

Application Type Renewal  
Facility Type Municipal  
Major / Minor Major

## NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application No. PA0070351  
APS ID 272  
Authorization ID 1404686

### Applicant and Facility Information

|  |  |
|--|--|
| Applicant Name <u>Amity Township Berks County</u>  | Facility Name <u>Amity Township STP</u>  |
| Applicant Address <u>2004 Weavertown Road</u><br><u>Douglassville, PA 19518-8971</u>   | Facility Address <u>120 Old Philadelphia Pike</u><br><u>Douglassville, PA 19518-1815</u>         |
| Applicant Contact <u>Troy Bingaman</u><br><u>(610) 689-6000/</u><br><u>tbingaman@amitytownshippa.com</u>                     | Facility Contact <u>Randolph Maguire, Superintendent</u><br><u>(maguire@amitytownshippa.com)</u> |
| Applicant Phone <u>tbingaman@amitytownshippa.com</u>   | Facility Phone <u>(610) 385-3400</u>   |
| Client ID <u>92377</u>   | Site ID <u>451640</u>  |
| Ch 94 Load Status <u>Projected Hydraulic &amp; Organic Overload</u>  | Municipality <u>Amity Township</u>   |
| Connection Status <u></u>  | County <u>Berks</u>  |
| Date Application Received <u>July 28, 2022</u>   | EPA Waived? <u>No</u>  |
| Date Application Accepted <u>August 11, 2022</u>   | If No, Reason <u>Major Facility</u>  |
| Purpose of Application <u>Revoke and reissue NPDES permit, planned increase in flow to occur during permit's 5-year term</u> |  |

### Summary of Review

The previous NPDES permit was issued January 23, 2020 with an expiration date of January 31, 2025. The permittee intends to increase the flow at this treatment plant within the next five years. Their Act 537 Plan Update providing for an upgrade and expansion to the Amity Township Wastewater Treatment Plant for a design flow of 2.9 MGD was reviewed and approved by DEP Sewage Planning: B2-06917-ACT, dated December 7, 2010. According to their 2021 Chapter 94 Municipal Load Management Report, received March 29, 2022, a hydraulic overload is projected starting in 2025 and the facility is under a CAP [Corrective Action Plan].

In order to allow time for obtaining a WQM permit application and constructing the expanded facility, the NPDES permit will be revoked and reissued rather than amended thereby allowing for a full 5-year term. (A permit amendment would not have changed the existing permit's expiration date.) Part C of the draft permit includes a requirement to submit to DEP a WQM permit application before the treatment plant can be expanded. When it is known when the expanded treatment plant will be placed into operation and the increased flow will commence, the DEP will add an effective date for the "final limits" in the DEP WMS database and alert the eDMR coders. Until that time, there will be "interim limits" that apply to the current design flow of 2.2 MGD.

A permit amendment application was submitted July 21, 2022 using DEP's OnBase upload system (Reference #63613) with an amendment fee. A permit reissue/renew application was submitted July 28, 2022, using DEP's OnBase upload system (Reference #64582).

The Amity Township Sewage Treatment Plant (STP) serves Amity Township (81% of flow), Douglass Township (10% of flow), Union Township (7% of flow), and Earl Township (2%). According to their permit application, there are no Combined Sewer Overflows, no hauled-in wastes and no hauled-in wastes anticipated to be accepted for the next 5 years (the permit term), and no Indirect Users (non-domestic wastewater from

| Approve | Deny | Signatures   | Date              |
|---------|------|--|-------------------|
| x       |      | <i>Bonnie Boylan</i><br>Bonnie Boylan / Permit Writer                              | February 6, 2023  |
| x       |      | <i>Daniel W. Martin</i><br>Daniel W. Martin, P.E. / Environmental Engineer Manager | February 23, 2023 |

### Summary of Review

industrial or commercial sources). There are two stormwater catchment basins which both discharge untreated stormwater to the Schuylkill River via outfall 001. The stormwater merges with the treatment plant effluent.

#### Design Flow:

The permittee's DMR data from January 1, 2020 through December 31, 2022 indicates a Maximum Monthly Average flow of 2.03 MGD. The facility reported a Daily Maximum flow larger than 2.2 MGD for 23 out of the past 36 months (3 years).

For calculation of effluent limits, their existing design flow of 2.2 MGD will be used for interim limits. The design Average Annual Flow (AAF) of 2.9 MGD, as discussed in conference calls and shown in their permit application, will be used for the permit limits effective post-expansion.

It will be necessary for the permittee to submit a WQM permit application before the expansion: the WQM permit 0605411 for the treatment plant currently indicates an AAF and a Hydraulic Capacity of 2.2 MGD. The projected AAF and Hydraulic Capacity and Organic design capacity supplied in the NPDES permit application has been included in the draft reissued NPDES permit for post-expansion with the expectation that the WQM permit application will match: an Annual Average design flow of 2.9 MGD, a Hydraulic Design Capacity of 4.35 MGD and an organic design capacity of 6940 lbs/day.

#### Delaware River Basin Commission (DRBC):

The discharge is within the Delaware River watershed and is thus subject to the Delaware River Basin Commission's (DRBC) requirements. A copy of the draft permit and Fact Sheet will therefore be sent to the DRBC for their review, in accordance with State regulations and an interagency agreement. Any comments from DRBC will be considered.

The most recent DRBC docket D-1990-078 CP-5 was approved for this facility on June 10, 2020 and expires on January 31, 2025.

#### Outstanding Violations:

There are no outstanding violations against the facility according to DEP's eFacts database or DEP's WMS database's "Violations by client".

