Pennsylvania Department of Environmental Protection

**Southcentral Regional Office**
**CLEAN WATER PROGRAM**

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0247201** |
| Facility Type | **Industrial** | APS ID | **488519** |
| Major / Minor | **Minor** | Authorization ID | **1460256** |

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

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **City of Lancaster** | Facility Name | **Susquehanna Water Treatment Plant** |
| Applicant Address | 120 N Duke Street, PO Box 1599 | Facility Address | 900 S 15th Street |
| | Lancaster, PA 17608-1599 | | Columbia, PA 17512 |
| Applicant Contact | Jeremy Brumbach | Facility Contact | Jeremy Brumbach |
| Applicant Phone | (717) 844-4463 | Facility Phone | (717) 844-4463 |
| Client ID | 210852 | Site ID | 618478 |
| SIC Code | 4941 | Municipality | West Hempfield Township |
| SIC Description | Trans. & Utilities - Water Supply | County | Lancaster |
| Date Application Received | October 31, 2023 | EPA Waived? | Yes |
| Date Application Accepted | November 8, 2023 | If No, Reason | |

Purpose of Application: NPDES Renewal.

## Summary of Review

City of Lancaster has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The existing permit was issued April 30, 2019, and became effective on May 1, 2019, authorizing discharge of treated industrial wastewater from the facility into Strickler Run. The existing permit expiration date was April 30, 2024, and the permit has been administratively extended since that time.

Changes in this renewal: Dissolved Iron monitoring has been added to the permit.

Sludge use and disposal description and location(s): Land application

Supplemental information for this facility is provided at the end of this fact sheet.

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.

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Benjamin R. Lockwood<br>Benjamin R. Lockwood / Environmental Engineering Specialist | January 22, 2025 |
| X | | Maria D. Bebenek for<br>Daniel W. Martin, P.E. / Environmental Engineer Manager | January 28, 2025 |

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

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 2.2 |
| Latitude | 40º 1' 25" | Longitude | 76º 28' 50" |
| Quad Name | | Quad Code | |
| Wastewater Description: | Water Treatment Effluent | | |
| Receiving Waters | Strickler Run (WWF) | Stream Code | 7875 |
| NHD Com ID | 57465349 | RMI | 1.52 |
| Drainage Area | 5.75 $mi^2$ | Yield ($cfs/mi^2$) | |
| $Q_{7-10}$ Flow (cfs) | 0.901 | $Q_{7-10}$ Basis | USGS PA StreamStats |
| Elevation (ft) | 263 | Slope (ft/ft) | |
| Watershed No. | 7-G | Chapter 93 Class. | WWF |
| Existing Use | N/A | Existing Use Qualifier | N/A |
| Exceptions to Use | N/A | Exceptions to Criteria | N/A |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | Siltation, Cause Unknown | | |
| Source(s) of Impairment | Agriculture, Urban Runoff/Storm Sewers | | |
| TMDL Status | N/A | Name | N/A |
| Nearest Downstream Public Water Supply Intake | Safe Harbor Dam Power Plant | | |
| PWS Waters | Susquehanna River | Flow at Intake (cfs) | |
| PWS RMI | | Distance from Outfall (mi) | 11 |

Changes Since Last Permit Issuance: USGS PA StreamStats provided a drainage area of 5.75 $mi^2$ and a $Q_{7-10}$ of 0.901 cfs at the point of discharge.

Other Comments: The City of Lancaster operates a water treatment plant that withdraws 26 million gallons per day (mgd) of water from the Susquehanna River. The treatment plant was upgraded to a membrane treatment system. The membrane system backwashes to a clarifier, which discharges effluent to Strickler Run. Settled solids are sent to a centrifuge, and then land applied.

| Compliance History | |
|---|---|
| | |
| **Summary of DMRs:** | A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet. |
| **Summary of Inspections:** | 7/16/2020: An administrative inspection was conducted. The facility was operating normally, and all treatment units were online and operable. There were no outstanding issues at the facility at the time of inspection.<br><br>3/11/2024: An incident response inspection was conducted. On 3/11, approximately 55 gallons of sodium hypochlorite spilled as a result of an open isolation valve while cleaning was being performed on the inline strainers for the sodium hypochlorite pumps. The spilled material was directed to the containment pit via floor drains. An open valve in the containment pit allowed the sodium hypochlorite to enter the WTP's EQ tank where it was pumped to the clarifier before discharging to Strickler Run. Maintenance staff neutralized the sodium hypochlorite in the tanks with sodium bisulfite. At the time of DEP inspection, approximately 40 dead fish were observed along the stream bank, and a slightly turbid discharge was observed.<br><br>4/12/024: A Notice of Violation (NOV) was issued due to the fish kill that occurred on 3/11/24.<br><br>5/16/2024: A routine inspection was conducted. At the time of inspection, the EQ tank and rapid mix tank had a light brown appearance. The clarifiers were clear. A clear discharge from Outfall 001 was observed and no concerns were noted. Field testing results were within permitted limits. |

Other Comments: There are currently no open violations for this Applicant.

