pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Northcentral Regional Office**
**CLEAN WATER PROGRAM**

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0232815** |
| Facility Type | **Industrial** | APS ID | **1068377** |
| Major / Minor | **Minor** | Authorization ID | **1404833** |

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

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Sunbury City Municipal Authority Northumberland County** | Facility Name | **Sunbury Municipal Authority Water System** |
| Applicant Address | 462 S 4th Street | Facility Address | 1600 Market Street |
| | Sunbury, PA 17801-3134 | | Sunbury, PA 17801 |
| Applicant Contact | Scott Debo | Facility Contact | Scott Debo |
| Applicant Phone | (570) 988-1760 | Facility Phone | (570) 988-1760 |
| Client ID | 41774 | Site ID | 1211 |
| SIC Code | 4941 | Municipality | Sunbury City |
| SIC Description | Trans. & Utilities - Water Supply | County | Northumberland |
| Date Application Received | July 28, 2022 | EPA Waived? | Yes |
| Date Application Accepted | August 9, 2022 | If No, Reason | |

Purpose of Application: Renewal of a NPDES permit for the discharge of industrial wastewater

## Summary of Review

This is an existing public water supply in the City of Sunbury, Northumberland County. A map indicating the discharge location is attached (Attachment A).

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 | | *Keith C. Allison*<br>Keith C. Allison / Project Manager | May 18, 2023 |
| X | | *Nicholas W. Hartranft*<br>Nicholas W. Hartranft, P.E. / Environmental Engineer Manager | May 22, 2023 |

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

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.063 |
| Latitude | 40º 51' 39.38" | Longitude | -76º 46' 24.91" |
| Quad Name | Sunbury, PA | Quad Code | |
| Wastewater Description: | IW Process Effluent without ELG | | |
| Receiving Waters | Little Shamokin Creek (CWF, MF) | Stream Code | 18490 |
| NHD Com ID | 54961599 | RMI | 0.14 |
| Drainage Area | 29.1 $mi^2$ | Yield ($cfs/mi^2$) | 0.0258 |
| $Q_{7-10}$ Flow (cfs) | 0.75 | $Q_{7-10}$ Basis | USGS StreamStats |
| Elevation (ft) | 440 | Slope (ft/ft) | 0.0406 |
| Watershed No. | 6-B | Chapter 93 Class. | CWF, MF |
| Existing Use | N/A | Existing Use Qualifier | N/A |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | PATHOGENS | | |
| Source(s) of Impairment | SOURCE UNKNOWN | | |
| TMDL Status | Final | Name | Shamokin Creek Watershed |
| Nearest Downstream Public Water Supply Intake | Suez Water Pennsylvania near Dauphin, PA | | |
| PWS Waters | Susquehanna River | Distance from Outfall (mi) | Approx. 48 |

Changes Since Last Permit Issuance: None

Other Comments:

The discharge is not expected to have any impact on the impairment by pathogens noted above. It is also not expected to have an impact on the existing impairment to Shamokin Creek from AMD.

In addition to the wastewater discharges associated with filter backwash and clarifier sludge, Lagoons #4 and #5 typically receive flow from Little Shamokin Creek or the Susquehanna River to keep the water in them “fresh”. During the months of May through August River water is used. The average daily discharge from the lagoons during this time is 2.8849 MGD.

The Department notes that the discharge is to a portion of Little Shamokin Creek which is artificially channelized below the dam for Reservoir #1 approximately 800 feet above its confluence with Shamokin Creek. The Chapter 93 designation of the entire reach of Little Shamokin Creek, including this section, is Cold Water Fishery. The definition of “Designated Use” from Chapter 93 is listed below.

> *Designated Uses - Those uses specified in § § 93.4(a) and 93.9a—93.9z for each water body or segment whether or not they are being attained.*

The Department designated a suboutfall, Internal Monitoring Point (IMP) 101 for the discharge from Sludge Lagoon #2 into Reservoir #5 for monitoring of the filter backwash water.

Stormwater influence on the discharges should be minimal given that no significant additional area drains into lagoons #2-#5 besides that which falls in directly during precipitation.

The discharge is not expected to affect any downstream public water supply at this time with the monitoring and limitations proposed.

| Treatment Facility Summary |
| --- |
| The treatment of the wastewater discharges of filter backwash and clarifier blowdown (sludge) is effectively treated through settling in Sludge Lagoons #3 and #2. |

| Stormwater Discharges from Industrial Activities |
| --- |
| As a SIC Code 4941 Water Supply facility it is not subject to the requirements for discharges of stormwater from industrial activities at 40 CFR 122.26(b)(14). |

## Compliance History

**DMR Data for Outfall 001 (from April 1, 2022 to March 31, 2023)**

| Parameter | MAR-23 | FEB-23 | JAN-23 | DEC-22 | NOV-22 | OCT-22 | SEP-22 | AUG-22 | JUL-22 | JUN-22 | MAY-22 | APR-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºF) Average Monthly | 43 | 39 | 39 | 36 | 47 | 56 | 73 | 80 | 83 | 75 | 66 | 52 |
| Temperature (ºF) Instream Monitoring Average Monthly | 41 | 38 | 39 | 35 | 44 | 54 | 66 | 75 | 72 | 67 | 59 | 48 |
| Temperature (ºF) Daily Maximum | 48 | 43 | 41 | 38 | 58 | 58 | 78 | 84 | 81.3 | 78 | 75 | 58 |
| Temperature (ºF) Instream Monitoring Daily Maximum | 46 | 43 | 41 | 36 | 54 | 57 | 70 | 70 | 72 | 70 | 70 | 58 |