#### Sludge use and disposal description and location(s):

off-site disposal to a landfill after dewatering

#### Public Participation:

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

| Discharge, Receiving Waters and Water Supply Information |                                  |                            |                           |
|--|----------------------------------|----------------------------|---------------------------|
| Outfall No.  | 001                              | Design Flow (MGD)          | 2.2 / 2.9                 |
| Latitude   | 40° 15' 5"                       | Longitude                  | -75° 43' 37"              |
| Quad Name  |                                  | Quad Code                  |                           |
| Wastewater Description: Sewage Effluent                  |                                  |                            |                           |
| Receiving Waters   | Schuylkill River (WWF, MF)       | Stream Code                | 833                       |
| NHD Com ID   | 25965616                         | RMI                        | 58.8                      |
| Drainage Area  | 1040 sq. mi.                     | Yield (cfs/mi²)            | 0.28                      |
| Q <sub>7-10</sub> Flow (cfs)                             | 292                              | Q <sub>7-10</sub> Basis    | PA Stream Stats           |
| Elevation (ft)   | 145 est'd                        | Slope (ft/ft)              |                           |
| Watershed No.  | 3-D                              | Chapter 93 Class.          | WWF, MF                   |
| Existing Use   | -                                | Existing Use Qualifier     | -                         |
| Exceptions to Use  | -                                | Exceptions to Criteria     | -                         |
| Assessment Status  | Impaired                         |                            |                           |
| Cause(s) of Impairment                                   | Polychlorinated Biphenyls (PCBs) |                            |                           |
| Source(s) of Impairment                                  | Source Unknown                   |                            |                           |
| TMDL Status  | Final                            | Name                       | Schuylkill River PCB TMDL |
| Background/Ambient Data                                  |                                  |                            |                           |
|  |                                  | Data Source                |                           |
| pH (SU)  |                                  |                            |                           |
| Temperature (°F)   |                                  |                            |                           |
| Hardness (mg/L)  |                                  |                            |                           |
| Other:   |                                  |                            |                           |
| Nearest Downstream Public Water Supply Intake            | Pottstown Water Authority        |                            |                           |
| PWS Waters   | Schuylkill River                 | Flow at Intake (cfs)       | Approx. 294               |
| PWS RMI  | Approx. 57                       | Distance from Outfall (mi) | Approx. 1.8 miles         |

The receiving water is NOT classified as a Class A Trout Water or as Trout Natural Reproduction.

Before the expansion:

| Treatment Facility Summary                         |  |                              |                            |                                     |
|--|--|------------------------------|----------------------------|-------------------------------------|
| <b>Treatment Facility Name:</b> Amity Township STP |  |                              |                            |                                     |
| <b>WQM Permit No.</b>                              | <b>Issuance Date</b>                     |                              |                            |                                     |
| 0605411  | 8/31/2005                                |                              |                            |                                     |
| <b>Waste Type</b>                                  | <b>Degree of Treatment</b>               | <b>Process Type</b>          | <b>Disinfection</b>        | <b>Avg Annual Design Flow (MGD)</b> |
| Sewage   | Secondary                                | Oxidation Ditch              | Gas Chlorine               | 2.2                                 |
|  |  |                              |                            |                                     |
| <b>Hydraulic Design Capacity (MGD)</b>             | <b>Organic Design Capacity (lbs/day)</b> | <b>Load Status</b>           | <b>Biosolids Treatment</b> | <b>Biosolids Use/Disposal</b>       |
| 2.2  | 4202                                     | Projected Hydraulic Overload | Aerobic Digestion          | Landfill                            |

Screen and grit removal

Influent pump station, 3 pumps

3 primary clarifiers, with high flow channel diverting surges to 1.5 Million gallon lagoon as needed

Oxidation ditch with 3 channels, RAS returned to outer ring

Splitter box

3 final clarifiers

2 Chlorine Contact Tanks (CCTs)

Dechlorination unit (per WQM permit and DRBC docket)

2 ultrasonic flow meters and composite sampler

1 post-aeration tank, where stormwater merges

Flood pump chamber with 4 pumps activated by high-level floats; stormwater channel passes through chamber

An earthen berm, 4.5 feet above the 100-year flood elevation, surrounds the WWTP. Flood pumps and back-water preventer flap valves are in place to pump treated effluent out of the WWTP during high river stages.

2 aerobic digesters

2 anaerobic digesters

1 sludge thickening tank and one blend tank

1 Belt Filter Press

4 Reed filter beds

Liquid sludge hauled to a POTW or

dewatered sludge disposed off-site, at landfill

8 Pump Stations in Amity Twp collection system, 1 PS in Union Twp, and 1 PS in Douglass Twp

with backup auxiliary power, metered flow, alarms

(PS #6 – Cider Mill is no longer in service according to DEP's 2021 Chapter 94 Report Review Checklist)

Projected for post-expansion):

| Treatment Facility Summary      |                                   |                   |                     |                              |
|---------------------------------|-----------------------------------|-------------------|---------------------|------------------------------|
|                                 |                                   |                   |                     |                              |
| Waste Type                      | Degree of Treatment               | Process Type      | Disinfection        | Avg Annual Design Flow (MGD) |
| Sewage                          | Secondary                         | Oxidation Ditches | Ultraviolet         | 2.9                          |
|                                 |                                   |                   |                     |                              |
| Hydraulic Design Capacity (MGD) | Organic Design Capacity (lbs/day) | Load Status       | Biosolids Treatment | Biosolids Use/Disposal       |
| 4.35                            | 6940                              | Not overloaded    | Aerobic Digestion   | Landfill                     |

Install larger mechanical fine screen and new grit removal equipment  
 Install new larger influent submersible pumps  
 Install new flow splitter box to two oxidation ditches  
 Add new oxidation ditch, 3 rings  
 Upsize aeration rotors in existing oxidation ditch  
 New final clarifier flow division box  
 New weirs, baffles, and launder covers for existing clarifiers  
 New UV disinfection system  
 New effluent pumps  
 Conversion of anaerobic digester to aerobic digesters  
 Conversion of existing primary clarifiers to covered aerobic digesters  
 New RAS/WAS pumps  
 Add air release valves to lagoon liner system  
 SCADA system

PREVIOUS PERMIT LIMITS, OUTFALL 001:

