.4 |
| Benzo(k)Fluoranthene | 0 | 0 | | 0 | 0.01 | 0.01 | 3.99 |
| Bis(2-Chloroethyl)Ether | 0 | 0 | | 0 | 0.03 | 0.03 | 12.0 |
| Bis(2-Chloroisopropyl)Ether | 0 | 0 | | 0 | N/A | N/A | N/A |
| Bis(2-Ethylhexyl)Phthalate | 0 | 0 | | 0 | 0.32 | 0.32 | 128 |
| 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 | 47.8 |
| Dibenzo(a,h)Anthrancene | 0 | 0 | | 0 | 0.0001 | 0.0001 | 0.04 |
| 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 | 19.9 |
| 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 | 19.9 |
| 2,6-Dinitrotoluene | 0 | 0 | | 0 | 0.05 | 0.05 | 19.9 |
| 1,2-Diphenylhydrazine | 0 | 0 | | 0 | 0.03 | 0.03 | 12.0 |
| 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 | 0.032 |
| Hexachlorobutadiene | 0 | 0 | | 0 | 0.01 | 0.01 | 3.99 |
| Hexachlorocyclopentadiene | 0 | 0 | | 0 | N/A | N/A | N/A |
| Hexachloroethane | 0 | 0 | | 0 | 0.1 | 0.1 | 39.9 |
| Indeno(1,2,3-cd)Pyrene | 0 | 0 | | 0 | 0.001 | 0.001 | 0.4 |
| 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 | 0.28 |
| n-Nitrosodi-n-Propylamine | 0 | 0 | | 0 | 0.005 | 0.005 | 1.99 |
| n-Nitrosodiphenylamine | 0 | 0 | | 0 | 3.3 | 3.3 | 1,315 |
| 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 | 0.0003 |
| alpha-BHC | 0 | 0 | | 0 | 0.0004 | 0.0004 | 0.16 |
| beta-BHC | 0 | 0 | | 0 | 0.008 | 0.008 | 3.19 |
| gamma-BHC | 0 | 0 | | 0 | N/A | N/A | N/A |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chlordane | 0 | 0 | | 0 | 0.0003 | 0.0003 | 0.12 | |
| 4,4-DDT | 0 | 0 | | 0 | 0.00003 | 0.00003 | 0.012 | |
| 4,4-DDE | 0 | 0 | | 0 | 0.00002 | 0.00002 | 0.008 | |
| 4,4-DDD | 0 | 0 | | 0 | 0.0001 | 0.0001 | 0.04 | |
| Dieldrin | 0 | 0 | | 0 | 0.000001 | 0.000001 | 0.0004 | |
| 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 | 0.002 | |
| Heptachlor Epoxide | 0 | 0 | | 0 | 0.00003 | 0.00003 | 0.012 | |
| Toxaphene | 0 | 0 | | 0 | 0.0007 | 0.0007 | 0.28 | |

☑ ***Recommended WQBELs & Monitoring Requirements***

**No. Samples/Month:** 4

| | *Mass Limits* | | *Concentration Limits* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pollutants | AML (lbs/day) | MDL (lbs/day) | AML | MDL | IMAX | Units | Governing WQBEL | WQBEL Basis | Comments |
| Total Copper | Report | Report | Report | Report | Report | µg/L | 146 | 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) | 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 |
| Total Aluminum | 7,528 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Antimony | 574 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Arsenic | 1,026 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Barium | 210,788 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium | N/A | N/A | No WQS |
| Total Boron | 81,304 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cadmium | 22.4 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Chromium (III) | 8,888 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Hexavalent Chromium | 164 | µg/L | Discharge Conc < TQL |
| Total Cobalt | 954 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Free Cyanide | 221 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Total Cyanide | N/A | N/A | No WQS |