## Compliance History

**DMR Data for Outfall 001 (from August 1, 2023 to July 31, 2024)**

| Parameter | JUL-24 | JUN-24 | MAY-24 | APR-24 | MAR-24 | FEB-24 | JAN-24 | DEC-23 | NOV-23 | OCT-23 | SEP-23 | AUG-23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 1.45594 | 1.4722 | 1.36819 | 1.231777 | 1.28352 | 1.34938 | 1.28903 | 1.26365 | 1.2634 | 1.20945 | 1.46137 | 1.42245 |
| Flow (MGD) Daily Maximum | 1.579 | 1.644 | 1.498 | 1.504 | 1.468 | 1.492 | 1.475 | 1.513 | 1.499 | 1.460 | 1.721 | 1.692 |
| pH (S.U.) Instantaneous Minimum | 7.3 | 7.1 | 6.9 | 7.0 | 6.2 | 6.7 | 6.4 | 6.8 | 7.0 | 6.8 | 7.3 | 7.2 |
| pH (S.U.) Instantaneous Maximum | 7.6 | 7.6 | 7.6 | 7.7 | 7.6 | 7.6 | 7.3 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 |
| TRC (lbs/day) Average Monthly | 0.385165384 | 0.3669802 | 0.44146045 | 0.43602898 | 0.44049694 | 0.49202763 | 0.42539728 | 0.40115435 | 0.40625048 | 0.32782186 | 0.49834552 | 0.49799562 |
| TRC (mg/L) Average Monthly | 0.032 | 0.030 | 0.039 | 0.042 | 0.0412 | 0.04 | 0.040 | 0.038 | 0.04 | 0.033 | 0.041 | 0.042 |
| TRC (mg/L) Instantaneous Maximum | 0.09 | 0.09 | 0.09 | 0.09 | 0.357 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.09 | 0.08 |
| TSS (lbs/day) Average Monthly | < 60.71250968 | < 53.7168975 | < 115.2484154 | 101.4452233 | 73.59360605 | < 66.77370538 | < 83.3166 | 66.13097405 | < 65.3278872 | < 40.34730581 | < 67.94697385 | < 62.87520619 |
| TSS (lbs/day) Daily Maximum | 92.074 | 68.5548 | 178.3926 | 148.75224 | 114.5916 | 120.27114 | 129.76623 | 92.08611 | 105.8346 | < 48.7056 | 98.7039 | 104.7504 |
| TSS (mg/L) Average Monthly | < 5 | < 4.38 | < 10.10 | 9.88 | 6.9 | < 6.20 | < 7.75 | 6.3 | < 6.20 | < 4.0 | < 5.58 | < 5.30 |
| TSS (mg/L) Daily Maximum | 8 | 5.0 | 15.0 | 14.0 | 10.0 | 11.0 | 11.5 | 8.5 | 10.8 | < 4.0 | 7.5 | 8.0 |
| Total Aluminum (lbs/day) Average Monthly | 6.499274161 | 4.466176335 | 6.10702494 | 7.096029161 | 5.99720986 | 5.388330667 | 8.288657884 | < 3.504151215 | 11.76692226 | 4.990457387 | 8.232857549 | 6.256676179 |
| Total Aluminum (lbs/day) Daily Maximum | 9.87 | 5.9778488 | 10.12075 | 12.029142 | 11.917526 | 8.7688857 | 16.361829 | 5.557614 | 18.03155 | 6.916166 | 12.018374 | 7.2312023 |
| Total Aluminum (mg/L) Average Monthly | 0.535 | 0.364 | 0.535 | 0.691 | 0.5603 | 0.4788 | 0.7710 | < 0.3325 | 1.12 | 0.4975 | 0.676 | 0.5274 |
| Total Aluminum (mg/L) Daily Maximum | 0.75 | 0.483 | 0.851 | 0.959 | 1.04 | 0.802 | 1.45 | 0.513 | 1.84 | 0.568 | 0.883 | 0.618 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Iron (lbs/day) Average Monthly | < 2.155294094 | < 2.019755346 | < 3.032973149 | 3.919124321 | 3.002619127 | 2.896764743 | 3.601427226 | < 1.889080016 | 2.436624825 | < 1.457546422 | 2.318728857 | < 1.471042256 |
| Total Iron (lbs/day) Daily Maximum | 3.856 | 4.2565418 | 5.1769968 | 8.2410176 | 5.1107304 | 5.3241576 | 4.9467056 | 2.9900382 | 3.625815 | 2.642308 | 3.3754656 | 1.9423132 |
| Total Iron (mg/L) Average Monthly | < 0.178 | < 0.165 | < 0.266 | 0.382 | 0.281 | 0.2654 | 0.335 | < 0.179 | 0.231 | < 0.145 | 0.190 | < 0.124 |
| Total Iron (mg/L) Daily Maximum | 0.293 | 0.336 | 0.424 | 0.657 | 0.446 | 0.487 | 0.527 | 0.276 | 0.370 | 0.217 | 0.248 | 0.166 |
| Total Manganese (lbs/day) Average Monthly | < 0.0375 | 4.797686331 | 0.677797611 | 0.82440295 | 0.454942292 | 0.661724819 | 0.481086174 | 0.368858023 | < 0.123806883 | < 0.123563624 | < 0.152347475 | < 0.147104256 |
| Total Manganese (lbs/day) Daily Maximum | 0.5524 | 14.31536 | 0.8766092 | 1.4769482 | 0.633647 | 1.0387053 | 0.5754309 | 0.7583562 | 0.1803568 | 0.1791562 | 0.2177088 | 0.2331053 |
| Total Manganese (mg/L) Average Monthly | < 0.0375 | 0.391 | 0.0594 | 0.0803 | 0.0425 | 0.05880 | 0.0448 | 0.035 | < 0.01175 | < 0.01225 | < 0.012500 | < 0.012 |
| Total Manganese (mg/L) Daily Maximum | 0.048 | 1.13 | 0.082 | 0.139 | 0.058 | 0.095 | 0.051 | 0.07 | 0.016 | 0.016 | 0.016 | 0.018 |