| Parameter   | Effluent Limitations |                  |                       |                 |                  |                  | Monitoring Requirements       |                      |
|---|----------------------|------------------|-----------------------|-----------------|------------------|------------------|-------------------------------|----------------------|
|   | Mass Units (lbs/day) |                  | Concentrations (mg/L) |                 |                  |                  | Minimum Measurement Frequency | Required Sample Type |
|   | Average Monthly      | Weekly Average   | Instant. Minimum      | Average Monthly | Weekly Average   | Instant. Maximum |                               |                      |
| Flow (MGD)  | Report               | Report Daily Max | XXX                   | XXX             | XXX              | XXX              | Continuous                    | Measured             |
| pH (S.U.)   | XXX                  | XXX              | 6.0                   | XXX             | XXX              | 9.0              | 1/day                         | Grab                 |
| Dissolved Oxygen  | XXX                  | XXX              | 5.0                   | XXX             | XXX              | XXX              | 1/day                         | Grab                 |
| Total Residual Chlorine (TRC)                           | XXX                  | XXX              | XXX                   | 0.5             | XXX              | 1.6              | 1/day                         | Grab                 |
| Carbonaceous Biochemical Oxygen Demand (CBOD5)          | 458                  | 734              | XXX                   | 25              | 40               | 50               | 2/week                        | 24-Hr Composite      |
| Biochemical Oxygen Demand (BOD5)<br>Raw Sewage Influent | Report               | Report Daily Max | XXX                   | Report          | XXX              | XXX              | 2/week                        | 24-Hr Composite      |
| Total Suspended Solids                                  | 550                  | 825              | XXX                   | 30              | 45               | 60               | 2/week                        | 24-Hr Composite      |
| Total Suspended Solids<br>Raw Sewage Influent           | Report               | Report Daily Max | XXX                   | Report          | XXX              | XXX              | 2/week                        | 24-Hr Composite      |
| Total Dissolved Solids                                  | 18348                | XXX              | XXX                   | 1000            | XXX              | 2000             | 2/week                        | 24-Hr Composite      |
| Fecal Coliform (No./100 ml)<br>Oct 1 - Apr 30           | XXX                  | XXX              | XXX                   | 2000            | XXX              | 10000            | 2/week                        | Grab                 |
| Fecal Coliform (No./100 ml)<br>May 1 - Sep 30           | XXX                  | XXX              | XXX                   | 200             | XXX              | 1000             | 2/week                        | Grab                 |
| Ammonia-Nitrogen<br>Nov 1 - Apr 30                      | 220                  | XXX              | XXX                   | 12              | XXX              | 24               | 2/week                        | 24-Hr Composite      |
| Ammonia-Nitrogen<br>May 1 - Oct 31                      | 73                   | XXX              | XXX                   | 4               | XXX              | 8                | 2/week                        | 24-Hr Composite      |
| Nitrate-Nitrite as N                                    | XXX                  | XXX              | XXX                   | XXX             | Report Daily Max | XXX              | 1/month                       | 24-Hr Composite      |
| Total Kjeldahl Nitrogen                                 | XXX                  | XXX              | XXX                   | XXX             | Report Daily Max | XXX              | 1/month                       | 24-Hr Composite      |
| Total Nitrogen  | XXX                  | XXX              | XXX                   | XXX             | Report Daily Max | XXX              | 1/month                       | Calculation          |
| Total Phosphorus  | XXX                  | XXX              | XXX                   | XXX             | Report Daily Max | XXX              | 1/month                       | 24-Hr Composite      |

| Parameter                        | Effluent Limitations |                |                       |                 |                  |                  | Monitoring Requirements       |                      |
|----------------------------------|----------------------|----------------|-----------------------|-----------------|------------------|------------------|-------------------------------|----------------------|
|                                  | Mass Units (lbs/day) |                | Concentrations (mg/L) |                 |                  |                  | Minimum Measurement Frequency | Required Sample Type |
|                                  | Average Monthly      | Weekly Average | Instant. Minimum      | Average Monthly | Weekly Average   | Instant. Maximum |                               |                      |
| Copper, Total                    | XXX                  | XXX            | XXX                   | XXX             | Report Daily Max | XXX              | 1/month                       | 24-Hr Composite      |
| PCBs Dry Weather Analysis (pg/L) | XXX                  | XXX            | XXX                   | XXX             | Report Daily Max | XXX              | 1/year                        | 24-Hr Composite      |
| PCBs Wet Weather Analysis (pg/L) | XXX                  | XXX            | XXX                   | XXX             | Report Daily Max | XXX              | 1/year                        | 24-Hr Composite      |

Compliance History

DMR Data for Outfall 001 (from December 1, 2021 to November 30, 2022)

| Parameter  | NOV-22 | OCT-22 | SEP-22 | AUG-22 | JUL-22 | JUN-22                                 | MAY-22 | APR-22 | MAR-22 | FEB-22 | JAN-22 | DEC-21 |
|--|--------|--------|--------|--------|--------|--|--------|--------|--------|--------|--------|--------|
| Flow (MGD)<br>Average Monthly                            | 0.758  | 1.069  | 0.707  | 0.607  | 0.646  | 0.785                                  | 1.81   | 2.029  | 1.085  | 1.575  | 1.082  | 0.567  |
| Flow (MGD)<br>Daily Maximum                              | 2.05   | 4.197  | 2.854  | 1.237  | 1.419  | 2.622                                  | 5.69   | 5.725  | 1.804  | 4.988  | 3.168  | 0.675  |
| pH (S.U.)<br>Instantaneous<br>Minimum                    | 7.1    | 7.1    | 7.2    | 7.3    | 7.4    | 7.2                                    | 6.8    | 6.9    | 7.2    | 7.2    | 7.1    | 7.0    |
| pH (S.U.)<br>Instantaneous<br>Maximum                    | 7.5    | 7.5    | 7.8    | 7.7    | 7.7    | 7.7                                    | 7.5    | 7.4    | 7.8    | 7.7    | 7.7    | 7.8    |
| DO (mg/L)<br>Instantaneous<br>Minimum                    | 8.1    | 7.2    | 5.8    | 7.4    | 7.7    | 7.1                                    | 6.8    | 7.2    | 7.5    | 5.7    | 5.4    | 5.0    |
| TRC (mg/L)<br>Average Monthly                            | 0.4    | 0.3    | 0.3    | 0.3    | 0.3    | 0.2                                    | 0.3    | 0.3    | 0.5    | 0.5    | 0.4    | 0.3    |
| TRC (mg/L)<br>Instantaneous<br>Maximum                   | 0.6    | 0.5    | 0.6    | 0.5    | 0.7    | 0.4                                    | 0.7    | 0.6    | 0.6    | 0.7    | 0.9    | 0.6    |
| CBOD5 (lbs/day)<br>Average Monthly                       | < 17   | < 27   | < 19   | < 16   | < 14   | < 18                                   | < 20   | < 60   | < 29   | 40     | 34     | < 13   |
| CBOD5 (lbs/day)<br>Weekly Average                        | 31     | < 53   | < 30   | 26     | 19     | 30                                     | < 22   | < 110  | 46     | 69     | 75     | 19     |
| CBOD5 (mg/L)<br>Average Monthly                          | < 3    | < 3    | < 3    | < 3    | < 3    | < 3                                    | < 2    | < 3    | < 3    | 4      | < 3    | < 3    |
| CBOD5 (mg/L)<br>Weekly Average                           | < 3    | < 4    | 3      | 6      | 4      | 4 (per<br>Daily Effl<br>Suppl.<br>DMR) | < 3    | < 5    | 5      | 5      | 4      | 4      |
| BOD5 (lbs/day)<br>Raw Sewage Influent<br>Average Monthly | 1712   | 2395   | 1668   | 1872   | 1355   | 2022                                   | 2540   | 2781   | 1776   | 1923   | 2766   | 1624   |
| BOD5 (lbs/day)<br>Raw Sewage Influent<br>Daily Maximum   | 2274   | 7116   | 7212   | 3486   | 2297   | 4164                                   | 4305   | 6451   | 2982   | 3404   | 8191   | 2692   |
| BOD5 (mg/L)<br>Raw Sewage Influent<br>Average Monthly    | 316    | 253    | 223    | 375    | 292    | 328                                    | 256    | 183.7  | 223    | 236    | 269    | 373    |