| | | | |
|---|---|---|---|
| Dissolved Iron | 30,770 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Iron | 179,263 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead | 329 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Manganese | 102,568 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Mercury | 5.13 | µg/L | Discharge Conc < TQL |
| Total Nickel | 4,884 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Phenols (Phenolics) (PWS) | | µg/L | PWS Not Applicable |
| Total Selenium | 512 | µg/L | Discharge Conc < TQL |
| Total Silver | 40.9 | µg/L | Discharge Conc < TQL |
| Total Thallium | 24.6 | µg/L | Discharge Conc < TQL |
| Total Zinc | 1,247 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Molybdenum | N/A | N/A | No WQS |
| Acrolein | 30.1 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Acrylonitrile | 23.9 | µg/L | Discharge Conc < TQL |
| Benzene | 231 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Bromoform | 2,790 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Carbon Tetrachloride | 159 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Chlorobenzene | 10,257 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Chlorodibromomethane | 319 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Chloroethane | N/A | N/A | No WQS |
| 2-Chloroethyl Vinyl Ether | 180,675 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Chloroform | 2,272 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Dichlorobromomethane | 379 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1-Dichloroethane | N/A | N/A | No WQS |
| 1,2-Dichloroethane | 3,946 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1-Dichloroethylene | 3,385 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,2-Dichloropropane | 359 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,3-Dichloropropylene | 108 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,4-Dioxane | N/A | N/A | No WQS |
| Ethylbenzene | 6,975 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Methyl Bromide | 5,521 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Methyl Chloride | 281,050 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Methylene Chloride | 7,972 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1,2,2-Tetrachloroethane | 79.7 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Tetrachloroethylene | 3,986 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Toluene | 5,846 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,2-trans-Dichloroethylene | 10,257 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1,1-Trichloroethane | 30,113 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1,2-Trichloroethane | 219 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Trichloroethylene | 239 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Vinyl Chloride | 7.97 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 2-Chlorophenol | 3,077 | µg/L | Discharge Conc < TQL |
| 2,4-Dichlorophenol | 1,026 | µg/L | Discharge Conc < TQL |
| 2,4-Dimethylphenol | 6,625 | µg/L | Discharge Conc < TQL |
| 4,6-Dinitro-o-Cresol | 205 | µg/L | Discharge Conc < TQL |

| | | | |
|---|---|---|---|
| 2,4-Dinitrophenol | 1,026 | µg/L | Discharge Conc < TQL |
| 2-Nitrophenol | 80,300 | µg/L | Discharge Conc < TQL |
| 4-Nitrophenol | 23,086 | µg/L | Discharge Conc < TQL |
| p-Chloro-m-Cresol | 1,606 | µg/L | Discharge Conc < TQL |
| Pentachlorophenol | 12.0 | µg/L | Discharge Conc < TQL |
| Phenol | 410,273 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 2,4,6-Trichlorophenol | 598 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Acenaphthene | 833 | µg/L | Discharge Conc < TQL |
| Acenaphthylene | N/A | N/A | No WQS |
| Anthracene | 30,770 | µg/L | Discharge Conc < TQL |
| Benzidine | 0.04 | µg/L | Discharge Conc < TQL |
| Benzo(a)Anthracene | 0.4 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Benzo(a)Pyrene | 0.04 | µg/L | Discharge Conc < TQL |
| 3,4-Benzofluoranthene | 0.4 | µg/L | Discharge Conc < TQL |
| Benzo(ghi)Perylene | N/A | N/A | No WQS |
| Benzo(k)Fluoranthene | 3.99 | µg/L | Discharge Conc < TQL |
| Bis(2-Chloroethoxy)Methane | N/A | N/A | No WQS |
| Bis(2-Chloroethyl)Ether | 12.0 | µg/L | Discharge Conc < TQL |
| Bis(2-Chloroisopropyl)Ether | 20,514 | µg/L | Discharge Conc < TQL |
| Bis(2-Ethylhexyl)Phthalate | 128 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 4-Bromophenyl Phenyl Ether | 2,710 | µg/L | Discharge Conc < TQL |
| Butyl Benzyl Phthalate | 10.3 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 2-Chloronaphthalene | 82,055 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 4-Chlorophenyl Phenyl Ether | N/A | N/A | No WQS |
| Chrysene | 47.8 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Dibenzo(a,h)Anthrancene | 0.04 | µg/L | Discharge Conc < TQL |
| 1,2-Dichlorobenzene | 8,231 | µg/L | Discharge Conc < TQL |
| 1,3-Dichlorobenzene | 718 | µg/L | Discharge Conc < TQL |
| 1,4-Dichlorobenzene | 7,327 | µg/L | Discharge Conc < TQL |
| 3,3-Dichlorobenzidine | 19.9 | µg/L | Discharge Conc < TQL |
| Diethyl Phthalate | 40,150 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Dimethyl Phthalate | 25,094 | µg/L | Discharge Conc < TQL |
| Di-n-Butyl Phthalate | 1,104 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 2,4-Dinitrotoluene | 19.9 | µg/L | Discharge Conc < TQL |
| 2,6-Dinitrotoluene | 19.9 | µg/L | Discharge Conc < TQL |
| Di-n-Octyl Phthalate | N/A | N/A | No WQS |
| 1,2-Diphenylhydrazine | 12.0 | µg/L | Discharge Conc < TQL |
| Fluoranthene | 2,008 | µg/L | Discharge Conc < TQL |
| Fluorene | 5,128 | µg/L | Discharge Conc < TQL |
| Hexachlorobenzene | 0.032 | µg/L | Discharge Conc < TQL |
| Hexachlorobutadiene | 3.99 | µg/L | Discharge Conc < TQL |
| Hexachlorocyclopentadiene | 50.2 | µg/L | Discharge Conc < TQL |
| Hexachloroethane | 39.9 | µg/L | Discharge Conc < TQL |
| Indeno(1,2,3-cd)Pyrene | 0.4 | µg/L | Discharge Conc < TQL |
| Isophorone | 3,487 | µg/L | Discharge Conc ≤ 25% WQBEL |