## Compliance History

**Effluent Violations for Outfall 001, from: September 1, 2023 To: July 31, 2024**

| Parameter | Date | SBC | DMR Value | Units | Limit Value | Units |
|---|---|---|---|---|---|---|
| TRC | 03/31/24 | IMAX | 0.357 | mg/L | .16 | mg/L |
| Total Aluminum | 11/30/23 | Avg Mo | 1.12 | mg/L | .75 | mg/L |
| Total Aluminum | 01/31/24 | Avg Mo | 0.7710 | mg/L | .75 | mg/L |
| Total Aluminum | 11/30/23 | Daily Max | 1.84 | mg/L | 1.5 | mg/L |

**Existing Effluent Limitations and Monitoring Requirements**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) | | Concentrations (mg/L) | | | | Minimum Measurement Frequency | Required Sample Type |
| | Average Monthly | Daily Maximum | Minimum | Average Monthly | Daily Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | Report | XXX | XXX | XXX | XXX | Continuous | Measured |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | XXX | 9.0 | 1/day | Grab |
| Total Residual Chlorine (TRC) | 0.9 | XXX | XXX | 0.05 | XXX | 0.16 | 1/day | Grab |
| Total Suspended Solids | Report | Report | XXX | 30 | 60 | 75 | 1/week | 8-Hr Composite |
| Aluminum, Total | 13.6 | 27.3 | XXX | 0.75 | 1.5 | 1.9 | 1/week | 8-Hr Composite |
| Iron, Total | 34.5 | 69.1 | XXX | 1.9 | 3.8 | 4.8 | 1/week | 8-Hr Composite |
| Manganese, Total | Report | Report | XXX | 1.0 | 2.0 | 2.5 | 1/week | 8-Hr Composite |

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

**Development of Effluent Limitations**

| | | | |
|---|---|---|---|
| **Outfall No.** | 001 | **Design Flow (MGD)** | 2.2 |
| **Latitude** | 40º 1' 25" | **Longitude** | 76º 28' 50" |

**Wastewater Description:** Water Treatment Effluent

**pH**

PA Code 95.2(1) requires effluent pH limits of not less than 6.0 and not greater than 9.0 at all times in the effluent. The permit will continue to require pH limits of 6.0 to 9.0 SU.

**Toxics**

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.3 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. Based on effluent sample results reported on the application, limits are necessary for Total Aluminum, and monitoring is required for Dissolved Iron, Total Iron, and Total Manganese. Default stream pH and hardness inputs were used for this model run. This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. Spreadsheet results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

Since the reported maximum concentration was greater than 50% of the respective WQBEL, per DEP's SOP No. BPNPSM-PMT-033, limits are required for Total Aluminum. The WQBEL developed for Total Aluminum was an average monthly of 0.75 mg/l, which is the same as the existing permit limit. Limits are already imposed in the existing permit for Total Iron and Total Manganese, which will remain in the renewal. Dissolved Iron monitoring will be added to the permit, with the same sample type and frequency of the other parameters.

**Total Dissolved Solids**

DEP's SOP No. BPNPSM-PMT-032 recommends monitoring for TDS when the discharge concentrations exceed 1,000 mg/l. The maximum effluent sampling result reported in the application for TDS is 203 mg/l. Based upon this data, TDS monitoring will not be required as part of the renewal.

**Chesapeake Bay Total Maximum Daily Load (TMDL)**

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. A new update to the WIP was published as the Phase 3 WIP in August 2019. As part of the Phase 3 WIP, a *Phase 3 Watershed Implementation Plan Wastewater Supplement* (Phase 3 Supplement) was developed, and was most recently revised on July 29, 2022, and is the basis for the development of any Chesapeake Bay related permit parameters. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream; therefore, no monitoring for TP and TN series will be required at this time.

**Total Residual Chlorine**

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The

Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.05 mg/l monthly average and 0.16 mg/l instantaneous maximum would be needed to prevent toxicity concerns. This is consistent with the existing permit limits.

**Anti-Degradation**

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

**303(d) Listed Streams**

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for siltation due to agriculture and an unknown cause due to urban runoff/storm sewers.

**Class A Wild Trout Fisheries**

No Class A Wild Trout Fisheries are impacted by this discharge.

**Anti-Backsliding**

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing

## 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" (386-0400-001), 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 | Daily Maximum | Minimum | Average Monthly | Daily Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | Report | XXX | XXX | XXX | XXX | Continuous | Measured |
| pH (S.U.) | XXX | XXX | 6.0 Inst Min | XXX | XXX | 9.0 | 1/day | Grab |
| TRC | 0.9 | XXX | XXX | 0.05 | XXX | 0.16 | 1/day | Grab |
| TSS | Report | Report | XXX | 30 | 60 | 75 | 1/week | 8-Hr Composite |
| Dissolved Iron | XXX | XXX | XXX | XXX | Report | XXX | 1/week | 8-Hr Composite |
| Total Aluminum | 13.6 | 27.3 | XXX | 0.75 | 1.5 | 1.9 | 1/week | 8-Hr Composite |
| Total Iron | 34.5 | 69.1 | XXX | 1.9 | 3.8 | 4.8 | 1/week | 8-Hr Composite |
| Total Manganese | Report | Report | XXX | 1.0 | 2.0 | 2.5 | 1/week | 8-Hr Composite |