**NPDES Permit Fact Sheet  
Amity Township STP**

**NPDES Permit No. PA0070351**

|  |        |        |       |       |       |        |        |        |       |       |      |       |
|--|--------|--------|-------|-------|-------|--------|--------|--------|-------|-------|------|-------|
| TSS (lbs/day)<br>Average Monthly                           | < 24   | 20     | < 34  | 28    | 19    | < 24   | 40     | < 79   | < 26  | < 51  | < 43 | 21    |
| TSS (lbs/day)<br>Raw Sewage Influent<br>Average Monthly    | 901    | 1275   | 1300  | 1071  | 1016  | 1026   | 1446   | 1802   | 1184  | 921   | 1279 | 836   |
| TSS (lbs/day)<br>Raw Sewage Influent<br>Daily Maximum      | 1344   | 3314   | 6569  | 2197  | 1561  | 2284   | 2112   | 4344   | 1962  | 1672  | 3065 | 1940  |
| TSS (lbs/day)<br>Weekly Average                            | < 50   | 33     | 69    | 42    | 30    | 54     | 61     | 257    | 51    | < 148 | < 67 | 25    |
| TSS (mg/L)<br>Average Monthly                              | < 4    | 3      | < 5   | 6     | 4     | < 4    | 4      | < 4    | < 3   | < 4   | < 5  | 5     |
| TSS (mg/L)<br>Raw Sewage Influent<br>Average Monthly       | 162    | 137    | 155   | 216   | 215   | 165    | 146    | 124    | 151   | 114   | 125  | 194   |
| TSS (mg/L)<br>Weekly Average                               | < 5    | 6      | 8     | 8     | 7     | 8      | 6      | 12     | 5     | < 10  | 7    | 6     |
| Total Dissolved Solids<br>(lbs/day)<br>Average Monthly     | 4281   | 5982   | 5701  | 4369  | 3845  | 4567   | 5439   | 14159  | 5619  | 5701  | 5976 | 3465  |
| Total Dissolved Solids<br>(mg/L)<br>Average Monthly        | 707    | 693    | 849   | 852   | 827   | 745    | 555    | 558    | 672   | 694   | 610  | 786   |
| Fecal Coliform<br>(No./100 ml)<br>Average Monthly          | < 22   | < 17   | < 29  | < 186 | < 5   | < 16   | < 99   | < 473  | < 5   | < 8   | < 7  | < 12  |
| Fecal Coliform<br>(No./100 ml)<br>Instantaneous<br>Maximum | 54     | 70     | 104   | 1330  | 15    | 104    | 745    | 3000   | 13    | 41    | 764  | 74    |
| Nitrate-Nitrite (mg/L)<br>Daily Maximum                    | 32     | 21.7   | 9.71  | 12.1  | 10.1  | 0.18   | 2.9    | 6.41   | 0.23  | 0.32  | 6.38 | 13.1  |
| Total Nitrogen (mg/L)<br>Daily Maximum                     | 33.28  | 22.61  | 12.06 | 13.48 | 11.67 | 18.64  | 3.79   | 9.24   | 18.43 | 8.24  | 7.59 | 14.29 |
| Ammonia (lbs/day)<br>Average Monthly                       | < 3    | < 0.4  | 2     | 0.7   | 0.4   | < 0.4  | < 5    | < 54   | 112   | 82    | < 22 | 7     |
| Ammonia (mg/L)<br>Average Monthly                          | < 0.38 | < 0.05 | 0.3   | 0.13  | 0.081 | < 0.05 | < 0.54 | < 2.53 | 12.84 | 10.75 | < 3  | 2     |
| TKN (mg/L)<br>Daily Maximum                                | 1.28   | 0.91   | 2.35  | 1.38  | 1.57  | 1.74   | 0.89   | 2.83   | 18.2  | 7.92  | 1.21 | 1.19  |
| Total Phosphorus<br>(mg/L)<br>Daily Maximum                | 4.28   | 4.22   | 1.53  | 3.26  | 2.52  | 3.16   | 0.12   | 1.5    | 0.58  | 0.32  | 1.32 | 0.13  |

**NPDES Permit Fact Sheet  
Amity Township STP**

**NPDES Permit No. PA0070351**

|   |       |       |       |       |       |       |       |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Copper (mg/L)<br>Daily Maximum          | 0.021 | 0.017 | 0.019 | 0.029 | 0.030 | 0.032 | 0.014 | 0.013 | 0.032 | 0.015 | 0.015 | 0.030 |
| PCBs (Dry Weather)<br>(pg/L)<br>Daily Maximum |       |       |       |       |       |       |       |       |       |       |       | 4.37  |
| PCBs (Wet Weather)<br>(pg/L)<br>Daily Maximum |       |       |       |       |       |       |       |       |       |       |       | 16.3  |

Compliance History

Effluent Violations for Outfall 001, from January 1, 2022 To December 31, 2022:

| Parameter      | Date     | SBC    | DMR Value | Units      | Limit Value | Units      |
|----------------|----------|--------|-----------|------------|-------------|------------|
| Fecal Coliform | 08/31/22 | IMAX   | 1330      | No./100 ml | 1000        | No./100 ml |
| Ammonia        | 03/31/22 | Avg Mo | 12.84     | mg/L       | 12          | mg/L       |