**DMR Data for Outfall 101 (from April 1, 2022 to March 31, 2023)**

| Parameter | MAR-23 | FEB-23 | JAN-23 | DEC-22 | NOV-22 | OCT-22 | SEP-22 | AUG-22 | JUL-22 | JUN-22 | MAY-22 | APR-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Internal Monitoring Point Average Monthly | 0.1145 | 0.0901 | 0.0862 | 0.0768 | 0.0718 | 0.1075 | 0.1192 | 0.0963 | 0.1069 | 0.0889 | 0.0877 | 0.1015 |
| Flow (MGD) Internal Monitoring Point Daily Maximum | 0.1174 | 0.1001 | 0.1049 | 0.1011 | 0.0906 | 0.1237 | 0.1441 | 0.1364 | 0.1222 | 0.0895 | 0.0896 | 0.1074 |
| pH (S.U.) Internal Monitoring Point Minimum | 7.38 | 7.19 | 7.33 | 7.42 | 7.26 | 7.58 | 7.94 | 8.71 | 8.78 | 8.26 | 7.55 | 7.43 |
| pH (S.U.) Internal Monitoring Point Maximum | 7.40 | 7.36 | 7.37 | 7.54 | 7.53 | 7.98 | 8.20 | 8.84 | 8.84 | 8.41 | 7.85 | 7.63 |
| TRC (mg/L) Internal Monitoring Point Average Monthly | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | 0.025 | < 0.02 | < 0.02 | < 0.02 |
| TRC (mg/L) Internal Monitoring Point Instantaneous Maximum | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | 0.02 | < 0.02 | < 0.02 | 0.03 | < 0.02 | < 0.02 | < 0.02 |
| TSS (mg/L) Internal Monitoring Point Average Monthly | < 4.00 | < 4.0 | < 4.00 | < 4.0 | 10.5 | 9.50 | 4.5 | < 4.00 | < 4.0 | 5.5 | 4.00 | < 4.0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TSS (mg/L) Internal Monitoring Point Instantaneous Maximum | < 4.00 | < 4.0 | < 4.00 | < 4.0 | 17.0 | 15.0 | 5.0 | < 4.00 | < 4.0 | 7.0 | 4.00 | < 4.00 |
| Total Aluminum (mg/L) Internal Monitoring Point Average Monthly | 0.14 | 0.060 | 0.09 | 0.054 | 0.146 | 0.088 | 0.19 | 0.38 | 0.32 | 0.205 | 0.15 | 0.072 |
| Total Aluminum (mg/L) Internal Monitoring Point Instantaneous Maximum | 0.19 | 0.061 | 0.13 | 0.059 | 0.23 | 0.11 | 0.24 | 0.44 | 0.42 | 0.21 | 0.17 | 0.075 |
| Total Iron (mg/L) Internal Monitoring Point Average Monthly | 0.09 | < 0.05 | < 0.05 | < 0.05 | 0.072 | 0.072 | < 0.05 | < 0.05 | < 0.05 | 0.057 | 0.053 | < 0.05 |
| Total Iron (mg/L) Internal Monitoring Point Instantaneous Maximum | 0.13 | < 0.05 | < 0.05 | < 0.05 | 0.095 | 0.094 | < 0.05 | < 0.05 | < 0.05 | 0.065 | 0.057 | < 0.05 |
| Total Manganese (mg/L) Internal Monitoring Point Average Monthly | 0.13 | 0.19 | 0.165 | 0.098 | 0.20 | 0.115 | 0.18 | 0.135 | 0.24 | 0.17 | 0.245 | 0.28 |
| Total Manganese (mg/L) Internal Monitoring Point Instantaneous Maximum | 0.14 | 0.22 | 0.19 | 0.11 | 0.30 | 0.12 | 0.24 | 0.14 | 0.31 | 0.17 | 0.25 | 0.36 |

| **Compliance History, Cont'd** | |
|---|---|
| | |
| **Summary of Inspections:** | The facility has been inspected approximately annually by the Department over the past permit term. The most recent inspection on October 25, 2022 identified no violations at the time of inspection. |
| **Other Comments:** | A query in WMS found no open violations in eFACTS for Sunbury Municipal Authority. |

**Existing Effluent Limitations and Monitoring Requirements – Outfall 001**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Temperature (deg F) | XXX | XXX | XXX | Report | Report Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) Instream Monitoring | XXX | XXX | XXX | Report | Report Daily Max | XXX | 1/week | I-S |

Compliance Sampling Location: Outfall 001. Instream temperature monitoring is to be taken approximately 100 feet upstream from the 001 discharge.

**Existing Effluent Limitations and Monitoring Requirements – Suboutfall 101**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | Report Daily Max | XXX | XXX | XXX | XXX | 2/month | Estimated |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | 9.0 | XXX | 2/month | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.0 | 2/month | Grab |
| Total Suspended Solids | XXX | XXX | XXX | 30.0 | XXX | 60.0 | 2/month | Grab |
| Aluminum, Total | XXX | XXX | XXX | 4.0 | XXX | 8.0 | 2/month | Grab |
| Iron, Total | XXX | XXX | XXX | 2.0 | XXX | 4.0 | 2/month | Grab |
| Manganese, Total | XXX | XXX | XXX | 1.0 | XXX | 2.0 | 2/month | Grab |

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** 0.063
**Latitude** 40º 51' 40.00" **Longitude** -76º 46' 25.00"
**Wastewater Description:** IW Process Effluent without ELG

### Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

| Parameter | Limit (mg/l) | SBC |
|---|---|---|
| Total Suspended Solids | 30 | Average Monthly |
| | 60 | Daily Max |
| Total Iron | 2 | Average Monthly |
| | 4 | Daily Max |
| Total Aluminum | 4 | Average Monthly |
| | 8 | Daily Max |
| Total Manganese | 1 | Average Monthly |
| | 2 | Daily Max |
| TRC | 0.5 | Average Monthly |
| pH | 6.0 – 9.0 S.U. | Min – Max |

Comments: The above limits have been determined by the Department to be applicable to filter backwash, waste sludges and other related water treatment plant wastes as listed in the Department's *Technology-Based Control Requirements for Water Treatment Plant Wastes* guidance document *(Doc. ID 362-2183-003)*. The guidance recommends these limits to apply to discharges to surface Waters of the Commonwealth and as such the Department will apply these limitations at the discharge from Lagoon 2 into Lagoon 5 because Lagoon 5 receives flow-through from Little Shamokin Creek and is not being considered treatment. This point will be designated as Internal Monitoring Point (IMP) 101 in the permit and the eDMR system.

### Water Quality-Based Limitations

A "Reasonable Potential Analysis" was performed to determine additional parameters with the potential to violate water quality standards (see the Toxics Management Spreadsheet in Attachment B). The Toxics Management Spreadsheet (TMS) is a mass-balance water quality analysis model that includes consideration for mixing and other factors to determine recommended water quality-based effluent limits. The model incorporates the water quality criteria in 25 Pa. Code §93.

Because the discharge from 001 includes dilution from Little Shamokin Creek and the River returning to Little Shamokin Creek, modeling and the reasonable potential analysis was performed considering the effective discharge of the backwash and sludge as represented by IMP 101. These loadings are being assumed to effectively accumulate in the lagoons and discharge to Little Shamokin as a long-term average. Effluent limits are recommended for results greater than 50% of the WQBEL and monitoring is recommended for results greater than 10% of the WQBEL for conservative pollutants.

The parameters listed below were determined by the TMS to be candidates for limitations or monitoring in the NPDES permit. The analysis recommended effluent limits for Cadmium and Selenium and monitoring for Arsenic because the monitoring was at reporting limits greater than the Department's Target Quantitation Limits listed in the application instructions. Also, monitoring for Total Aluminum and Total Zinc were recommended because these were detected in the effluent in at least one sample at a sufficient level to warrant monitoring. The table below shows the permittee's initial sample results, the WQ-based monthly average limitation, the Target Quantitation Limits, and the Toxics Management Spreadsheet recommendation for the relevant parameters.

The Department has established the Target QLs as achievable minimum detection levels that guarantee that NPDES sampling gives the Department the best information for making permitting decisions. This policy is consistent with EPA's Sufficiently Sensitive Methods Rule.

| Pollutant | Sample Results (µg/L) | WQBEL (µg/L) | Target Quantitation Limit (µg/L) | TMS Recommendation |
|---|---|---|---|---|
| Total Aluminum | 1,100 | 4,184 | n/a | Report |
| Total Arsenic | <10 | 87 | 3 | Report |
| Total Cadmium | <4 | 2.27 | 0.2 | Limitation |
| Total Selenium | <200 | 43.4 | 5 | Limitation |
| Total Zinc | 82.7 | 640 | n/a | Report |

The applicant will be given the option of conducting an additional sampling event for Total Arsenic, Total Cadmium, and Total Selenium. If the additional samples meet their respective Target Quantitation Limits and are still not-detect then the Department will reevaluate the results to consider removing the monitoring requirements for these three parameters from the final permit.

**Temperature**

Typical water plant discharges are not expected to have any thermal effect on the receiving stream, but the Authority seasonally receives source water from the Susquehanna River. Susquehanna River (WWF) water would typically be warmer than Little Shamokin Creek (CWF) water. This flow-through of water used to keep the water in the lagoons fresh would cause potential impacts to the designated use of Little Shamokin Creek at the point of discharge. In addition, these discharges typically occur when Little Shamokin Creek is at lower levels resulting in a higher probability of impact.

To address the thermal impacts to Little Shamokin Creek during the period of May through August, when Susquehanna River water is used in the system, instream temperature modeling was used. The Department uses a modeling spreadsheet to model thermal impacts to receiving streams using the criteria of 25 Pa. Code 93.7. The resulting discharge rate of 2.8849 MGD for this period was used. The Thermal Discharge Limit analysis spreadsheets are attached (see Attachment C).

Below are listed the limitations for May through August with the average and max temperatures seen in the discharge for those months compiled from eDMR data.

| Date Range | Daily Ave Limitation (°F) | Max Daily Temperature (2019-2022) (°F) | Max Mo. Ave (2019-2022) (°F) | Overall Mo. Ave. (2019-2022) (°F) |
|---|---|---|---|---|
| May 1-15 | 56.9 | 75 | 66 | 63.5 |
| May 16-30 | 60.9 | 75 | 66 | 63.5 |
| Jun 1-15 | 64.5 | 84 | 75 | 74 |
| Jun 16-30 | 68.5 | 84 | 75 | 74 |
| Jul 1-31 | 72.3 | 84 | 83 | 81.45 |
| Aug 1-15 | 71.2 | 84 | 81 | 79.5 |
| Aug 16-31 | 71.2 | 84 | 81 | 79.5 |

Because the limitations are not expected to be achievable based on the existing data a compliance schedule will be included in the permit to allow time for the permittee to make the changes necessary to meet the final limitations. The proposed schedule is below. During the current permit period the permittee had evaluated potential alternatives to address potential thermal limitations. The most cost-effective alternative was determined to be moving the discharge from Reservoir 4 to Little Shamokin Creek to a new discharge from Reservoir 5 to Shamokin Creek (Warm Water Fishery impaired by metals from Abandoned Mine Drainage).

