pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0253120** |
| Facility Type | **Industrial** | APS ID | **1080332** |
| Major / Minor | **Minor** | Authorization ID | **1425940** |

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

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Tri County Joint Municipal Authority** | Facility Name | **Tri County Joint Municipal Authority Water Treatment Plant** |
| Applicant Address | PO Box 758 | Facility Address | 26 Monongahela Avenue |
| | Fredericktown, PA 15333-0758 | | Fredericktown, PA 15333 |
| Applicant Contact | Keith Marucci | Facility Contact | Keith Marucci |
| Applicant Phone | (724) 377-2211 | Facility Phone | (724) 377-2211 |
| Client ID | 75368 | Site ID | 246567 |
| SIC Code | 4941 | Municipality | East Bethlehem Township |
| SIC Description | Trans. & Utilities - Water Supply | County | Washington |
| Date Application Received | January 31, 2023 | EPA Waived? | Yes |
| Date Application Accepted | February 23, 2023 | If No, Reason | |

Purpose of Application: Renewal of NPDES Permit PA0253120.

## Summary of Review

The Department received a timely renewal NPDES permit application from Tri County Joint Municipal Authority (TCJMA) for the Water Treatment Plant located in East Bethlehem Township of Washington County on January 31, 2023. The facility is a potable public water treatment plant (WTP) with an SIC Code of 4941. The facility's existing permitted discharges consist of supernatant from the sludge thickener holding tank, which is discharged back to the Monongahela River. The sludge thickener holding tank processes wastewaters from treated filter backwash and blowdown sludge from the clarifier and settling basin.

The TCJMA Facility purifies water withdrawn from the Monongahela River (via gravity flow to the intake wetwell) for public consumption. The raw water is treated with the following chemicals: Poly Aluminum Chloride, Potassium Permanganate, Coagulant Aid, and Chlorine prior to being routed to the solids contact clarifier. The water is then routed to the sedimentation basin and then to the four (4) dual media sand-anthracite filters via an overflow weir. Finished water then flows to the clearwell where the water is further treated with the following chemicals are added as needed: Chlorine, Fluoride and Caustic Soda. From the clearwell, finished water is pumped into the TCJMA distribution system.

Blowdown sludge from the solids contact clarifier, sedimentation basin flow along with filter backwash water all gravity flow to the wastewater pump station to be pumped to the sludge thickener. Supernatant from the sludge thickener then is discharged at Outfall 001 back into the Monongahela River.

Residual waste disposal must meet solid waste regulations.

Part C language in the draft permit provides controls on floating solids, chemical additives, residual solids, Total Residual Chlorine and Sedimentation Basin Cleaning.

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Curtis Holes, P.E. / Environmental Engineer | February 24, 2023 |
| X | | Michael E. Fifth, P.E. / Environmental Engineer Manager | March 3, 2023 |

**Summary of Review**

The facility does not have any open violations with the Clean Water Program.

It is recommended that a draft permit be published for public comment in response to this application.

Public Participation

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

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

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.0346 |
| Latitude | 39º 59' 26" | Longitude | -79º 59' 36" |
| Quad Name | Carmichaels | Quad Code | 1906 |
| Wastewater Description: | Supernatant from treated filter backwash and blowdown sludge from the clarifier and settling basin. | | |

| | | | |
|---|---|---|---|
| Receiving Waters | Monongahela River (WWF) | Stream Code | 37185 |
| NHD Com ID | 99412970 | RMI | 65.26 |
| Drainage Area | 4,950 | Yield (cfs/mi$^2$) | 0.107 |
| $Q_{7-10}$ Flow (cfs) | 530 | $Q_{7-10}$ Basis | US Army Cop of Engineers |
| Elevation (ft) | 765 | Slope (ft/ft) | |
| Watershed No. | 19-C | Chapter 93 Class. | WWF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Attaining Use(s) | | |
| Cause(s) of Impairment | PCB and Chlordane | | |
| Source(s) of Impairment | Runoff through contaminated ground water and surface water. | | |
| TMDL Status | Final | Name | Monongahela River TMDL |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | PAWAC – Brownsville (3 MGD) | | |
| PWS Waters | Monongahela River | Flow at Intake (cfs) | 530 |
| PWS RMI | 57.54 | Distance from Outfall (mi) | 7.72 |