| | | | |
|---|---|---|---|
| Naphthalene | 1,405 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Nitrobenzene | 1,026 | µg/L | Discharge Conc < TQL |
| n-Nitrosodimethylamine | 0.28 | µg/L | Discharge Conc < TQL |
| n-Nitrosodi-n-Propylamine | 1.99 | µg/L | Discharge Conc ≤ 25% WQBEL |
| n-Nitrosodiphenylamine | 1,315 | µg/L | Discharge Conc < TQL |
| Phenanthrene | 50.2 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Pyrene | 2,051 | µg/L | Discharge Conc < TQL |
| 1,2,4-Trichlorobenzene | 7.18 | µg/L | Discharge Conc < TQL |
| Aldrin | 0.0003 | µg/L | Discharge Conc < TQL |
| alpha-BHC | 0.16 | µg/L | Discharge Conc < TQL |
| beta-BHC | 3.19 | µg/L | Discharge Conc < TQL |
| gamma-BHC | 9.54 | µg/L | Discharge Conc < TQL |
| delta BHC | N/A | N/A | No WQS |
| Chlordane | 0.12 | µg/L | Discharge Conc < TQL |
| 4,4-DDT | 0.012 | µg/L | Discharge Conc < TQL |
| 4,4-DDE | 0.008 | µg/L | Discharge Conc < TQL |
| 4,4-DDD | 0.04 | µg/L | Discharge Conc < TQL |
| Dieldrin | 0.0004 | µg/L | Discharge Conc < TQL |
| alpha-Endosulfan | 2.21 | µg/L | Discharge Conc < TQL |
| beta-Endosulfan | 2.21 | µg/L | Discharge Conc < TQL |
| Endosulfan Sulfate | 2,051 | µg/L | Discharge Conc < TQL |
| Endrin | 0.86 | µg/L | Discharge Conc < TQL |
| Endrin Aldehyde | 103 | µg/L | Discharge Conc < TQL |
| Heptachlor | 0.002 | µg/L | Discharge Conc < TQL |
| Heptachlor Epoxide | 0.012 | µg/L | Discharge Conc < TQL |
| Toxaphene | 0.021 | µg/L | Discharge Conc < TQL |

# ATTACHMENT C

# TRC Modeling Results

## TRC EVALUATION – Outfall 001

| | | | |
|---|---|---|---|
| 550 | = Q stream (cfs) | 0.5 | = CV Daily |
| 3 | = Q discharge (MGD) | 0.5 | = CV Hourly |
| 30 | = no. samples | 0.124 | = AFC_Partial Mix Factor |
| 0.3 | = Chlorine Demand of Stream | 0.857 | = 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 = 4.707 | **1.3.2.iii** | WLA cfc = 31.597 |
| PENTOXSD TRG | **5.1a** | LTAMULT afc = 0.373 | **5.1c** | LTAMULT cfc = 0.581 |
| PENTOXSD TRG | **5.1b** | LTA_afc= 1.754 | **5.1d** | LTA_cfc = 18.369 |