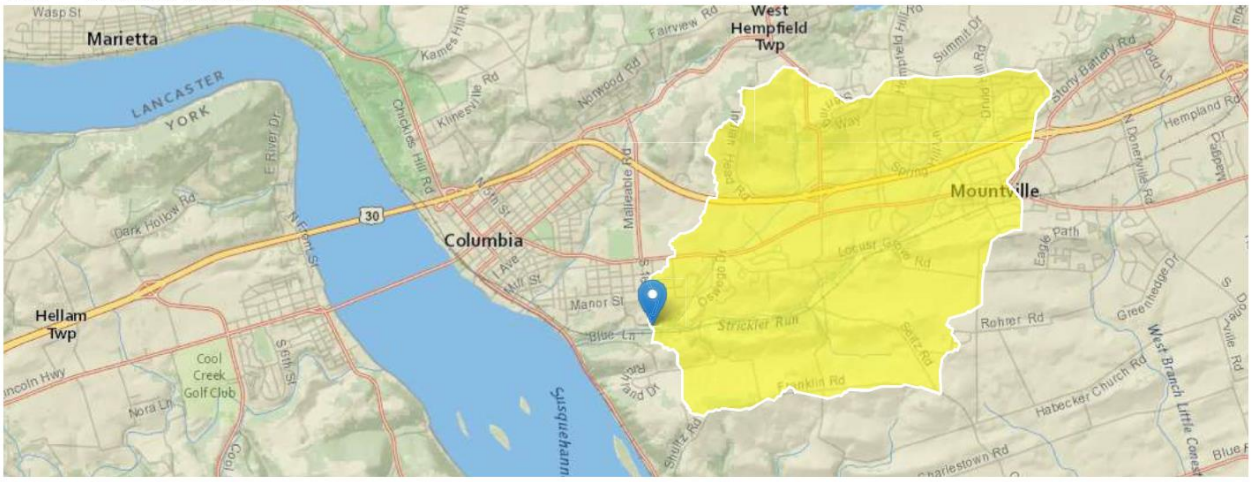
Compliance Sampling Location: Outfall 001

Other Comments: None

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☐ | WQM for Windows Model (see Attachment ) |
| ☒ | Toxics Management Spreadsheet (see Attachment ) |
| ☐ | TRC Model Spreadsheet (see Attachment ) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☒ | Water Quality Toxics Management Strategy, 361-0100-003, 4/06. |
| ☒ | Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97. |
| ☐ | Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98. |
| ☒ | Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96. |
| ☐ | Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97. |
| ☐ | Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97. |
| ☐ | Pennsylvania CSO Policy, 386-2000-002, 9/08. |
| ☐ | Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03. |
| ☐ | Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97. |
| ☒ | Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97. |
| ☐ | Implementation Guidance Design Conditions, 386-2000-007, 9/97. |
| ☐ | Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004. |
| ☐ | Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997. |
| ☐ | Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99. |
| ☒ | Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004. |
| ☐ | Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97. |
| ☐ | Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008. |
| ☐ | Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994. |
| ☐ | Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09. |
| ☐ | Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97. |
| ☐ | Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97. |
| ☐ | Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99. |
| ☐ | Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999. |
| ☐ | Design Stream Flows, 386-2000-003, 9/98. |
| ☐ | Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98. |
| ☐ | Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97. |
| ☐ | Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07. |
| ☒ | SOP: BCW-PMT-032 |
| ☐ | Other: |

## City of Lancaster Susquehanna Water Treatment Plant PA0247201 Outfall 001

**Region ID:** PA
**Workspace ID:** PA20240925154258023000
**Clicked Point (Latitude, Longitude):** 40.02395, -76.47997
**Time:** 2024-09-25 11:43:25 -0400




Collapse All

### Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| BSLOPD | Mean basin slope measured in degrees | 4.4248 | degrees |
| DRNAREA | Area that drains to a point on a stream | 5.75 | square miles |
| ROCKDEP | Depth to rock | 5.1 | feet |
| URBAN | Percentage of basin with urban development | 11.5078 | percent |

### Low-Flow Statistics

#### Low-Flow Statistics Parameters [Low Flow Region 1]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 5.75 | square miles | 4.78 | 1150 |
| BSLOPD | Mean Basin Slope degrees | 4.4248 | degrees | 1.7 | 6.4 |
| ROCKDEP | Depth to Rock | 5.1 | feet | 4.13 | 5.21 |
| URBAN | Percent Urban | 11.5078 | percent | 0 | 89 |

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 1.79 | ft^3/s | 46 | 46 |
| 30 Day 2 Year Low Flow | 2.26 | ft^3/s | 38 | 38 |
| 7 Day 10 Year Low Flow | 0.901 | ft^3/s | 51 | 51 |
| 30 Day 10 Year Low Flow | 1.16 | ft^3/s | 46 | 46 |

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 90 Day 10 Year Low Flow | 1.74 | ft^3/s | 41 | 41 |

*Low-Flow Statistics Citations*

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



Application Version: 4.24.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

## City of Lancaster Susquehanna Water Treatment Plant RMI = 0.0

**Region ID:** PA
**Workspace ID:** PA20240925154524363000
**Clicked Point (Latitude, Longitude):** 40.01777, -76.49761
**Time:** 2024-09-25 11:45:52 -0400


Collapse All

### Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| BSLOPD | Mean basin slope measured in degrees | 4.6024 | degrees |
| DRNAREA | Area that drains to a point on a stream | 6.05 | square miles |
| ROCKDEP | Depth to rock | 5.1 | feet |
| URBAN | Percentage of basin with urban development | 11.9889 | percent |

### Low-Flow Statistics

#### Low-Flow Statistics Parameters [Low Flow Region 1]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 6.05 | square miles | 4.78 | 1150 |
| BSLOPD | Mean Basin Slope degrees | 4.6024 | degrees | 1.7 | 6.4 |
| ROCKDEP | Depth to Rock | 5.1 | feet | 4.13 | 5.21 |
| URBAN | Percent Urban | 11.9889 | percent | 0 | 89 |