Changes Since Last Permit Issuance: None

**Figure 1: Basin Delineation for Outfall 001**

| Compliance History | |
|---|---|
| | |
| **Summary of DMRs:** | All monitoring data shows that discharges have been below effluent limits. |
| **Summary of Inspections:** | The last inspection conducted by the Department was on September 17, 2021 by Howard Dunn and no violations were noted. |

Other Comments: **None**

## Compliance History

**DMR Data for Outfall 001 (from January 1, 2022 to December 31, 2022)**

| Parameter | Limit | DEC-22 | NOV-22 | OCT-22 | SEP-22 | AUG-22 | JUL-22 | JUN-22 | MAY-22 | APR-22 | MAR-22 | FEB-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | **Report** | 0.048 | 0.049 | 0.036 | 0.035 | 0.033 | 0.029 | 0.034 | 0.039 | 0.0348 | 0.033 | 0.042 |
| Flow (MGD) Daily Maximum | **Report** | 0.249 | 0.181 | 0.127 | 0.152 | 0.176 | 0.113 | 0.119 | 0.121 | 0.151 | 0.218 | 0.100 |
| pH (S.U.) Daily Minimum | **6.0** | 7.51 | 7.31 | 7.38 | 7.35 | 7.11 | 7.24 | 7.10 | 7.39 | 7.39 | 7.38 | 7.14 |
| pH (S.U.) Daily Maximum | **9.0** | 7.55 | 7.49 | 7.41 | 7.39 | 7.13 | 7.27 | 7.28 | 7.56 | 7.49 | 7.41 | 7.15 |
| TRC (mg/L) Average Monthly | **0.5** | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.15 | 0.10 | 0.10 | 0.05 | 0.15 |
| TRC (mg/L) Daily Maximum | **1.0** | 0.10 | 0.10 | 0.11 | 0.10 | 0.10 | 0.10 | 0.19 | 0.10 | 0.10 | 0.11 | 0.20 |
| TSS (mg/L) Average Monthly | **30.0** | 3.0 | 5.5 | 3.0 | 3.0 | 6.0 | 3.0 | 6.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| TSS (mg/L) Daily Maximum | **60.0** | 3.0 | 8.0 | 3.0 | 3.0 | 8.0 | 3.0 | 8.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Total Aluminum (mg/L) Average Monthly | **4.0** | 0.22 | 0.42 | 0.23 | 0.18 | 0.39 | 0.28 | 0.29 | 0.17 | 0.10 | 0.21 | 0.10 |
| Total Aluminum (mg/L) Daily Maximum | **8.0** | 0.34 | 0.74 | 0.31 | 0.19 | 0.50 | 0.41 | 0.47 | 0.24 | 0.10 | 0.25 | 0.10 |
| Total Iron (mg/L) Average Monthly | **2.0** | 0.04 | 0.02 | 0.06 | 0.03 | 0.05 | 0.02 | 0.03 | 0.02 | 0.02 | 0.07 | 0.02 |
| Total Iron (mg/L) Daily Maximum | **4.0** | 0.06 | 0.07 | 0.07 | 0.04 | 0.06 | 0.04 | 0.06 | 0.09 | 0.02 | 0.06 | 0.02 |
| Total Manganese (mg/L) Average Monthly | **1.0** | 0.05 | 0.12 | 0.09 | 0.07 | 0.11 | 0.10 | 0.10 | 0.04 | 0.06 | 0.12 | 0.03 |
| Total Manganese (mg/L) Daily Maximum | **2.0** | 0.08 | 0.20 | 0.11 | 0.07 | 0.14 | 0.12 | 0.13 | 0.05 | 0.09 | 0.18 | 0.03 |

## Development of Effluent Limitations

| | | | |
|---|---|---|---|
| **Outfall No.** | 001 | **Design Flow (MGD)** | 0.0346 |
| **Latitude** | 39º 59' 26" | **Longitude** | -79º 59' 36" |

**Wastewater Description:** Supernatant from treated filter backwash and blowdown sludge from the clarifier and settling basin.

### Technology-Based Limitations

The TCJMA WTP is not subject to Federal Effluent Limitation Guidelines (ELGs) as the SIC code is not listed under 40 CFR parts 405 through 471.

Regulatory Effluent Standards and Monitoring Requirements

The pH effluent range for all Industrial waste process and non-process discharges pursuant of 25 Pa. Code § 92a.48(a)(2) and 25 Pa. Code § 95.2 is indicated in Table 1 below.

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) and 25 Pa. Code § 95.2(1) as indicated in Table 1 below.