| Source | Reference | Effluent Limit Calculations | | |
|---|---|---|---|---|
| PENTOXSD TRG | **5.1f** | AML MULT = | 1.231 | |
| PENTOXSD TRG | **5.1g** | AVG MON LIMIT (mg/l) = | 0.500 | BAT/BPJ |
| | | INST MAX LIMIT (mg/l) = | 1.635 | |

| | |
|---|---|
| WLA afc | **(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc)) + Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)** |
| LTAMULT afc | EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5) |
| LTA_afc | wla_afc*LTAMULT_afc |
| **WLA_cfc** | **(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc) ) + Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)** |
| LTAMULT_cfc | EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5) |
| **LTA_cfc** | wla_cfc*LTAMULT_cfc |
| AML MULT | EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1)) |
| AVG MON LIMIT | MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT) |
| INST MAX LIMIT | **1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)** |

# ATTACHMENT D

# WET Testing Results

## DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

| | |
|---|---|
| **Type of Test** | Chronic |
| **Species Tested** | Ceriodaphnia |
| **Endpoint** | Survival |
| **TIWC (decimal)** | 0.02 |
| **No. Per Replicate** | 1 |
| **TST b value** | 0.75 |
| **TST alpha value** | 0.2 |

**Facility Name**: Charleroi STP

**Permit No.**: PA0026891

**Test Completion Date**: 10/2/2018

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 0 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 1 | 1 |
| 5 | 1 | 1 |
| 6 | 1 | 1 |
| 7 | 1 | 1 |
| 8 | 1 | 1 |
| 9 | 1 | 1 |
| 10 | 1 | 1 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 0.900 | 1.000 |
| Std Dev. | 0.316 | 0.000 |
| # Replicates | 10 | 10 |

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

**Test Completion Date**: 12/10/2019

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 0 | 1 |
| 5 | 1 | 1 |
| 6 | 1 | 1 |
| 7 | 1 | 1 |
| 8 | 1 | 1 |
| 9 | 1 | 1 |
| 10 | 1 | 1 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 0.900 | 1.000 |
| Std Dev. | 0.316 | 0.000 |
| # Replicates | 10 | 10 |

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

**Test Completion Date**: 11/3/2020

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 1 | 1 |
| 5 | 1 | 1 |
| 6 | 1 | 1 |
| 7 | 1 | 1 |
| 8 | 1 | 1 |
| 9 | 1 | 1 |
| 10 | 1 | 1 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 1.000 | 1.000 |
| Std Dev. | 0.000 | 0.000 |
| # Replicates | 10 | 10 |

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

**Test Completion Date**: 11/1/2021

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 1 | 1 |
| 5 | 1 | 1 |
| 6 | 1 | 1 |
| 7 | 1 | 1 |
| 8 | 1 | 1 |
| 9 | 1 | 1 |
| 10 | 1 | 1 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 1.000 | 1.000 |
| Std Dev. | 0.000 | 0.000 |
| # Replicates | 10 | 10 |

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

## DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

| | |
|---|---|
| **Type of Test** | Chronic |
| **Species Tested** | Ceriodaphnia |
| **Endpoint** | Reproduction |
| **TIWC (decimal)** | 0.02 |
| **No. Per Replicate** | 1 |
| **TST b value** | 0.75 |
| **TST alpha value** | 0.2 |

**Facility Name**: Charleroi STP

**Permit No.**: PA0026891

**Test Completion Date**: 10/2/2018

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 10 | 22 |
| 2 | 20 | 26 |
| 3 | 14 | 22 |
| 4 | 25 | 26 |
| 5 | 14 | 23 |
| 6 | 21 | 29 |
| 7 | 24 | 17 |
| 8 | 24 | 27 |
| 9 | 18 | 22 |
| 10 | 20 | 24 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 19.000 | 23.800 |
| Std Dev. | 4.989 | 3.393 |
| # Replicates | 10 | 10 |

| | |
|---|---|
| T-Test Result | 5.9791 |
| Deg. of Freedom | 17 |
| Critical T Value | 0.8633 |
| Pass or Fail | **PASS** |