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 2 | ft^3/s | 46 | 46 |
| 30 Day 2 Year Low Flow | 2.5 | ft^3/s | 38 | 38 |
| 7 Day 10 Year Low Flow | 1.02 | ft^3/s | 51 | 51 |
| 30 Day 10 Year Low Flow | 1.3 | ft^3/s | 46 | 46 |

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 90 Day 10 Year Low Flow | 1.92 | ft^3/s | 41 | 41 |

*Low-Flow Statistics Citations*

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



Application Version: 4.24.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

TRC_CALC

| 1A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 2 | **TRC EVALUATION** | | | | | |
| 3 | Input appropriate values in B4:B8 and E4:E7 | | | | | |
| 4 | 0.901 | = Q stream (cfs) | | 0.5 | = CV Daily | |
| 5 | 2.2 | = Q discharge (MGD) | | 0.5 | = CV Hourly | |
| 6 | 30 | = no. samples | | 1 | = AFC_Partial Mix Factor | |
| 7 | 0.3 | = Chlorine Demand of Stream | | 1 | = CFC_Partial Mix Factor | |
| 8 | 0 | = Chlorine Demand of Discharge | | 15 | = AFC_Criteria Compliance Time (min) | |
| 9 | 0.5 | = BAT/BPJ Value | | 720 | = CFC_Criteria Compliance Time (min) | |
| | 0 | = % Factor of Safety (FOS) | | | =Decay Coefficient (K) | |
| 10 | Source | Reference | AFC Calculations | | Reference | CFC Calculations |
| 11 | TRC | 1.3.2.iii | WLA afc = 0.103 | | 1.3.2.iii | WLA cfc = 0.093 |
| 12 | PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | | 5.1c | LTAMULT cfc = 0.581 |
| 13 | PENTOXSD TRG | 5.1b | LTA_afc= 0.039 | | 5.1d | LTA_cfc = 0.054 |
| 14 | | | | | | |
| 15 | Source | | Effluent Limit Calculations | | | |
| 16 | PENTOXSD TRG | 5.1f | AML MULT = 1.231 | | | |
| 17 | PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.047 | | AFC | |
| 18 | | | INST MAX LIMIT (mg/l) = 0.155 | | | |

| | |
|---|---|
| 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)** |

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# Discharge Information

Instructions | Discharge | Stream

Facility: **Susquehanna Water Treatment Plant** NPDES Permit No.: **PA0247201** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Water Treatment Effluent**

| Discharge Characteristics | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Design Flow (MGD)* | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) | | | | Complete Mix Times (min) | |
| | | | AFC | CFC | THH | CRL | $Q_{7-10}$ | $Q_h$ |
| 2.2 | 80 | 7.9 | | | | | | |