Pursuant to 25 Pa. Code § 95.2(4) effluent standards for industrial wastes may not contain more than 7 mg/l of dissolved iron as indicated in Table 1 below.

Pursuant to 25 Pa. Code § 92a.48(b) the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELG's or a facility specific BPJ evaluation as indicated in Table 1 below.

**Table 1. Regulatory Effluent Standards**

| Parameter | Monthly Avg. | Daily Max | IMAX |
|---|---|---|---|
| Flow (MGD) | Monitor | Monitor | ---- |
| Iron, Dissolved | ---- | ---- | 7.0 mg/l |
| pH (S.U.) | 6-9 at all times | ---- | ---- |
| TRC | 0.5 mg/l | ---- | 1.6 mg/l |

Total Dissolved Solids

Integral to the implementation of 25 Pa. Code § 95.10 is the principle that existing, authorized mass loadings of TDS are exempt from any treatment requirements under these provisions. Existing mass loadings of TDS up to and including the maximum daily discharge loading for any existing discharge, provided that the loading was authorized prior to August 21, 2010 are exempt. Discharge loadings of TDS authorized by the Department are typically exempt from the treatment requirements of Chapter 95.10 until the net TDS loading is increased, an existing discharge proposes a hydraulic expansion or a change in the waste stream. If there are existing mass or production-based TDS effluent limits, then these are used as the basis for the existing mass loading. The facility is not new or expanding waste loading of TDS, therefore, the facility is exempt from 25 Pa. Code § 95.10 treatment requirements.

Best Practicable Control Technology Currently Achievable (BPT)

The Department's reference document *Technology-Based Control Requirements for Water Treatment Plant Wastes* (DEP-ID 362-2183-003) established BPT for discharges of WTPs wastewater, which are illustrated in Table 2 below.

**Table 2. BPT Limits for WTP Filter Backwash Wastewater**

| Parameter | Monthly Avg. (mg/l) | Daily Max (mg/l) |
|---|---|---|
| Total Suspended solids | 30.0 | 60.0 |
| Iron (total) | 2.0 | 4.0 |
| Aluminum (total) | 4.0 | 8.0 |
| Manganese (total) | 1.0 | 2.0 |
| Flow | Monitor | ---- |
| pH (S.U.) | 6-9 at all times | |
| Total Residual Chlorine | 0.5 | 1.0 |

## Water Quality-Based Limitations

Toxics Management Analysis

The Department's Toxics Management Spreadsheet (TMS) was utilized to facilitate calculations necessary for completing a reasonable potential analysis and determine Water Quality-Based Effluent Limitations (WQBELs) for discharges containing toxic pollutant concentrations. TMS combines the functionality of two (2) of the Department's analysis tools, Toxics Screening Analysis Spreadsheet and PENTOXSD water quality model.

DEP's procedures for evaluating reasonable potential are as follows:

1. For IW discharges, the design flow to use in modeling is the average flow during production or operation and may be taken form the permit application.

2. Perform a Toxics Screening Analysis to identify toxic pollutants of concern. All toxic pollutants, as reported in the permit application or on DMRs, are modeled by the TMS to determine the parameters of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion].

    - Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. Establish an IMAX limit at 2.5 times the average monthly limit.

    - For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

    - For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and contained in the DMRs; data from those sources are used as inputs into the TMS. A summary of TMS Inputs is contained in Table 3 below.

**Table 3. TMS Inputs**

| Parameter | Value |
|---|---|
| **Discharge Inputs** | |
| Facility | TCJMA WTP |
| Evaluation Type | Industrial |
| NPDES Permit No. | PA0253120 |
| Wastewater Description | Filter Backwash |
| Outfall ID | 001 |
| Design Flow (MGD) | 0.0346 |
| Hardness ($^{mg}/_{L}$) | 88 |
| pH (S.U.) | 7 |
| Partial Mix Factors | Unknown – Calculated by TMS |
| Complete Mix Times | |
| $Q_{7-10}$ (min) | |
| $Q_h$ (min) | |
| **Stream Inputs** | |
| Receiving Surface Water | Monongahela River |
| Number of Reaches to Model | 1 |
| Stream Code | 037185 |
| RMI | 65.2 |
| Elevation (ft) | 765/764* |
| Drainage Area ($mi^2$) | 4,950 |
| Slope (ft/ft) | |
| PWS Withdrawal (MGD) | 3 |
| Apply Fish Criteria | Yes |
| Low Flow Yield ($cfs/mi^2$) | |
| Flows | |
| Stream (cfs) | 530 |
| Tributary (cfs) | N/A |
| Width (ft) | |
| Stream Hardness ($^{mg}/_{L}$) | 100 |
| Stream pH (S.U.) | 7.0 |

***** Denotes discharge location/downstream location values.

Based on the recommendations of the TMS, one WQBEL is recommended at Outfall 001 for monitor and report of total aluminum. Analysis Report from the TMS run is included in Attachment A.