**DEP INSPECTIONS:**

|                    |  |
|--------------------|--|
| April 8, 2022      | Inspection due to incident: discharge of partially treated sewage to ground and to outfall 001 are violations of permit and Clean Streams Law. DEP was notified by permittee on April 8, 2022 of Sanitary Sewer Overflows at MH 49 and primary clarifiers overflowing due to excessive rain event. Lagoon had filled up and backed up into primary clarifiers.   |
| April 4, 2022      | Inspection conducted ("routine", CEI). Not staffed 24/7. <b>Reed beds not in use.</b>  |
| November 4, 2021   | DEP administrative review showed some discrepancies between the September DMR and the September Supplemental DMR   |
| September 23, 2021 | Notice of Violation (NOV) sent for permit limit exceedances of Ammonia reported in DMRs of June, July, and August 2021.  |
| July 21, 2021      | Inspection conducted ("routine", CEI). High settleability noted. Improved conditions since June 29 upset. 2 RAS returns are directed to outer ditch. Two ultrasonic meters, sum of both CCTs. New generator has been installed capable of running entire plant; new covers on aerobic digesters; new blowers; new belt filter press. Inspector collected effluent samples post-CCT. As with June 29, 2021 samples, only permit limit exceeded was Ammonia.   |
| July 9, 2021       | Follow up inspection from June 29, 2021. Bulking sludge visible in clarifier. CCT tank appeared cloudy. Brown suspended solids visible in effluent. Receiving water downstream of outfall, from River Bridge Road, appeared turbid/brown.  |
| June 30, 2021      | NOV sent, result of June 29, 2021 inspection.  |
| June 29, 2021      | Violation noted. Inadequate or partially treated sewage from the STP to Schuylkill River and failure to immediately report to DEP a pollution incident. They reported that there were no noticeable changes to influent BOD and TSS prior to upset. Possible that lagoon wastewater which was being mixed with influent and fed to oxidation ditch from June 14 <sup>th</sup> to June 17 <sup>th</sup> caused the problem. Lagoon feed has been suspended. Reseeding oxidation ditch. DEP inspector noted a chemical/cleaning odor at the oxidation ditch during her inspection. DEP inspector collected effluent samples (from CCT tank): Ammonia permit limit was exceeded but the other parameters in permit were not (including pH). |

**Development of Effluent Limitations**

|                                |                 |                          |              |
|--------------------------------|-----------------|--------------------------|--------------|
| <b>Outfall No.</b>             | 001             | <b>Design Flow (MGD)</b> | 2.2 / 2.9    |
| <b>Latitude</b>                | 40° 15' 5"      | <b>Longitude</b>         | -75° 43' 37" |
| <b>Wastewater Description:</b> | Sewage Effluent |                          |              |

The permit limits imposed are the more stringent of applicable TBELs, limits developed using BPJ, developed WQBELs, and previous permit limits that the facility has been able to achieve. (TBELs, BPJ, WQBELs are explained below.)

**Technology-Based Effluent Limitations (TBELs)**

| Pollutant                     | Limit (mg/l)                    | SBC             | Federal Regulation | State Regulation | DRBC Regulation              |
|-------------------------------|---------------------------------|-----------------|--------------------|------------------|------------------------------|
| CBOD <sub>5</sub>             | 25 <sup>a</sup>                 | Average Monthly | 133.102(a)(4)(i)   | 92a.47(a)(1)     | 18 CFR Part 410 <sup>a</sup> |
|                               | 40 <sup>a</sup>                 | Average Weekly  | 133.102(a)(4)(ii)  | 92a.47(a)(2)     |                              |
| Total Suspended Solids        | 30                              | Average Monthly | 133.102(b)(1)      | 92a.47(a)(1)     | 18 CFR Part 410              |
|                               | 45                              | Average Weekly  | 133.102(b)(2)      | 92a.47(a)(2)     |                              |
| pH                            | 6.0 – 9.0 S.U.                  | Min – Max       | 133.102(c)         | 95.2(1)          | 18 CFR Part 410              |
| Fecal Coliform (5/1 – 9/30)   | 200 / 100 ml                    | Geo Mean        | -                  | 92a.47(a)(4)     | 18 CFR Part 410              |
| Fecal Coliform (5/1 – 9/30)   | 1,000 / 100 ml                  | IMAX            | -                  | 92a.47(a)(4)     |                              |
| Fecal Coliform (10/1 – 4/30)  | 2,000 / 100 ml                  | Geo Mean        | -                  | 92a.47(a)(5)     |                              |
| Fecal Coliform (10/1 – 4/30)  | 10,000 / 100 ml                 | IMAX            | -                  | 92a.47(a)(5)     |                              |
| Total Residual Chlorine (TRC) | 0.5                             | Average Monthly | -                  | 92a.48(b)(2)     |                              |
| Ammonia                       | 20                              | Average Monthly | -                  | -                | 18 CFR Part 410              |
| Total Dissolved Solids        | 1000 <sup>b</sup>               | Average Monthly | -                  |                  | 18 CFR Part 410              |
| Total Dissolved Solids        | 2000 if applicable <sup>c</sup> | Average Monthly | -                  | 95.10            |                              |

<sup>a</sup> DRBC regulations and the facility's DRBC docket also includes a requirement for 85% minimum removal of CBOD<sub>5</sub>. Narrative limits are imposed in NPDES sewage permits in Part A following the limits tables: "The monthly average percent removal of BOD<sub>5</sub> or CBOD<sub>5</sub> and TSS must be at least 85% for POTW facilities on a concentration basis...." Because all Chapter 94 reporting is in terms of BOD<sub>5</sub>, the influent monitoring has continued to be required as BOD<sub>5</sub>, as requested by DEP SCRO Sewage Planning. Because DEP's WQM 7.0 model uses CBOD<sub>5</sub>, most NPDES permits for Sewage Treatment Plants include effluent limits in terms of CBOD<sub>5</sub> rather than as BOD<sub>5</sub>. Sewage treatment plants designed to achieve "secondary treatment" usually have no difficulty achieving the 85% removal requirement for organic matter.

<sup>b</sup> Or as otherwise approved by DRBC upon their determination that the discharge will not cause the in-stream Total Dissolved Solids (TDS) concentration to exceed the lesser of 500 mg/l or 133% over background.