Proposed Schedule of Compliance

A. The permittee shall achieve compliance with final effluent limitations or terminate this discharge in accordance with the following schedule:

| | | |
|---|---|---|
| 1. | Feasibility study completion | One Year after Permit Effective Date |
| 2. | Final plan completion | Two Years after Permit Effective Date |
| 3. | Submit necessary permit applications | Three Years after Permit Effective Date |
| 4. | Start construction | Forty-Two Months after Permit Effective Dat |
| 5. | End construction | Four Years after Permit Effective Date |
| 6. | Compliance with effluent limitations | 59 Months after Permit Effective Date |

B. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit to DEP a written notice of compliance or non-compliance with the specific schedule requirement. Each notice of non-compliance shall include the following information:

1. A short description of the non-compliance.

2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement.

3. A description of any factors which tend to explain or mitigate the non-compliance.

4. An estimate of the date that compliance with the elapsed schedule requirement will be achieved and an assessment of the probability that the next scheduled requirement will be met on time.

Should Sunbury Municipal Authority move the discharge point to Shamokin Creek adjacent to Reservoir 5 the Department would no longer require any final temperature limitations.

**Chesapeake Bay/Nutrient Requirements**

Because measurable levels of TN and TP are present in the discharge and consistent with Department policy and the Phase III Wastewater Supplement annual monitoring for TN and TP will be included in the permit.

**Best Professional Judgment (BPJ) Limitations**

Comments: No additional limitations are necessary at this time beyond the technology and water quality-based limits noted above.

**Anti-Backsliding**

Consistent with the anti-backsliding requirements of the Clean Water Act and 40 CFR 122.44(l) no proposed limitations have been made less stringent.

**Proposed Effluent Limitations and Monitoring Requirements – Outfall 001**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Temperature deg F) - Interim | XXX | XXX | XXX | XXX | Report Daily Max | XXX | 1/week | I-S |
| Temperature (May – August) (deg F) - Final | XXX | XXX | XXX | XXX | Report Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) May 1-15 Final | XXX | XXX | XXX | XXX | 56.9 Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) May 16-30 - Final | XXX | XXX | XXX | XXX | 60.9 Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) Jun 1-15 - Final | XXX | XXX | XXX | XXX | 64.5 Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) Jun 16-30 - Final | XXX | XXX | XXX | XXX | 68.5 Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) Jul 1-31 - Final | XXX | XXX | XXX | XXX | 72.3 Daily Max | XXX | 1/week | I-S |
| Temperature (deg F) Aug - Final | XXX | XXX | XXX | XXX | 71.2 Daily Max | XXX | 1/week | I-S |
| Nitrogen, Total | XXX | Report Daily Max | XXX | XXX | Report Daily Max | XXX | 1/year | Grab |
| Phosphorus, Total | XXX | Report Daily Max | XXX | XXX | Report Daily Max | XXX | 1/year | Grab |

Compliance Sampling Location: Outfall 001. Instream temperature monitoring has been removed. New Final limitations are included for May-August as mentioned above. Because the Limitations are Daily Maxima monthly average reporting has been removed. Monitoring for Total Nitrogen and Total Phosphorus are also included as mentioned above.

**Proposed Effluent Limitations and Monitoring Requirements – Suboutfall 101**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | Report Daily Max | XXX | XXX | XXX | XXX | 2/month | Estimated |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | 9.0 | XXX | 2/month | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.0 | 2/month | Grab |
| Total Suspended Solids | XXX | XXX | XXX | 30.0 | XXX | 60.0 | 2/month | Grab |
| Aluminum, Total | XXX | XXX | XXX | 4.0 | XXX | 8.0 | 2/month | Grab |
| Arsenic, Total | XXX | XXX | XXX | Report | Report | XXX | 2/month | Grab |
| Cadmium, Total (µg/L) | 0.001 | 0.002 Daily Max | XXX | 2.27 | 3.54 Daily Max | 5.67 | 2/month | Grab |
| Iron, Total | XXX | XXX | XXX | 2.0 | XXX | 4.0 | 2/month | Grab |
| Manganese, Total | XXX | XXX | XXX | 1.0 | XXX | 2.0 | 2/month | Grab |
| Selenium, Total | 0.023 | 0.036 Daily Max | XXX | 0.043 | 0.0677 | 0.109 | 2/month | Grab |
| Zinc, Total | XXX | XXX | XXX | Report | Report Daily Max | XXX | 2/month | Grab |