Total Maximum Daily Load (TMDL)

Wastewater discharges from TCJMA WTP are located within the Monongahela River Watersheds for which the Department has developed a TMDL. The TMDL was finalized on March 1, 1999 and establishes waste load allocations for the discharge of PCBs and Chlordane within the Monongahela River Watersheds. Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (codified at Title 40 of the *Code of Federal Regulations* Part 130) require states to develop a TMDL for impaired water bodies. A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding the water quality criteria for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and non-point sources to restore and maintain the quality of the state's water resources (USEPA 1991a). The reduction needed to meet the minimum water quality standards is then divided between each known point and non-point pollutant source in the form of a watershed allocation. TMDLs prescribe allocations that minimally achieve water quality criteria (i.e., 100 percent use of a stream's assimilative capacity).

The TMDLs for the Monongahela River are summarized below in Table 4.

**Table 4: Monongahela River TMDL Summary**

| Pollutant | TMDL | WLA | LA | MOS |
|---|---|---|---|---|
| PCB | 0.0003033 lbs/day | 0 | 0.0002730 lbs/day | 0.00003033 lbs/day |
| Chlordane | 0.0037912 lbs/day | 0 | 0.0034121 lbs/day | 0.00037912 lbs/day |

TCJMA does not generate or discharge wastewaters containing PCBs or Chlordane; accordingly, the Monongahela River TMDLs are not imposed on TCJMA.

WQM 7.0 Model

In general, WQM 7.0 Model is run if the maximum $BOD_5$/$CBOD_5$ concentrations exceeds 30/25 mg/L respectively in the permit application or the DMRs. The permit application reports $BOD_5$/$CBOD_5$ concentrations of <3/<10 mg/L respectively, therefore, WQM 7.0 Model is not required to be run.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and discharge chlorine demands for the receiving stream, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is then proposed. The results of the modeling, included in Attachment B, indicate that no WQBELs are required for TRC.

**Anti-Backsliding**

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 (l) 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). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

The facility is not seeking to revise the previously permitted effluent limits.

**Effluent Limitations and Monitoring Requirements for Outfall 001**

Effluent limits applicable at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 5. The applicable limits and monitoring requirements provided below are based on those in Tables 1 and 2 of this Fact Sheet.

**Table 5. Effluent limits and monitoring requirements for Outfall 001**

| Parameter | Mass (pounds) | | Concentration (mg/L) | | | Basis |
|---|---|---|---|---|---|---|
| | Average Monthly | Daily Maximum | Average Monthly | Daily Maximum | Instant Maximum | |
| Flow (MGD) | Report | Report | — | — | — | 25 Pa. Code § 92a.61(b) |
| Total Residual Chlorine | — | — | 0.5 | 1.0 | 1.6 | 25 Pa. Code § 92a.48(b) |
| Total Suspended Solids | — | — | 30.0 | 60.0 | — | 40 CFR § 125.3 |
| Iron (total) | — | — | 2.0 | 4.0 | — | 40 CFR § 125.3 |
| Aluminum (total) | — | — | 4.0 | 8.0 | — | 40 CFR § 125.3 |
| Manganese (total) | — | — | 1.0 | 2.0 | — | 40 CFR § 125.3 |
| pH (S.U.) | Within the range of 6.0 to 9.0 | | | | | 25 Pa. Code § 92a.48(a)(2) & 25 Pa. Code § 95.2 |

**Monitoring Frequency for Outfall 001**

Monitoring requirements are based on the previous permits monitoring requirements for TCJMA WTF and displayed in Table 6 below.