**Test Completion Date**: 12/10/2019

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 45 | 34 |
| 2 | 43 | 35 |
| 3 | 34 | 32 |
| 4 | 0 | 40 |
| 5 | 39 | 33 |
| 6 | 38 | 28 |
| 7 | 35 | 39 |
| 8 | 35 | 42 |
| 9 | 35 | 37 |
| 10 | 35 | 34 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 33.900 | 35.400 |
| Std Dev. | 12.485 | 4.169 |
| # Replicates | 10 | 10 |

| | |
|---|---|
| T-Test Result | 3.0775 |
| Deg. of Freedom | 16 |
| Critical T Value | 0.8647 |
| Pass or Fail | **PASS** |

**Test Completion Date**: 11/3/2020

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 32 | 24 |
| 2 | 30 | 38 |
| 3 | 38 | 38 |
| 4 | 40 | 26 |
| 5 | 33 | 38 |
| 6 | 24 | 26 |
| 7 | 34 | 36 |
| 8 | 34 | 39 |
| 9 | 34 | 32 |
| 10 | 34 | 42 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 33.300 | 33.900 |
| Std Dev. | 4.322 | 6.437 |
| # Replicates | 10 | 10 |

| | |
|---|---|
| T-Test Result | 3.9161 |
| Deg. of Freedom | 14 |
| Critical T Value | 0.8681 |
| Pass or Fail | **PASS** |

**Test Completion Date**: 11/1/2021

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 36 | 44 |
| 2 | 37 | 30 |
| 3 | 41 | 34 |
| 4 | 37 | 38 |
| 5 | 41 | 36 |
| 6 | 44 | 45 |
| 7 | 40 | 48 |
| 8 | 38 | 36 |
| 9 | 41 | 41 |
| 10 | 16 | 12 |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 37.100 | 36.400 |
| Std Dev. | 7.810 | 10.178 |
| # Replicates | 10 | 10 |

| | |
|---|---|
| T-Test Result | 2.3091 |
| Deg. of Freedom | 15 |
| Critical T Value | 0.8662 |
| Pass or Fail | **PASS** |

## DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

| | |
|---|---|
| **Type of Test** | Chronic |
| **Species Tested** | Pimephales |
| **Endpoint** | Survival |
| **TIWC (decimal)** | 0.02 |
| **No. Per Replicate** | 10 |
| **TST b value** | 0.75 |
| **TST alpha value** | 0.25 |

**Facility Name**: Charleroi STP

**Permit No.**: PA0026891

**Test Completion Date**: 10/2/2018

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 10 | 10 |
| 2 | 10 | 9 |
| 3 | 10 | 9 |
| 4 | 9 | 10 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 9.750 | 9.500 |
| Std Dev. | 0.500 | 0.577 |
| # Replicates | 4 | 4 |

T-Test Result: 5.3848
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: **PASS**

**Test Completion Date**: 12/10/2019

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 10 | 10 |
| 2 | 10 | 10 |
| 3 | 10 | 10 |
| 4 | 10 | 10 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 10.000 | 10.000 |
| Std Dev. | 0.000 | 0.000 |
| # Replicates | 4 | 4 |

T-Test Result:
Deg. of Freedom:
Critical T Value:
Pass or Fail: **PASS**

**Test Completion Date**: 11/3/2020

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 10 | 10 |
| 2 | 10 | 10 |
| 3 | 10 | 10 |
| 4 | 10 | 10 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 10.000 | 10.000 |
| Std Dev. | 0.000 | 0.000 |
| # Replicates | 4 | 4 |

T-Test Result:
Deg. of Freedom:
Critical T Value:
Pass or Fail: **PASS**

**Test Completion Date**: 11/2/2021

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 10 | 10 |
| 2 | 10 | 10 |
| 3 | 10 | 10 |
| 4 | 10 | 10 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 10.000 | 10.000 |
| Std Dev. | 0.000 | 0.000 |
| # Replicates | 4 | 4 |

T-Test Result:
Deg. of Freedom:
Critical T Value:
Pass or Fail: **PASS**

## DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

| | |
|---|---|
| **Type of Test** | Chronic |
| **Species Tested** | Pimephales |
| **Endpoint** | Growth |
| **TIWC (decimal)** | 0.02 |
| **No. Per Replicate** | 10 |
| **TST b value** | 0.75 |
| **TST alpha value** | 0.25 |