<sup>c</sup> Only applies to new dischargers and to existing dischargers with an increase in TDS mass loadings of more than 5,000 lbs/day since August 21, 2010 when TDS regulations were promulgated, measured as an average daily discharge over the course of a calendar year i.e. an annual avg daily load. The 2019 Fact Sheet included a TDS "baseline" (the estimated TDS mass loading as of August 2010) of 13,779 lbs/day. DMRs from January 1, 2020 through December 31, 2022 indicate an average TDS concentration in the discharge of 668 mg/l. 668 mg/l x 2.9 MGD x 8.34 conversion factor = 16,156 lbs/day anticipated post-expansion. Because the increased loading is less than 5000 lbs/day, the 2000 mg/l TDS concentration limit is **not applicable** in this case (16,156 lbs/day – 13,779 lbs/day = 2377 lbs/day).

**Best Professional Judgment (BPJ) Limitations**

None

### Water Quality-Based Effluent Limitations (WQBELs)

#### TRC:

DEP's TRC Excel spreadsheet/model was used and the results are attached. Whether the design discharge flow is 2.2 MGD or 2.9 MGD, WQBELs were not deemed needed and the model defaulted to the TBELs. The previous permit limits were the same: 0.50 mg/l as a Monthly Average and 1.6 mg/l as a Daily Maximum. (The acute and chronic Partial Mix Factors used in the TRC spreadsheet were taken from the TMS model simulations: 0.2 for PMFa and 1 for PMFc.)

The proposed expanded treatment plant will include UV disinfection according to the application. Because there may be a transition time or if chlorine will be kept as back-up, the TRC limits have been continued in the post-expansion permit limits; UV daily monitoring has been added in addition. If no disinfection with chlorine occurs during a reporting period and no other use of chlorine occurs during a reporting period, the permittee is allowed to code their DMRs as NODI - condition not met. If chlorine is used during a reporting period, monitoring would be required and the TRC limits achieved.

#### CBOD5, Ammonia, and Dissolved Oxygen:

DEP's WQM 7.0 model is used to calculate CBOD5 and Ammonia (NH3-N) effluent limits, while maintaining Dissolved Oxygen (DO) levels. DEP's Technical Guidance document 391-2000-007 describes the calculations used in this model. It is a steady-state model that can evaluate several dischargers to a stream segment and apportion Waste Load allocations (WLAs) to each. Because the Schuylkill River is wide and the WQM 7.0 model does not account for incomplete mixing, a manual adjustment was made to account for the initial mixing not extending across the full width of the River: Drainage Area divided by 3 (1040 miles<sup>2</sup> / 3 = 347 miles<sup>2</sup>). The same approach has been used by DEP for other dischargers to the Schuylkill River in recognition that the discharge is more likely to mix with the river water on the same side as the discharge during the first fifteen minutes, when the acute criteria is applied, and only gradually mix with the rest of the river downstream.

Site-specific data are used as input values when available, but when not available, defaults or reasonable assumptions are made.

#### Input values used include:

pH for stream during design low-flow period of July-Sept.....7 s.u. (default)  
pH for discharge during design low-flow period of July-Sept.....7 s.u. (default)  
Temperature for stream during design low-flow period of July-Sept.....25°C (default for WWF streams/rivers)  
Temperature for discharge during design low-flow period of July-Sept.....25°C (default)  
Background concentration for CBOD5 during design low-flow period.....2.0 mg/l (default)  
Background concentration for DO during design low-flow period.....8.24 mg/l (default)  
Background concentration for NH3 during design low-flow period.....0 mg/l (default)

The river appears to be approximately 205 feet wide at this location using an aerial mapping tool. An estimated width:depth (w:d) ratio of 100 was used as an input value (which was also the width:depth ratio generated by the TMS model as an estimate).

The model input and output pages are included at the end of the Fact Sheet. The upstream discharger Birdsboro STP (located very near the confluence with Hay Creek and Schuylkill River) and the downstream Public Water Supply intake were included in the model simulation in order to determine protective limits.

For a design discharge flow of **2.9 MGD**, the following limits were indicated:

| Parameter        | Limit (mg/l) | SBC             | Model   |
|------------------|--------------|-----------------|---------|
| Ammonia          | 4.0          | Monthly Average | WQM 7.0 |
| Ammonia          | 8.0          | Daily Maximum   | WQM 7.0 |
| CBOD5            | 19 *         | Monthly Average | WQM 7.0 |
| Dissolved Oxygen | 5.0          | Minimum         | WQM 7.0 |

Because the model indicated that DO was still declining at the end of the reach when Amity STP's existing permit limits were input as allowable discharge concentrations but the design flow was increased to 2.9 MGD, model iterations were

run: a) holding the CBOD5 discharge concentration steady while allowing the model to calculate the necessary NH3 permit limits to achieve DO recovery and b) holding the NH3 discharge concentration steady while allowing the model to calculate the necessary CBOD5 permit limits to achieve DO recovery. The WQM 7.0 model indicated that a CBOD5 limit of 19 mg/l (or less) and a continued NH3 limit of 4 mg/l would allow DO recovery while not causing an in-stream exceedance of water quality criteria or standards.

The new monthly average CBOD5 limit of 19 mg/l is more stringent than the existing NPDES permit limit of 25 mg/l. However, the DMRs between December 1, 2021 and December 31, 2022 reported a maximum monthly average CBOD5 concentration in the discharge of 4 mg/l, well below 19 mg/l, indicating that the discharge will easily be able to meet the new CBOD5 permit limit of 19 mg/l. The DMRs and Supplemental DMRs between December 1, 2021, and December 31, 2022 indicate a maximum weekly average of 6 mg/l, well below 29 mg/l, the new CBOD5 permit limit as a weekly average.

The WQM 7.0 model was also run with a design flow of 2.2 MGD since there were regulatory changes to water quality criteria since the last permit's development of limits. The resulting limits were consistent with the existing permit limits for Ammonia, CBOD5, and DO and will be carried forward as the interim limits, before the expansion of the treatment plant occurs.

As was done in the existing permit, the Ammonia limits during the colder months do not need to be as stringent given that Ammonia is less toxic at lower temperatures [Technical Guidance document 391-2000-013]. The Ammonia limits between November 1<sup>st</sup> and April 30<sup>th</sup> will continue to be 12.0 mg/l as a monthly average and 24.0 as a maximum.

#### TOXICS:

DEP's Toxics Management Spreadsheet (TMS) is a steady-state model that evaluates a single discharger to a stream segment and can account for partial mixing in the receiving waterway (therefore the Drainage Area was not reduced contrary to the WQM model). The TMS is used to calculate effluent limits for toxic parameters and to evaluate Reasonable Potential of a parameter in the discharge to cause an exceedance in the stream of a water quality criteria or standard such that a limit would be necessary. DEP's Technical Guidance document 391-2000-011 describes the methods used in this model (which was previously known as PENTOX).