**Table 6. Monitoring Requirements for Outfall 001**

| Parameter | Sample Type | Minimum Sample Frequency |
|---|---|---|
| Flow (MGD) | Meter | 2/Month |
| TRC | Grab | 2/Month |
| TSS | Grab | 2/Month |
| Iron (total) | Grab | 2/Month |
| Aluminum (total) | Grab | 2/Month |
| Manganese (total) | Grab | 2/Month |
| pH (S.U.) | Grab | 2/Month |

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☐ | WQM for Windows Model (see Attachment ) |
| ☒ | Toxics Management Spreadsheet (see Attachment **C**) |
| ☒ | TRC Model Spreadsheet (see Attachment **D** ) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☐ | Water Quality Toxics Management Strategy, 361-0100-003, 4/06. |
| ☐ | Technical Guidance for the Development and Specification of Effluent Limitations, 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. |
| ☐ | SOP: |
| ☐ | Other: |

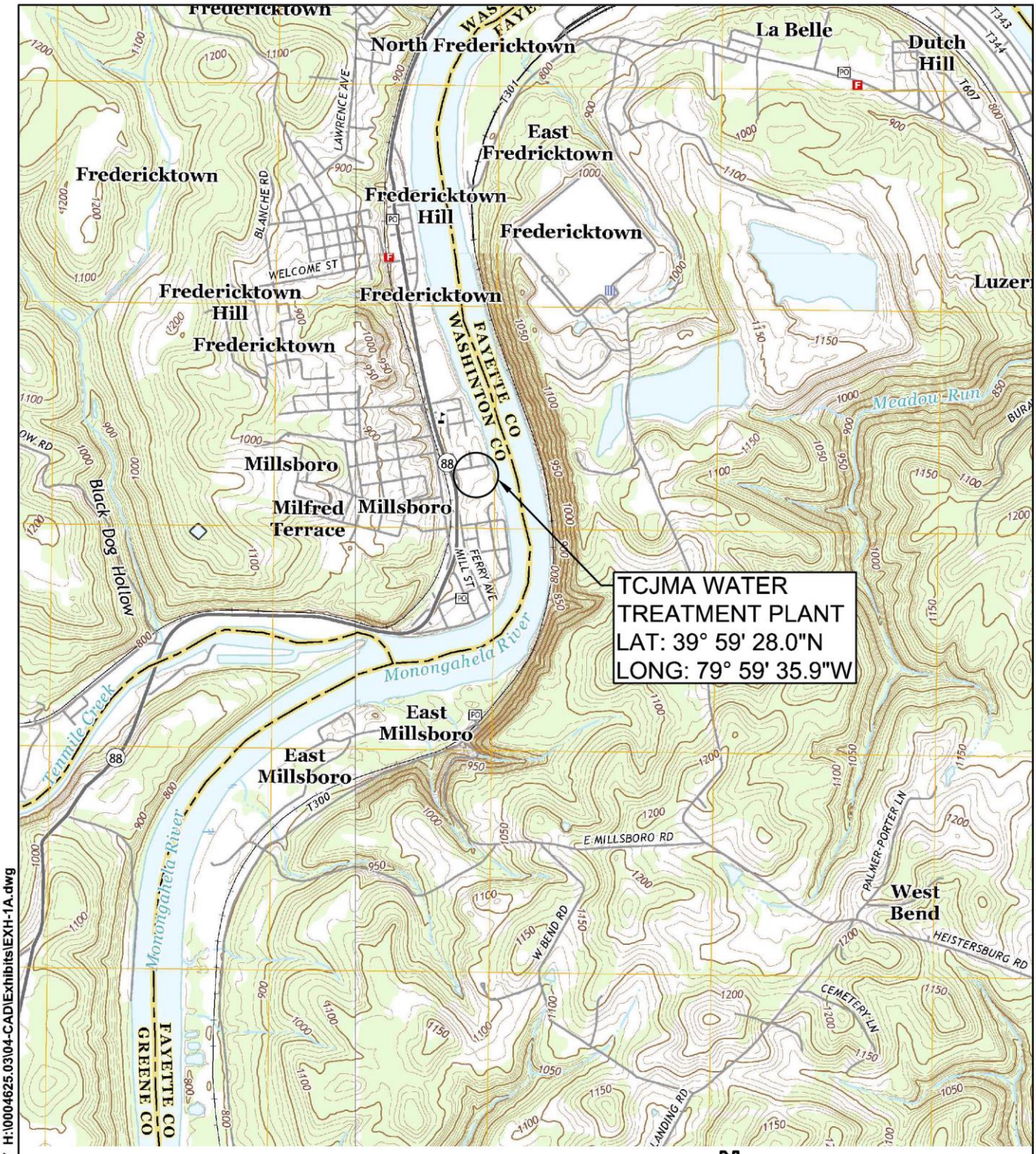
**Attachment A – Facility Location Map**