| | | | | | *0 if left blank* | | *0.5 if left blank* | | *0 if left blank* | | | *1 if left blank* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Discharge Pollutant | Units | Max Discharge Conc | | Trib Conc | Stream Conc | Daily CV | Hourly CV | Stream CV | Fate Coeff | FOS | Criteria Mod | Chem Transl |
| Group 1 | Total Dissolved Solids (PWS) | mg/L | | 203 | | | | | | | | | |
| | Chloride (PWS) | mg/L | | 57.2 | | | | | | | | | |
| | Bromide | mg/L | < | 1 | | | | | | | | | |
| | Sulfate (PWS) | mg/L | | 34.5 | | | | | | | | | |
| | Fluoride (PWS) | mg/L | < | 0.2 | | | | | | | | | |
| Group 2 | Total Aluminum | µg/L | | 1270 | | | | | | | | | |
| | Total Antimony | µg/L | < | 0.4 | | | | | | | | | |
| | Total Arsenic | µg/L | < | 1 | | | | | | | | | |
| | Total Barium | µg/L | | 29 | | | | | | | | | |
| | Total Beryllium | µg/L | < | 0.4 | | | | | | | | | |
| | Total Boron | µg/L | < | 50 | | | | | | | | | |
| | Total Cadmium | µg/L | < | 0.1 | | | | | | | | | |
| | Total Chromium (III) | µg/L | < | 1 | | | | | | | | | |
| | Hexavalent Chromium | µg/L | | 0.33 | | | | | | | | | |
| | Total Cobalt | µg/L | < | 1 | | | | | | | | | |
| | Total Copper | µg/L | < | 2 | | | | | | | | | |
| | Free Cyanide | µg/L | | | | | | | | | | | |
| | Total Cyanide | µg/L | | | | | | | | | | | |
| | Dissolved Iron | µg/L | | 69 | | | | | | | | | |
| | Total Iron | µg/L | | 214 | | | | | | | | | |
| | Total Lead | µg/L | < | 1 | | | | | | | | | |
| | Total Manganese | µg/L | | 597 | | | | | | | | | |
| | Total Mercury | µg/L | < | 0.2 | | | | | | | | | |
| | Total Nickel | µg/L | | 2 | | | | | | | | | |
| | Total Phenols (Phenolics) (PWS) | µg/L | < | 5 | | | | | | | | | |
| | Total Selenium | µg/L | < | 2 | | | | | | | | | |
| | Total Silver | µg/L | < | 0.2 | | | | | | | | | |
| | Total Thallium | µg/L | < | 0.4 | | | | | | | | | |
| | Total Zinc | µg/L | < | 10 | | | | | | | | | |
| | Total Molybdenum | µg/L | | | | | | | | | | | |
| | Acrolein | µg/L | < | | | | | | | | | | |
| | Acrylamide | µg/L | < | | | | | | | | | | |
| | Acrylonitrile | µg/L | < | | | | | | | | | | |
| | Benzene | µg/L | < | | | | | | | | | | |
| | Bromoform | µg/L | < | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group 3 | Carbon Tetrachloride | µg/L | < | | | | | | | | | | |
| | Chlorobenzene | µg/L | | | | | | | | | | | |
| | Chlorodibromomethane | µg/L | < | | | | | | | | | | |
| | Chloroethane | µg/L | < | | | | | | | | | | |
| | 2-Chloroethyl Vinyl Ether | µg/L | < | | | | | | | | | | |
| | Chloroform | µg/L | < | | | | | | | | | | |
| | Dichlorobromomethane | µg/L | < | | | | | | | | | | |
| | 1,1-Dichloroethane | µg/L | < | | | | | | | | | | |
| | 1,2-Dichloroethane | µg/L | < | | | | | | | | | | |
| | 1,1-Dichloroethylene | µg/L | < | | | | | | | | | | |
| | 1,2-Dichloropropane | µg/L | < | | | | | | | | | | |
| | 1,3-Dichloropropylene | µg/L | < | | | | | | | | | | |
| | 1,4-Dioxane | µg/L | < | | | | | | | | | | |
| | Ethylbenzene | µg/L | < | | | | | | | | | | |
| | Methyl Bromide | µg/L | < | | | | | | | | | | |
| | Methyl Chloride | µg/L | < | | | | | | | | | | |
| | Methylene Chloride | µg/L | < | | | | | | | | | | |
| | 1,1,2,2-Tetrachloroethane | µg/L | < | | | | | | | | | | |
| | Tetrachloroethylene | µg/L | < | | | | | | | | | | |
| | Toluene | µg/L | < | | | | | | | | | | |
| | 1,2-trans-Dichloroethylene | µg/L | < | | | | | | | | | | |
| | 1,1,1-Trichloroethane | µg/L | < | | | | | | | | | | |
| | 1,1,2-Trichloroethane | µg/L | < | | | | | | | | | | |
| | Trichloroethylene | µg/L | < | | | | | | | | | | |
| | Vinyl Chloride | µg/L | < | | | | | | | | | | |
| Group 4 | 2-Chlorophenol | µg/L | < | | | | | | | | | | |
| | 2,4-Dichlorophenol | µg/L | < | | | | | | | | | | |
| | 2,4-Dimethylphenol | µg/L | < | | | | | | | | | | |
| | 4,6-Dinitro-o-Cresol | µg/L | < | | | | | | | | | | |
| | 2,4-Dinitrophenol | µg/L | < | | | | | | | | | | |
| | 2-Nitrophenol | µg/L | < | | | | | | | | | | |
| | 4-Nitrophenol | µg/L | < | | | | | | | | | | |
| | p-Chloro-m-Cresol | µg/L | < | | | | | | | | | | |
| | Pentachlorophenol | µg/L | < | | | | | | | | | | |
| | Phenol | µg/L | < | | | | | | | | | | |
| | 2,4,6-Trichlorophenol | µg/L | < | | | | | | | | | | |
| Group 5 | Acenaphthene | µg/L | < | | | | | | | | | | |