Site-specific data are used as input values when available, but when not available, defaults or reasonable assumptions are made. Input values used include:

pH for stream during design low-flow period of July-Sept.....7 s.u. (default)  
 pH for discharge during design low-flow period of July-Sept.....7 s.u. (default)  
 Hardness for stream during design low-flow flow period of July-Sept.....143 mg/l (per permit application)  
 Hardness for discharge during design low-flow flow period of July-Sept.....245 mg/l (avg. per permit application)  
 Background concentration for toxic parameters, any low-flow flow period.....0 ug/l (default)  
 Width : depth ratio, estimated .....100

#### Note-

When there are few samples, the maximum concentrations are used as model inputs for discharge concentrations. When there are 10 or more samples, average concentrations can be used instead as model inputs for discharge concentrations. There were more than 10 sample results for TDS and for Total Copper.

The model input and output pages are included at the end of this Fact Sheet. The TMS was run with a design flow of 2.2 MGD and again with a design flow of 2.9 MGD. For both a design flow of 2.2 MGD and a design flow of 2.9 MGD, the following limitations and monitoring requirements were determined through water quality modeling:

| Parameter      | Limit (mg/l)                                    | Monitoring          | Model                         |
|----------------|---|---------------------|-------------------------------|
| Total Copper   | None –<br>Reasonable Potential not demonstrated | Monitoring required | Toxics Management Spreadsheet |
| Total Thallium | None –<br>Reasonable Potential not demonstrated | Monitoring required | Toxics Management Spreadsheet |

The TMS recommended a monitoring requirement for Total Copper because the average discharge concentration of 0.035 mg/l, determined by DEP's TOXCONC statistical spreadsheet based on 35 recent discrete sample results (attached), was more than 10% of the calculated WQBELs for Total Copper: 0.19 mg/l for a discharge flow of 2.2 MGD and 0.15 mg/l for a discharge flow of 2.9 MGD. The TMS did not recommend limits for Total Copper because the average discharge concentration was less than 50% of the calculated WQBELs.

The TMS recommended a monitoring requirement for Total Thallium because the discharge concentration of <0.003 mg/l, the lab Quantitation Level (QL) used, was more than 10% of the calculated WQBELs for Total Thallium: 0.013 mg/l for a discharge flow of 2.2 MGD and 0.010 mg/l for a discharge flow of 2.9 MGD. The TMS did not recommend limits for Total Thallium because the discharge concentration was less than 50% of the calculated WQBELs.

Total Maximum Daily Load (TMDL):

A TMDL for Polychlorinated Biphenyls (PCBs) in the Schuylkill River was finalized in April 2007. Statewide, dischargers to the Schuylkill River who demonstrate high concentrations of PCBs in their discharge are being required to prepare and implement Pollutant Minimization Plans (PMPs). The goal is to reduce total PCB loading to the Schuylkill River.

The facility submitted a PCB Pollutant Minimization Plan on February 9, 2021. DEP accepted the plan on March 23, 2021. Implementation of the PMP Plan was required to begin by May 23, 2021.

PCB monitoring from January 1, 2018 through December 31, 2022 (not adjusted for field blank concentrations):

| Year    | Wet Weather (pg/l) | Dry Weather (pg/l) | Average of Wet and Dry (pg/l) | Comment   |
|---------|--------------------|--------------------|-------------------------------|---|
| 2018    | 935                | 454                | 695                           | Reported incorrectly on DMRs (units error)  |
| 2019    | 591                | 281                | 436                           | Reported incorrectly on DMRs (units error)  |
| 2020    | 556                | 431                | 494                           |   |
| 2021    | 791                | 491                | 641                           | Reported incorrectly on DMRs – equipment blank concentration reported instead of effluent concentration |
| 2022    | 954                | 787                | 871                           |   |
| Average | 765.4              | 488.8              | 627                           |   |

The monitoring data has not shown a decrease in PCB concentrations in the discharge. The concentrations are consistently greater than the TMDL's target concentration of 44 pg/l (0.044 ng/l).

The PCB baseline from the Pollutant Minimization Plan was 0.97 grams/year.

For mass loading since 2020:

| Year | Wet Weather (pg/l) | Associated Field Blank (pg/l) | Net Concentration (pg/l) | Dry Weather (pg/l) | Associated Field Blank (pg/l) | Net Concentration (pg/l) | Average Concentration (pg/l) | Average Annual Flow (MGD) | Estimated Annual Mass Load (gram/year) |
|------|--------------------|-------------------------------|--------------------------|--------------------|-------------------------------|--------------------------|------------------------------|---------------------------|--|
| 2021 | 791                | 16.3                          | 774.7                    | 491                | 4.37                          | 486.6                    | 631                          | 1.034                     | 0.90 *                                 |
| 2022 | 954                | Not reported                  | -                        | 787                | Not reported                  | -                        | <871                         | 1.163                     | <1.40 *                                |

\*calculated as:

631 pg/l avg. concentration x 10<sup>-9</sup> mg/pg x 1.034 MGD x 8.34 lbs/day x 453.6 grams/lb x 365 days/yr = 0.90 grams/year.  
 <871 pg/l avg. concentration x 10<sup>-9</sup> mg/pg x 1.163 MGD x 8.34 lbs/day x 453.6 grams/lb x 365 days/yr = <1.40 grams/yr.

The monitoring data has not shown a consistent decrease in PCB mass loading. (Even if the 2022 effluent concentrations were reduced by 20% as an estimate for as-yet-unreported field blank concentrations, the resulting mass loading for 2022 would be 1.12 grams/year, still higher than the baseline of 0.97 grams/year.)

According to the permittee's December 14, 2022 PMP Annual Report: "Amity Township is in the process of developing PCB questionnaires to send to commercial/industrial sites in and around the service area to identify any sources of PCBs."

For the renewal permit, the requirement for PCB monitoring using the sensitive analytical method 1668A, continued implementation of to the PCB PMP Plan, and the continued submittal of PCB Annual Reports will be required.

Besides measuring reductions in PCB loading specifically from this facility, all PCB data gathered can be used to track the progress of all dischargers collectively, and to possibly revise the TMDL in the future.