**Attachment B – Treatment Pant Process Flow Schematic**

**Attachment C – TMS Output for Outfall 001**

**Attachment D – TRC Model**

## Attachment A – Facility Location Map

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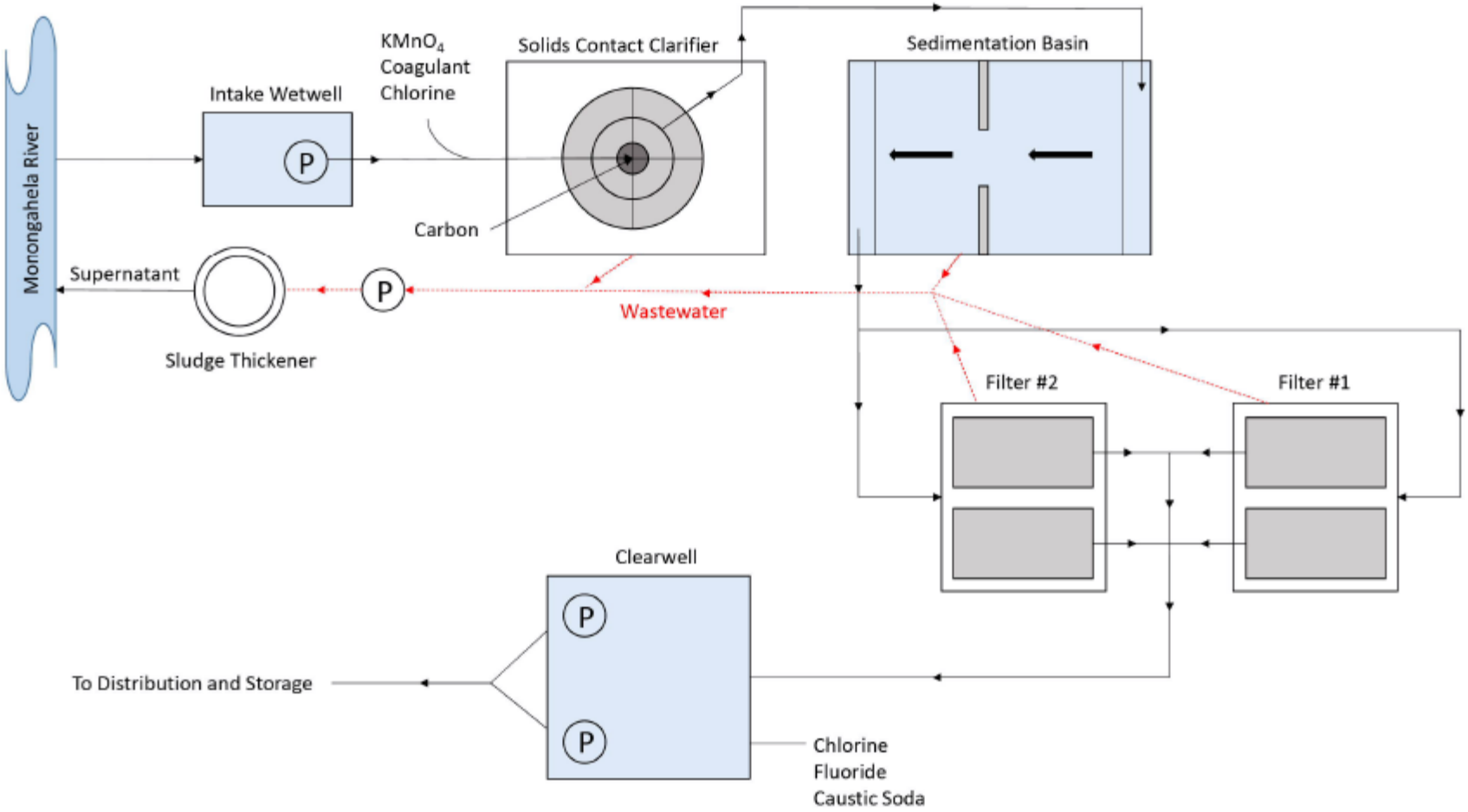
TRI COUNTY JOINT MUNICIPAL AUTHORITY
MILLSBORO, WASHINGTON COUNTY, PENNSYLVANIA
TCJMA WATER TREATMENT PLANT - NPDES Permit Renewal
LOCATION EXHIBIT

| | |
|---|---|
| DATE: 09/05/17 | SCALE: AS NOTED |
| PREPARED BY: PDM | PROJECT NO. 4625.03 |
| CHECKED BY: XXX | DRAWING NO. EXH-1 |
| APPROVED BY: XXX | |