| | Acenaphthylene | µg/L | < | | | | | | | | | | |
| | Anthracene | µg/L | < | | | | | | | | | | |
| | Benzidine | µg/L | < | | | | | | | | | | |
| | Benzo(a)Anthracene | µg/L | < | | | | | | | | | | |
| | Benzo(a)Pyrene | µg/L | < | | | | | | | | | | |
| | 3,4-Benzofluoranthene | µg/L | < | | | | | | | | | | |
| | Benzo(ghi)Perylene | µg/L | < | | | | | | | | | | |
| | Benzo(k)Fluoranthene | µg/L | < | | | | | | | | | | |
| | Bis(2-Chloroethoxy)Methane | µg/L | < | | | | | | | | | | |
| | Bis(2-Chloroethyl)Ether | µg/L | < | | | | | | | | | | |
| | Bis(2-Chloroisopropyl)Ether | µg/L | < | | | | | | | | | | |
| | Bis(2-Ethylhexyl)Phthalate | µg/L | < | | | | | | | | | | |
| | 4-Bromophenyl Phenyl Ether | µg/L | < | | | | | | | | | | |
| | Butyl Benzyl Phthalate | µg/L | < | | | | | | | | | | |
| | 2-Chloronaphthalene | µg/L | < | | | | | | | | | | |
| | 4-Chlorophenyl Phenyl Ether | µg/L | < | | | | | | | | | | |
| | Chrysene | µg/L | < | | | | | | | | | | |
| | Dibenzo(a,h)Anthrancene | µg/L | < | | | | | | | | | | |
| | 1,2-Dichlorobenzene | µg/L | < | | | | | | | | | | |
| | 1,3-Dichlorobenzene | µg/L | < | | | | | | | | | | |
| | 1,4-Dichlorobenzene | µg/L | < | | | | | | | | | | |
| | 3,3-Dichlorobenzidine | µg/L | < | | | | | | | | | | |
| | Diethyl Phthalate | µg/L | < | | | | | | | | | | |
| | Dimethyl Phthalate | µg/L | < | | | | | | | | | | |
| | Di-n-Butyl Phthalate | µg/L | < | | | | | | | | | | |
| | 2,4-Dinitrotoluene | µg/L | < | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2,6-Dinitrotoluene | µg/L | < | | | | | | | | | | |
| | Di-n-Octyl Phthalate | µg/L | < | | | | | | | | | | |
| | 1,2-Diphenylhydrazine | µg/L | < | | | | | | | | | | |
| | Fluoranthene | µg/L | < | | | | | | | | | | |
| | Fluorene | µg/L | < | | | | | | | | | | |
| | Hexachlorobenzene | µg/L | < | | | | | | | | | | |
| | Hexachlorobutadiene | µg/L | < | | | | | | | | | | |
| | Hexachlorocyclopentadiene | µg/L | < | | | | | | | | | | |
| | Hexachloroethane | µg/L | < | | | | | | | | | | |
| | Indeno(1,2,3-cd)Pyrene | µg/L | < | | | | | | | | | | |
| | Isophorone | µg/L | < | | | | | | | | | | |
| | Naphthalene | µg/L | < | | | | | | | | | | |
| | Nitrobenzene | µg/L | < | | | | | | | | | | |
| | n-Nitrosodimethylamine | µg/L | < | | | | | | | | | | |
| | n-Nitrosodi-n-Propylamine | µg/L | < | | | | | | | | | | |
| | n-Nitrosodiphenylamine | µg/L | < | | | | | | | | | | |
| | Phenanthrene | µg/L | < | | | | | | | | | | |
| | Pyrene | µg/L | < | | | | | | | | | | |
| | 1,2,4-Trichlorobenzene | µg/L | < | | | | | | | | | | |
| Group 6 | Aldrin | µg/L | < | | | | | | | | | | |
| | alpha-BHC | µg/L | < | | | | | | | | | | |
| | beta-BHC | µg/L | < | | | | | | | | | | |
| | gamma-BHC | µg/L | < | | | | | | | | | | |
| | delta BHC | µg/L | < | | | | | | | | | | |
| | Chlordane | µg/L | < | | | | | | | | | | |
| | 4,4-DDT | µg/L | < | | | | | | | | | | |
| | 4,4-DDE | µg/L | < | | | | | | | | | | |
| | 4,4-DDD | µg/L | < | | | | | | | | | | |
| | Dieldrin | µg/L | < | | | | | | | | | | |
| | alpha-Endosulfan | µg/L | < | | | | | | | | | | |
| | beta-Endosulfan | µg/L | < | | | | | | | | | | |
| | Endosulfan Sulfate | µg/L | < | | | | | | | | | | |
| | Endrin | µg/L | < | | | | | | | | | | |
| | Endrin Aldehyde | µg/L | < | | | | | | | | | | |
| | Heptachlor | µg/L | < | | | | | | | | | | |
| | Heptachlor Epoxide | µg/L | < | | | | | | | | | | |
| | PCB-1016 | µg/L | < | | | | | | | | | | |
| | PCB-1221 | µg/L | < | | | | | | | | | | |
| | PCB-1232 | µg/L | < | | | | | | | | | | |
| | PCB-1242 | µg/L | < | | | | | | | | | | |
| | PCB-1248 | µg/L | < | | | | | | | | | | |
| | PCB-1254 | µg/L | < | | | | | | | | | | |
| | PCB-1260 | µg/L | < | | | | | | | | | | |
| | PCBs, Total | µg/L | < | | | | | | | | | | |
| | Toxaphene | µg/L | < | | | | | | | | | | |
| | 2,3,7,8-TCDD | ng/L | < | | | | | | | | | | |
| Group 7 | Gross Alpha | pCi/L | | | | | | | | | | | |
| | Total Beta | pCi/L | < | | | | | | | | | | |
| | Radium 226/228 | pCi/L | < | | | | | | | | | | |
| | Total Strontium | µg/L | < | | | | | | | | | | |
| | Total Uranium | µg/L | < | | | | | | | | | | |
| | Osmotic Pressure | mOs/kg | | | | | | | | | | | |
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# Stream / Surface Water Information