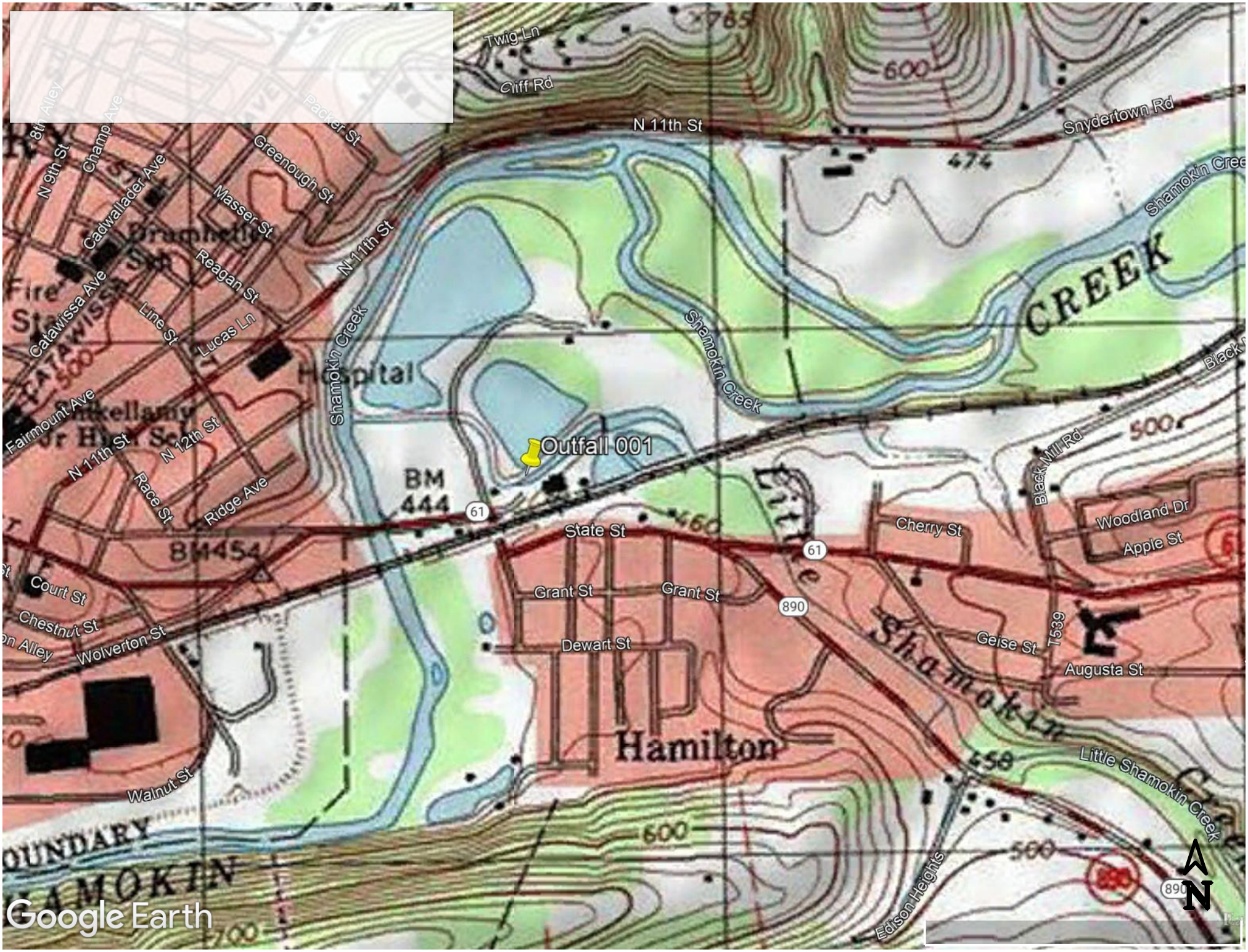
Compliance Sampling Location: Suboutfall 101.

Comments: Limits and/or monitoring for Arsenic, Cadmium, Selenium, and Zinc are new as mentioned above.

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☐ | WQM for Windows Model (see Attachment ) |
| ☒ | Toxics Management Spreadsheet (see Attachment **B**) |
| ☐ | TRC Model Spreadsheet (see Attachment ) |
| ☒ | Temperature Model Spreadsheet (see Attachment **C**) |
| ☒ | 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: |

Attachments:

A. Discharge Location Map
B. Toxics Management Spreadsheet
C. Thermal Discharge Analysis Spreadsheet


Outfall 001
Twig Ln
Cliff Rd
N 11th St
Snydertown Rd
Shamokin Creek
CREEK
Hospital
Shamokin Creek
Shamokin Creek
Fairmount Ave
N 11th St
N 12th St
Race St
Ridge Ave
BM 444
BM454
State St
Grant St
Grant St
Dewart St
Cherry St
Black Mill Rd
Woodland Dr
Apple St
Geise St
T539
Augusta St
Court St
Chestnut St
Wolverton St
Walnut St
Hamilton
Shamokin
Little Shamokin Creek
Edison Heights
Google Earth
N

# Discharge Information

Instructions | Discharge | Stream

Facility: **Sunbury Municipal Authority - Water Plant** NPDES Permit No.: **PA0232815** Outfall No.: **001**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **Filter backwash**

| Discharge Characteristics | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Design Flow (MGD)* | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) | | | | Complete Mix Times (min) | |
| | | | AFC | CFC | THH | CRL | $Q_{7-10}$ | $Q_h$ |
| 0.063 | 55.8 | 7.8 | | | | | | |