Tri-County Joint Municipal Authority
Aerial Site Plan
Legend
Emery Ave
Hamory Ave
Monongahela Ave
Sludge Thickener
Outfall 001
Raw Water Pump Station
TCJMA Administrative Offices
Filter and Chemical Building
Raw Water Intake
Solids Contact Clarifier
Clearwell (Below Grade)
Sedimentation Basins
Google Earth
© 2018 Google
N
200 ft

## Attachment B – Treatment Pant Process Flow Schematic




# Tri-County Joint Municipal Authority (TCJMA) Water Treatment Plant Process Flow Schematic

## Attachment C – TMS Output for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

## Model Results

**TCJMA WTP, NPDES Permit No. PA0253120, Outfall 001**

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.047 Analysis Hardness (mg/l): 99.974 Analysis pH: 7.00

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | 750 | 750 | 352,917 | |
| Total Antimony | 0 | 0 | | 0 | 1,100 | 1,100 | 517,612 | |
| Total Arsenic | 0 | 0 | | 0 | 340 | 340 | 159,989 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 21,000 | 21,000 | 9,881,677 | |
| Total Boron | 0 | 0 | | 0 | 8,100 | 8,100 | 3,811,504 | |
| Total Cadmium | 0 | 0 | | 0 | 2.013 | 2.13 | 1,004 | Chem Translator of 0.944 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 569.644 | 1,803 | 848,258 | Chem Translator of 0.316 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 16 | 16.3 | 7,667 | Chem Translator of 0.982 applied |
| Total Cobalt | 0 | 0 | | 0 | 95 | 95.0 | 44,703 | |
| Total Copper | 0 | 0 | | 0 | 13.436 | 14.0 | 6,586 | Chem Translator of 0.96 applied |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | 64.563 | 81.6 | 38,406 | Chem Translator of 0.791 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 1.400 | 1.65 | 775 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 468.135 | 469 | 220,725 | 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 | 3.215 | 3.78 | 1,780 | Chem Translator of 0.85 applied |
| Total Thallium | 0 | 0 | | 0 | 65 | 65.0 | 30,586 | |
| Total Zinc | 0 | 0 | | 0 | 117.155 | 120 | 56,388 | Chem Translator of 0.978 applied |

☑ ***CFC*** CCT (min): 720 PMF: 0.329 Analysis Hardness (mg/l): 99.996 Analysis pH: 7.00

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 220 | 220 | 715,920 | |
| Total Arsenic | 0 | 0 | | 0 | 150 | 150 | 488,127 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 4,100 | 4,100 | 13,342,137 | |
| Total Boron | 0 | 0 | | 0 | 1,600 | 1,600 | 5,206,688 | |
| Total Cadmium | 0 | 0 | | 0 | 0.246 | 0.27 | 881 | Chem Translator of 0.909 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 74.112 | 86.2 | 280,436 | Chem Translator of 0.86 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 10 | 10.4 | 33,827 | Chem Translator of 0.962 applied |
| Total Cobalt | 0 | 0 | | 0 | 19 | 19.0 | 61,829 | |
| Total Copper | 0 | 0 | | 0 | 8.955 | 9.33 | 30,357 | Chem Translator of 0.96 applied |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | 1,500 | 1,500 | 14,854,040 | WQC = 30 day average; PMF = 1 |
| Total Lead | 0 | 0 | | 0 | 2.517 | 3.18 | 10,353 | Chem Translator of 0.791 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 0.770 | 0.91 | 2,948 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 52.005 | 52.2 | 169,743 | 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 | 16,236 | 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 | 42,304 | |
| Total Zinc | 0 | 0 | | 0 | 118.135 | 120 | 389,892 | Chem Translator of 0.986 applied |

☑ ***THH*** CCT (min): 720 PMF: 0.329 Analysis Hardness (mg/l): N/A Analysis pH: N/A