**Facility Name**: Charleroi STP

**Permit No.**: PA0026891

**Test Completion Date: 10/2/2018**

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 0.487 | 0.498 |
| 2 | 0.562 | 0.542 |
| 3 | 0.501 | 0.464 |
| 4 | 0.49 | 0.499 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 0.510 | 0.501 |
| Std Dev. | 0.035 | 0.032 |
| # Replicates | 4 | 4 |

| | |
|---|---|
| T-Test Result | 5.7070 |
| Deg. of Freedom | 5 |
| Critical T Value | 0.7267 |
| Pass or Fail | **PASS** |

**Test Completion Date: 12/10/2019**

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 0.342 | 0.447 |
| 2 | 0.362 | 0.377 |
| 3 | 0.354 | 0.388 |
| 4 | 0.336 | 0.373 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 0.349 | 0.396 |
| Std Dev. | 0.012 | 0.034 |
| # Replicates | 4 | 4 |

| | |
|---|---|
| T-Test Result | 7.5934 |
| Deg. of Freedom | 4 |
| Critical T Value | 0.7407 |
| Pass or Fail | **PASS** |

**Test Completion Date: 11/3/2020**

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 0.548 | 0.44 |
| 2 | 0.488 | 0.465 |
| 3 | 0.561 | 0.458 |
| 4 | 0.491 | 0.509 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 0.522 | 0.468 |
| Std Dev. | 0.038 | 0.029 |
| # Replicates | 4 | 4 |

| | |
|---|---|
| T-Test Result | 3.7475 |
| Deg. of Freedom | 5 |
| Critical T Value | 0.7267 |
| Pass or Fail | **PASS** |

**Test Completion Date: 11/2/2021**

| Replicate No. | Control | TIWC |
|---|---|---|
| 1 | 0.428 | 0.417 |
| 2 | 0.411 | 0.435 |
| 3 | 0.441 | 0.444 |
| 4 | 0.422 | 0.458 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| Mean | 0.426 | 0.439 |
| Std Dev. | 0.013 | 0.017 |
| # Replicates | 4 | 4 |

| | |
|---|---|
| T-Test Result | 12.2006 |
| Deg. of Freedom | 5 |
| Critical T Value | 0.7267 |
| Pass or Fail | **PASS** |

## WET Summary and Evaluation

| | |
|---|---|
| **Facility Name** | Charleroi STP |
| **Permit No.** | PA0026891 |
| **Design Flow (MGD)** | 3 |
| **$Q_{7-10}$ Flow (cfs)** | 550 |
| **$PMF_a$** | 0.124 |
| **$PMF_c$** | 0.857 |

| | | Test Results (Pass/Fail) | | | |
|---|---|---|---|---|---|
| | | Test Date | Test Date | Test Date | Test Date |
| **Species** | **Endpoint** | 10/2/18 | 12/10/19 | 11/3/20 | 11/1/21 |
| Ceriodaphnia | Survival | PASS | PASS | PASS | PASS |

| | | Test Results (Pass/Fail) | | | |
|---|---|---|---|---|---|
| | | Test Date | Test Date | Test Date | Test Date |
| **Species** | **Endpoint** | 10/2/18 | 12/10/19 | 11/3/20 | 11/1/21 |
| Ceriodaphnia | Reproduction | PASS | PASS | PASS | PASS |

| | | Test Results (Pass/Fail) | | | |
|---|---|---|---|---|---|
| | | Test Date | Test Date | Test Date | Test Date |
| **Species** | **Endpoint** | 10/2/18 | 12/10/19 | 11/3/20 | 11/2/21 |
| Pimephales | Survival | PASS | PASS | PASS | PASS |

| | | Test Results (Pass/Fail) | | | |
|---|---|---|---|---|---|
| | | Test Date | Test Date | Test Date | Test Date |
| **Species** | **Endpoint** | 10/2/18 | 12/10/19 | 11/3/20 | 11/2/21 |
| Pimephales | Growth | PASS | PASS | PASS | PASS |

**Reasonable Potential?** NO

**Permit Recommendations**

| | |
|---|---|
| Test Type | **Chronic** |
| TIWC | **1** % Effluent |
| Dilution Series | **1, 2, 30, 60, 100** % Effluent |
| Permit Limit | **None** |
| Permit Limit Species | |