| | | | | | 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 | | 90 | | | | | | | | | |
| | Chloride (PWS) | mg/L | | 23.3 | | | | | | | | | |
| | Bromide | mg/L | < | 0.2 | | | | | | | | | |
| | Sulfate (PWS) | mg/L | | 31.1 | | | | | | | | | |
| | Fluoride (PWS) | mg/L | < | 1 | | | | | | | | | |
| Group 2 | Total Aluminum | µg/L | | 1110 | | | | | | | | | |
| | Total Antimony | µg/L | < | 4 | | | | | | | | | |
| | Total Arsenic | µg/L | < | 10 | | | | | | | | | |
| | Total Barium | µg/L | | 24 | | | | | | | | | |
| | Total Beryllium | µg/L | < | 2 | | | | | | | | | |
| | Total Boron | µg/L | < | 50 | | | | | | | | | |
| | Total Cadmium | µg/L | < | 4 | | | | | | | | | |
| | Total Chromium (III) | µg/L | < | 5 | | | | | | | | | |
| | Hexavalent Chromium | µg/L | < | 0.25 | | | | | | | | | |
| | Total Cobalt | µg/L | < | 1 | | | | | | | | | |
| | Total Copper | µg/L | < | 2 | | | | | | | | | |
| | Free Cyanide | µg/L | | | | | | | | | | | |
| | Total Cyanide | µg/L | < | 10 | | | | | | | | | |
| | Dissolved Iron | µg/L | < | 40 | | | | | | | | | |
| | Total Iron | µg/L | | 57.6 | | | | | | | | | |
| | Total Lead | µg/L | < | 1 | | | | | | | | | |
| | Total Manganese | µg/L | | 19 | | | | | | | | | |
| | Total Mercury | µg/L | < | 0.2 | | | | | | | | | |
| | Total Nickel | µg/L | < | 1 | | | | | | | | | |
| | Total Phenols (Phenolics) (PWS) | µg/L | < | 20 | | | | | | | | | |
| | Total Selenium | µg/L | < | 200 | | | | | | | | | |
| | Total Silver | µg/L | < | 1 | | | | | | | | | |
| | Total Thallium | µg/L | < | 0.4 | | | | | | | | | |
| | Total Zinc | µg/L | | 82.7 | | | | | | | | | |
| | Total Molybdenum | µg/L | | | | | | | | | | | |
| | Acrolein | µg/L | < | | | | | | | | | | |
| | Acrylamide | µg/L | < | | | | | | | | | | |
| | Acrylonitrile | µg/L | < | | | | | | | | | | |
| | Benzene | µg/L | < | | | | | | | | | | |
| | Bromoform | µg/L | < | | | | | | | | | | |
| | Carbon Tetrachloride | µg/L | < | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group 3 | 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 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

# Stream / Surface Water Information

**Sunbury Municipal Authority - Water Plant, NPDES Permit No. PA0232815, Outfall 001**

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Little Shamokin Creek**

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 | 018490 | 0.14 | 436 | 29.1 | | | Yes |
| End of Reach 1 | 018490 | 0.001 | 433 | 29.5 | | | Yes |

***Q*** *7-10*

| 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 | 0.14 | 0.0258 | | | | | | | | | | 100 | 7 | | |
| End of Reach 1 | 0.001 | 0.0258 | | | | | | | | | | | | | |

***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 | 0.14 | | | | | | | | | | | | | | |
| End of Reach 1 | 0.001 | | | | | | | | | | | | | | |

# Model Results

**Sunbury Municipal Authority - Water Plant, NPDES Permit No. PA0232815, Outfall 001**

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

☑ ***Hydrodynamics***

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

| RMI | Stream Flow (cfs) | PWS Withdrawal (cfs) | Net Stream Flow (cfs) | Discharge Analysis Flow (cfs) | Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Travel Time (days) | Complete Mix Time (min) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.14 | 0.75 | | 0.75 | 0.097 | 0.004 | 0.532 | 17.757 | 33.365 | 0.09 | 0.095 | 13.64 |
| 0.001 | 0.76 | | 0.761 | | | | | | | | |

***$Q_h$***

| RMI | Stream Flow (cfs) | PWS Withdrawal (cfs) | Net Stream Flow (cfs) | Discharge Analysis Flow (cfs) | Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Travel Time (days) | Complete Mix Time (min) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.14 | 5.78 | | 5.78 | 0.097 | 0.004 | 1.248 | 17.757 | 14.233 | 0.265 | 0.032 | 4.691 |
| 0.001 | 5.853 | | 5.85 | | | | | | | | |

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 13.640 PMF: 1 Analysis Hardness (mg/l): 94.922 Analysis pH: 7.04

| 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 | 6,528 | |
| Total Antimony | 0 | 0 | | 0 | 1,100 | 1,100 | 9,574 | |
| Total Arsenic | 0 | 0 | | 0 | 340 | 340 | 2,959 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 21,000 | 21,000 | 182,771 | |
| Total Boron | 0 | 0 | | 0 | 8,100 | 8,100 | 70,497 | |
| Total Cadmium | 0 | 0 | | 0 | 1.914 | 2.02 | 17.6 | Chem Translator of 0.946 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 545.954 | 1,728 | 15,037 | Chem Translator of 0.316 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 16 | 16.3 | 142 | Chem Translator of 0.982 applied |
| Total Cobalt | 0 | 0 | | 0 | 95 | 95.0 | 827 | |
| Total Copper | 0 | 0 | | 0 | 12.795 | 13.3 | 116 | 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 | 61.016 | 76.4 | 665 | Chem Translator of 0.799 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 1.400 | 1.65 | 14.3 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 448.038 | 449 | 3,907 | 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 | 2.941 | 3.46 | 30.1 | Chem Translator of 0.85 applied |
| Total Thallium | 0 | 0 | | 0 | 65 | 65.0 | 566 | |
| Total Zinc | 0 | 0 | | 0 | 112.118 | 115 | 998 | Chem Translator of 0.978 applied |
| | | | | | | | | |

☑ ***CFC*** CCT (min): 13.640 PMF: 1 Analysis Hardness (mg/l): 94.922 Analysis pH: 7.04