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | 500,000 | 500,000 | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | 250,000 | 250,000 | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | 250,000 | 250,000 | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | 2,000 | 2,000 | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 5.6 | 5.6 | 18,223 | |
| Total Arsenic | 0 | 0 | | 0 | 10 | 10.0 | 32,542 | |
| Total Barium | 0 | 0 | | 0 | 2,400 | 2,400 | 7,810,031 | |
| Total Boron | 0 | 0 | | 0 | 3,100 | 3,100 | 10,087,957 | |
| Total Cadmium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Chromium (III) | 0 | 0 | | 0 | N/A | N/A | N/A | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Cobalt | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Copper | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Dissolved Iron | 0 | 0 | | 0 | 300 | 300 | 976,254 | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Manganese | 0 | 0 | | 0 | 1,000 | 1,000 | 3,254,180 | |
| Total Mercury | 0 | 0 | | 0 | 0.050 | 0.05 | 163 | |
| Total Nickel | 0 | 0 | | 0 | 610 | 610 | 1,985,050 | |
| 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 | 781 | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ ***CRL*** CCT (min): 720 PMF: 0.491 Analysis Hardness (mg/l): N/A Analysis pH: N/A

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Arsenic | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Barium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Boron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Cadmium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Chromium (III) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Hexavalent Chromium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Cobalt | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Copper | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Nickel | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Selenium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Silver | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Thallium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

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

**No. Samples/Month:** 4

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

☑ ***Other Pollutants without Limits or Monitoring***

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

| Pollutants | Governing WQBEL | Units | Comments |
|---|---|---|---|
| Total Dissolved Solids (PWS) | N/A | N/A | PWS Not Applicable |
| Chloride (PWS) | N/A | N/A | PWS Not Applicable |
| Bromide | N/A | N/A | No WQS |
| Sulfate (PWS) | N/A | N/A | PWS Not Applicable |
| Fluoride (PWS) | N/A | N/A | Discharge Conc < TQL |
| Total Aluminum | 226,206 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Antimony | N/A | N/A | Discharge Conc < TQL |
| Total Arsenic | 32,542 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Barium | 6,333,756 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium | N/A | N/A | No WQS |
| Total Boron | 2,443,020 | µg/L | Discharge Conc < TQL |
| Total Cadmium | 643 | µg/L | Discharge Conc < TQL |
| Total Chromium (III) | 280,436 | µg/L | Discharge Conc < TQL |
| Hexavalent Chromium | 4,914 | µg/L | Discharge Conc < TQL |
| Total Cobalt | 28,653 | µg/L | Discharge Conc < TQL |
| Total Copper | 4,221 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cyanide | N/A | N/A | No WQS |
| Dissolved Iron | 976,254 | µg/L | Discharge Conc < TQL |
| Total Iron | 14,854,040 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead | 10,353 | µg/L | Discharge Conc < TQL |
| Total Manganese | 3,254,180 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Mercury | 163 | µg/L | Discharge Conc < TQL |
| Total Nickel | 141,476 | µg/L | Discharge Conc < TQL |
| Total Phenols (Phenolics) (PWS) | | µg/L | Discharge Conc < TQL |
| Total Selenium | 16,236 | µg/L | Discharge Conc < TQL |
| Total Silver | 1,141 | µg/L | Discharge Conc < TQL |
| Total Thallium | 781 | µg/L | Discharge Conc < TQL |
| Total Zinc | 36,130 | µg/L | Discharge Conc < TQL |

# Attachment D – TRC Model

TCJMA TRC_CALC

## TRC EVALUATION

| | | | |
|---|---|---|---|
| 381 | = Q stream (cfs) | 0.5 | = CV Daily |
| 0.0346 | = Q discharge (MGD) | 0.5 | = CV Hourly |
| 4 | = no. samples | 0.705 | = AFC_Partial Mix Factor |
| 0.3 | = Chlorine Demand of Stream | 1 | = CFC_Partial Mix Factor |
| 0 | = Chlorine Demand of Discharge | 15 | = AFC_Criteria Compliance Time (min) |
| 0.5 | = BAT/BPJ Value | 720 | = CFC_Criteria Compliance Time (min) |
| | = % Factor of Safety (FOS) | | =Decay Coefficient (K) |

| Source | Reference | AFC Calculations | Reference | CFC Calculations |
|---|---|---|---|---|
| TRC | 1.3.2.iii | WLA afc = 1600.824 | 1.3.2.iii | WLA cfc = 2213.712 |
| PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | 5.1c | LTAMULT cfc = 0.581 |
| PENTOXSD TRG | 5.1b | LTA_afc= 596.505 | 5.1d | LTA_cfc = 1286.948 |

| Source | | Effluent Limit Calculations | |
|---|---|---|---|
| PENTOXSD TRG | 5.1f | AML MULT = 1.720 | |
| PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.500 | BAT/BPJ |
| | | INST MAX LIMIT (mg/l) = 1.170 | |

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