**Susquehanna Water Treatment Plant, NPDES Permit No. PA0247201, Outfall 001**

Instructions | Discharge | *Stream*

Receiving Surface Water Name: _____ No. Reaches to Model: 1

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

| Location | Stream Code* | RMI* | Elevation (ft)* | DA ($mi^2$)* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|---|---|---|---|---|---|---|---|
| Point of Discharge | 007875 | 1.52 | 263 | 5.75 | | | Yes |
| End of Reach 1 | 007875 | 0 | 227 | 6.05 | | | Yes |

***$Q_{7-10}$***

| Location | RMI | LFY ($cfs/mi^2$)* | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness* | pH* | Hardness | pH |
| Point of Discharge | 1.52 | 0.1 | 0.901 | | | | | | | | | 100 | 7 | | |
| End of Reach 1 | 0 | 0.1 | 1.02 | | | | | | | | | 100 | 7 | | |

***$Q_h$***

| Location | RMI | LFY ($cfs/mi^2$) | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness | pH | Hardness | pH |
| Point of Discharge | 1.52 | | | | | | | | | | | | | | |
| End of Reach 1 | 0 | | | | | | | | | | | | | | |

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Version 1.4, May 2023

# Model Results

**Susquehanna Water Treatment Plant, NPDES Permit No. PA0247201, Outfall 001**

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.852 PMF: 1 Analysis Hardness (mg/l): 84.186 Analysis pH: 7.51

| 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 | 949 | |
| Total Antimony | 0 | 0 | | 0 | 1,100 | 1,100 | 1,391 | |
| Total Arsenic | 0 | 0 | | 0 | 340 | 340 | 430 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 21,000 | 21,000 | 26,559 | |
| Total Boron | 0 | 0 | | 0 | 8,100 | 8,100 | 10,244 | |
| Total Cadmium | 0 | 0 | | 0 | 1.703 | 1.79 | 2.26 | Chem Translator of 0.951 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 494.843 | 1,566 | 1,981 | Chem Translator of 0.316 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 16 | 16.3 | 20.6 | Chem Translator of 0.982 applied |
| Total Cobalt | 0 | 0 | | 0 | 95 | 95.0 | 120 | |
| Total Copper | 0 | 0 | | 0 | 11.427 | 11.9 | 15.1 | 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 | 53.518 | 65.6 | 82.9 | Chem Translator of 0.816 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 1.400 | 1.65 | 2.08 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 404.780 | 406 | 513 | 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 | 2.392 | 2.81 | 3.56 | Chem Translator of 0.85 applied |
| Total Thallium | 0 | 0 | | 0 | 65 | 65.0 | 82.2 | |
| Total Zinc | 0 | 0 | | 0 | 101.277 | 104 | 131 | Chem Translator of 0.978 applied |

☑ ***CFC*** CCT (min): 0.852 PMF: 1 Analysis Hardness (mg/l): 84.186 Analysis pH: 7.51

| 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 | 278 | |
| Total Arsenic | 0 | 0 | | 0 | 150 | 150 | 190 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 4,100 | 4,100 | 5,185 | |
| Total Boron | 0 | 0 | | 0 | 1,600 | 1,600 | 2,024 | |
| Total Cadmium | 0 | 0 | | 0 | 0.218 | 0.24 | 0.3 | Chem Translator of 0.916 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 64.369 | 74.8 | 94.7 | Chem Translator of 0.86 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 10 | 10.4 | 13.1 | Chem Translator of 0.962 applied |
| Total Cobalt | 0 | 0 | | 0 | 19 | 19.0 | 24.0 | |
| Total Copper | 0 | 0 | | 0 | 7.731 | 8.05 | 10.2 | 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 | 1,897 | WQC = 30 day average; PMF = 1 |
| Total Lead | 0 | 0 | | 0 | 2.086 | 2.56 | 3.23 | Chem Translator of 0.816 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 0.770 | 0.91 | 1.15 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 44.959 | 45.1 | 57.0 | 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 | 6.31 | 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 | 16.4 | |
| Total Zinc | 0 | 0 | | 0 | 102.106 | 104 | 131 | Chem Translator of 0.986 applied |

☑ ***THH*** CCT (min): 0.852 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | 500,000 | 500,000 | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | 250,000 | 250,000 | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | 250,000 | 250,000 | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | 2,000 | 2,000 | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 5.6 | 5.6 | 7.08 | |
| Total Arsenic | 0 | 0 | | 0 | 10 | 10.0 | 12.6 | |
| Total Barium | 0 | 0 | | 0 | 2,400 | 2,400 | 3,035 | |
| Total Boron | 0 | 0 | | 0 | 3,100 | 3,100 | 3,921 | |
| 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 | 379 | |
| 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 | 1,265 | |
| Total Mercury | 0 | 0 | | 0 | 0.050 | 0.05 | 0.063 | |
| Total Nickel | 0 | 0 | | 0 | 610 | 610 | 771 | |
| 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 | 0.3 | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ ***CRL*** CCT (min): 4.882 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

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

**No. Samples/Month:** 4

| Pollutants | *Mass Limits* | | *Concentration Limits* | | | | Governing WQBEL | WQBEL Basis | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | AML (lbs/day) | MDL (lbs/day) | AML | MDL | IMAX | Units | | | |
| Total Aluminum | 13.8 | 17.4 | 750 | 949 | 949 | µg/L | 750 | AFC | Discharge Conc ≥ 50% WQBEL (RP) |
| Dissolved Iron | Report | Report | Report | Report | Report | µg/L | 379 | THH | Discharge Conc > 10% WQBEL (no RP) |
| Total Iron | Report | Report | Report | Report | Report | µg/L | 1,897 | CFC | Discharge Conc > 10% WQBEL (no RP) |
| Total Manganese | Report | Report | Report | Report | Report | µg/L | 1,265 | THH | 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 |
| Fluoride (PWS) | N/A | N/A | Discharge Conc < TQL |
| Total Antimony | N/A | N/A | Discharge Conc < TQL |
| Total Arsenic | N/A | N/A | Discharge Conc < TQL |
| Total Barium | 3,035 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium | N/A | N/A | No WQS |
| Total Boron | 2,024 | µg/L | Discharge Conc < TQL |
| Total Cadmium | 0.3 | µg/L | Discharge Conc < TQL |
| Total Chromium (III) | 94.7 | µg/L | Discharge Conc < TQL |
| Hexavalent Chromium | 13.1 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cobalt | 24.0 | µg/L | Discharge Conc < TQL |
| Total Copper | 10.2 | µg/L | Discharge Conc < TQL |
| Total Lead | 3.23 | µg/L | Discharge Conc < TQL |
| Total Mercury | 0.063 | µg/L | Discharge Conc < TQL |
| Total Nickel | 57.0 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Phenols (Phenolics) (PWS) | | µg/L | Discharge Conc < TQL |
| Total Selenium | 6.31 | µg/L | Discharge Conc < TQL |
| Total Silver | 2.81 | µg/L | Discharge Conc < TQL |
| Total Thallium | 0.3 | µg/L | Discharge Conc < TQL |
| Total Zinc | 104 | µg/L | Discharge Conc ≤ 10% WQBEL |