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 220 | 220 | 1,915 | |
| Total Arsenic | 0 | 0 | | 0 | 150 | 150 | 1,306 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 4,100 | 4,100 | 35,684 | |
| Total Boron | 0 | 0 | | 0 | 1,600 | 1,600 | 13,925 | |
| Total Cadmium | 0 | 0 | | 0 | 0.237 | 0.26 | 2.27 | Chem Translator of 0.911 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 71.017 | 82.6 | 719 | Chem Translator of 0.86 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 10 | 10.4 | 90.5 | Chem Translator of 0.962 applied |
| Total Cobalt | 0 | 0 | | 0 | 19 | 19.0 | 165 | |
| Total Copper | 0 | 0 | | 0 | 8.566 | 8.92 | 77.7 | 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 | 13,055 | WQC = 30 day average; PMF = 1 |
| Total Lead | 0 | 0 | | 0 | 2.378 | 2.98 | 25.9 | Chem Translator of 0.799 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 0.770 | 0.91 | 7.88 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 49.763 | 49.9 | 434 | 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 | 43.4 | 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 | 113 | |
| Total Zinc | 0 | 0 | | 0 | 113.035 | 115 | 998 | Chem Translator of 0.986 applied |
| | | | | | | | | |

☑ ***THH*** CCT (min): 13.640 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 | 48.7 | |
| Total Arsenic | 0 | 0 | | 0 | 10 | 10.0 | 87.0 | |
| Total Barium | 0 | 0 | | 0 | 2,400 | 2,400 | 20,888 | |
| Total Boron | 0 | 0 | | 0 | 3,100 | 3,100 | 26,981 | |
| 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 | 2,611 | |
| 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 | 8,703 | |
| Total Mercury | 0 | 0 | | 0 | 0.050 | 0.05 | 0.44 | |
| Total Nickel | 0 | 0 | | 0 | 610 | 610 | 5,309 | |
| 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 | 2.09 | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |
| | | | | | | | | |

☑ ***CRL*** CCT (min): 4.691 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

| | *Mass Limits* | | *Concentration Limits* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pollutants | AML (lbs/day) | MDL (lbs/day) | AML | MDL | IMAX | Units | Governing WQBEL | WQBEL Basis | Comments |
| Total Aluminum | Report | Report | Report | Report | Report | µg/L | 4,184 | AFC | Discharge Conc > 10% WQBEL (no RP) |
| Total Arsenic | Report | Report | Report | Report | Report | µg/L | 87.0 | THH | Discharge Conc > 10% WQBEL (no RP) |
| Total Cadmium | 0.001 | 0.002 | 2.27 | 3.54 | 5.67 | µg/L | 2.27 | CFC | Discharge Conc ≥ 50% WQBEL (RP) |
| Total Selenium | 0.023 | 0.036 | 43.4 | 67.7 | 109 | µg/L | 43.4 | CFC | Discharge Conc ≥ 50% WQBEL (RP) |
| Total Zinc | Report | Report | Report | Report | Report | µg/L | 640 | AFC | Discharge Conc > 10% WQBEL (no RP) |
| | | | | | | | | | |

☐ ***Other Pollutants without Limits or Monitoring***

**Facility:** Sunbury Water Authority
**Permit Number:** PA0232815
**Stream Name:** Little Shamokin Creek
**Analyst/Engineer:** K. Allison
**Stream Q7-10 (cfs):** 0.75

| | Facility Flows[1] | | | | Stream Flows | |
|---|---|---|---|---|---|---|
| | Stream (Intake) (MGD) | External (Intake) (MGD) | Consumptive (Loss) (MGD) | Discharge (MGD) | Adj. Q7-10 Stream Flow (cfs) | Downstream[2] Stream Flow (cfs) |
| Jan 1-31 | 0 | 0.063 | 0 | 0.063 | 2.4 | 2.5 |
| Feb 1-29 | 0 | 0.063 | 0 | 0.063 | 2.6 | 2.7 |
| Mar 1-31 | 0 | 0.063 | 0 | 0.063 | 5.3 | 5.3 |
| Apr 1-15 | 0 | 0.063 | 0 | 0.063 | 7.0 | 7.1 |
| Apr 16-30 | 0 | 0.063 | 0 | 0.063 | 7.0 | 7.1 |
| May 1-15 | 0 | 2.8849 | 0 | 2.8849 | 3.8 | 8.3 |
| May 16-30 | 0 | 2.8849 | 0 | 2.8849 | 3.8 | 8.3 |
| Jun 1-15 | 0 | 2.8849 | 0 | 2.8849 | 2.3 | 6.7 |
| Jun 16-30 | 0 | 2.8849 | 0 | 2.8849 | 2.3 | 6.7 |
| Jul 1-31 | 0 | 2.8849 | 0 | 2.8849 | 1.3 | 5.7 |
| Aug 1-15 | 0 | 2.8849 | 0 | 2.8849 | 1.1 | 5.5 |
| Aug 16-31 | 0 | 2.8849 | 0 | 2.8849 | 1.1 | 5.5 |
| Sep 1-15 | 0 | 0.063 | 0 | 0.063 | 0.8 | 0.9 |
| Sep 16-30 | 0 | 0.063 | 0 | 0.063 | 0.8 | 0.9 |
| Oct 1-15 | 0 | 0.063 | 0 | 0.063 | 0.9 | 1.0 |
| Oct 16-31 | 0 | 0.063 | 0 | 0.063 | 0.9 | 1.0 |
| Nov 1-15 | 0 | 0.063 | 0 | 0.063 | 1.2 | 1.3 |
| Nov 16-30 | 0 | 0.063 | 0 | 0.063 | 1.2 | 1.3 |
| Dec 1-31 | 0 | 0.063 | 0 | 0.063 | 1.8 | 1.9 |

[1] Facility flows are not required (and will not affect the permit limits) if all intake flow is from the receiving stream (Case 1), consumptive losses are small, and permit limits will be expressed as Million BTUs/day.
[2] Downstream Stream Flow includes the discharge flow.

*Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.*

Version 1.0 -- 08/01/2004 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017
NOTE: The user can only edit fields that are blue.
NOTE: MGD x 1.547 = cfs.

Facility: **Sunbury Water Authority**
Permit Number: PA0232815
Stream: Little Shamokin Creek

| | WWF Criteria (ºF) | CWF Criteria (ºF) | TSF Criteria (ºF) | 316 Criteria (ºF) | Q7-10 Multipliers (Used in Analysis) | Q7-10 Multipliers (Default - Info Only) |
|---|---|---|---|---|---|---|
| Jan 1-31 | 40 | 38 | 40 | 0 | 3.2 | 3.2 |
| Feb 1-29 | 40 | 38 | 40 | 0 | 3.5 | 3.5 |
| Mar 1-31 | 46 | 42 | 46 | 0 | 7 | 7 |
| Apr 1-15 | 52 | 48 | 52 | 0 | 9.3 | 9.3 |
| Apr 16-30 | 58 | 52 | 58 | 0 | 9.3 | 9.3 |
| May 1-15 | 64 | 54 | 64 | 0 | 5.1 | 5.1 |
| May 16-30 | 72 | 58 | 68 | 0 | 5.1 | 5.1 |
| Jun 1-15 | 80 | 60 | 70 | 0 | 3 | 3 |
| Jun 16-30 | 84 | 64 | 72 | 0 | 3 | 3 |
| Jul 1-31 | 87 | 66 | 74 | 0 | 1.7 | 1.7 |
| Aug 1-15 | 87 | 66 | 80 | 0 | 1.4 | 1.4 |
| Aug 16-31 | 87 | 66 | 87 | 0 | 1.4 | 1.4 |
| Sep 1-15 | 84 | 64 | 84 | 0 | 1.1 | 1.1 |
| Sep 16-30 | 78 | 60 | 78 | 0 | 1.1 | 1.1 |
| Oct 1-15 | 72 | 54 | 72 | 0 | 1.2 | 1.2 |
| Oct 16-31 | 66 | 50 | 66 | 0 | 1.2 | 1.2 |
| Nov 1-15 | 58 | 46 | 58 | 0 | 1.6 | 1.6 |
| Nov 16-30 | 50 | 42 | 50 | 0 | 1.6 | 1.6 |
| Dec 1-31 | 42 | 40 | 42 | 0 | 2.4 | 2.4 |

NOTES:
WWF= Warm water fishes
CWF= Cold water fishes
TSF= Trout stocking

Facility: **Sunbury Water Authority**
Permit Number: PA0232815
Stream: Little Shamokin Creek

| | CWF Ambient Stream Temperature (ºF) (Default) | Ambient Stream Temperature (ºF) (Site-specific data) | Target Maximum Stream Temp.[1] (ºF) | CWF Daily WLA[2] (Million BTUs/day) | CWF Daily WLA[3] (ºF) | at Discharge Flow (MGD) |
|---|---|---|---|---|---|---|
| Jan 1-31 | 34 | 0 | 38 | N/A -- Case 2 | 110.0 | 0.063 |
| Feb 1-29 | 35 | 0 | 38 | N/A -- Case 2 | 110.0 | 0.063 |
| Mar 1-31 | 39 | 0 | 42 | N/A -- Case 2 | 110.0 | 0.063 |
| Apr 1-15 | 46 | 0 | 48 | N/A -- Case 2 | 110.0 | 0.063 |
| Apr 16-30 | 52 | 0 | 53 | N/A -- Case 2 | 110.0 | 0.063 |
| May 1-15 | 55 | 0 | 56 | N/A -- Case 2 | 56.9 | 2.8849 |
| May 16-30 | 59 | 0 | 60 | N/A -- Case 2 | 60.9 | 2.8849 |
| Jun 1-15 | 63 | 0 | 64 | N/A -- Case 2 | 64.5 | 2.8849 |
| Jun 16-30 | 67 | 0 | 68 | N/A -- Case 2 | 68.5 | 2.8849 |
| Jul 1-31 | 71 | 0 | 72 | N/A -- Case 2 | 72.3 | 2.8849 |
| Aug 1-15 | 70 | 0 | 71 | N/A -- Case 2 | 71.2 | 2.8849 |
| Aug 16-31 | 70 | 0 | 71 | N/A -- Case 2 | 71.2 | 2.8849 |
| Sep 1-15 | 66 | 0 | 67 | N/A -- Case 2 | 75.5 | 0.063 |
| Sep 16-30 | 60 | 0 | 61 | N/A -- Case 2 | 69.5 | 0.063 |
| Oct 1-15 | 55 | 0 | 56 | N/A -- Case 2 | 65.2 | 0.063 |
| Oct 16-31 | 51 | 0 | 52 | N/A -- Case 2 | 61.2 | 0.063 |
| Nov 1-15 | 46 | 0 | 47 | N/A -- Case 2 | 59.3 | 0.063 |
| Nov 16-30 | 40 | 0 | 42 | N/A -- Case 2 | 66.6 | 0.063 |
| Dec 1-31 | 35 | 0 | 40 | N/A -- Case 2 | 110.0 | 0.063 |

[1] This is the maximum of the CWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for CWF, or the ambient stream temperature based on site-specific data entered by the user. A minimum of 1ºF above ambient stream temperature is allocated.

[2] The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

[3] The WLA expressed in ºF is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110ºF are displayed as 110ºF.