### **Anti-backsliding**

No concentration limits in the permit are less stringent than in the previous permit.

### **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/ Impaired Waters**

The discharge is located on a waterway that was included on the 303(d) list of impaired waterways submitted to EPA pursuant to the Clean Water Act. A Pollutant Minimization Plan has been required for the identified pollutant causing the impairment, PCBs. The TMDL for this impaired waterway recognized this approach.

### **Nutrient Monitoring**

Nutrient levels in rivers and streams are a concern. In order to gather information to assess the situation and to adequately protect the waterways, most NPDES permits are now including a monitoring requirement, at the least, for **Total Nitrogen (TKN + NO<sub>2</sub>-NO<sub>3</sub>) and Total Phosphorus**. The statutory basis for this requirement is found at PA Code Chapter 92a.61. Monitoring for Total Nitrogen and Total Phosphorus has been added to the renewal permit. Because this requirement is to gather data and not to demonstrate compliance with a limit, a frequency of once per month has been included.

### **E. Coli Monitoring**

Consistent with the Standard Operating Procedure (SOP) Establishing Effluent Limitations for Individual Sewage Permits and due to the regulatory change in the State Water Quality Standards, E. Coli monitoring has been included. The statutory basis for this requirement is found at PA Code Chapter 92a.61

### **Sample Type**

Consistent with the Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, the sample type of '24-hour composite' has been continued from the existing permit for the majority of parameters and the sample type of 'Grab' will be continued for those parameters requiring grab samples: pH, DO, TRC, and Fecal Coliform.

### **Decimal Places**



DEP's software requires decimal places for some concentration limits. As needed, the concentration limits will comply with the software validation requirements.

### **Mass Loading Limitations**

Consistent with the Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, and the SOP for Establishing Effluent Limitations for Individual Sewage Permits, mass loading limits have been established for CBOD<sub>5</sub>, TSS, NH<sub>3</sub>-N. In addition, mass loading limits have been included for TDS, as was also done in the previous permit. Mass loads for TDS will be reviewed in the event of future expansions, to satisfy §95.10 of the PA Code as discussed below, and/or in the event of TDS TMDLs or DRBC TDS determinations on segments of the Schuylkill River.

### **TDS Baseline**

In order to implement the regulations at Chapter 95.10 relevant to imposing TDS limits if increased loads trigger this requirement in the future, a TDS Baseline needs to be documented. The increase of TDS loads is measured against "maximum daily discharge loads of TDS...that were authorized by the Department prior to August 21, 2010" [Chapter 95.10(a)(1)]. The 2010 Fact Sheet summarized TDS concentrations reported in the effluent between 2007 and 2009. The maximum concentration was 751 mg/l. The design flow in 2010 was 2.2 MGD. Therefore the baseline TDS as of August 2010 was thus estimated as:

$751 \text{ mg/l} \times 2.2 \text{ MGD} \times 8.34 \text{ conversion factor} = 13,779 \text{ lbs/day}$

### **Influent BOD and TSS Monitoring**

The permit will include influent BOD<sub>5</sub> and TSS monitoring at the same frequency as is done for effluent in order to implement Chapter 94.12 and assess percent removal requirements.

### **Stormwater**

Stormwater at sewage treatment plants are within the federal definition of "industrial stormwater associated with industrial activity". As such, DEP requires that any stormwater discharges meeting the federal definition must be authorized to discharge by a NPDES permit. The previous NPDES permit already recognized the stormwater discharges and required that Best Management Practices (BMPs) be followed. The renewal permit requires the same, consistent with the treatment of stormwater discharges at other STPs.

To avoid confusion that these stormwater discharges are not actually separate discharge pipes, language has been included in Part c of the permit to document that they merge with the treated effluent and discharge to outfall 001.

**Whole Effluent Toxicity (WET)**

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

- ☐ For the permit renewal application (4 tests).  
☐ Quarterly throughout the permit term.  
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.  
☒ Other: 3 tests since the last renewal permit was issued in January of 2020 (which commenced the annual testing frequency) and the most recent test that was included in the previous permit application. The previous permit application was dated December 2014. No WET tests were conducted or required between the March 2014 test and the December 15, 2020.)

**Summary of One Older Test Result**

The dilution series used (at DEP's instruction using previous procedures, older LFY, and older D.A.): 100%, 58%, 15%, 8%, and 4%.  
The Target Instream Waste Concentration (TIWC) to be used for analysis of the results: 15%.

NOEC/LC50 Data Analysis:

| Test Termination Date | Ceriodaphnia Results (% Effluent) |                   |      | Pimephales Results (% Effluent) |             |      | Pass? |
|-----------------------|-----------------------------------|-------------------|------|---------------------------------|-------------|------|-------|
|                       | NOEC Survival                     | NOEC Reproduction | LC50 | NOEC Survival                   | NOEC Growth | LC50 |       |
| March 4, 2014         | 100%                              | 58%               | 100% | 100%                            | 100%        | 100% | Pass  |

Is there reasonable potential for an excursion above water quality standards based on the results of these tests?

☐ YES ☒ NO

**Summary of Three Most Recent Test Results**

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

TST Data Analysis

| Test Termination Date | Ceriodaphnia Results (Pass/Fail) |              | Pimephales Results (Pass/Fail) |        |
|-----------------------|----------------------------------|--------------|--------------------------------|--------|
|                       | Survival                         | Reproduction | Survival                       | Growth |
| November 15, 2022     | Pass                             | Pass         | Pass                           | Pass   |
| November 23, 2021     | Pass                             | Pass         | Pass                           | Pass   |
| December 15, 2020     | Pass                             | Pass         | Pass                           | Pass   |

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

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

☐ YES ☒ NO

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

Acute Partial Mix Factor (PMFa): 0.2

Chronic Partial Mix Factor (PMFc): 1

**1. Determine IWC – Acute (IWCa):**

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

$$[(2.9 \text{ MGD} \times 1.547) / ((292 \text{ cfs} \times 0.2) + (2.9 \text{ MGD} \times 1.547))] \times 100 = 7.1\%$$

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

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

**2b. Determine Target IWCc**

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

$$[(2.9 \text{ MGD} \times 1.547) / ((292 \text{ cfs} \times 1) + (2.9 \text{ MGD} \times 1.547))] \times 100 = \text{TIWCc\%} = 1.5\% \text{ (round to 2\%)}$$

**3. Determine Dilution Series**

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

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

The current Standard Operating Procedure (SOP) for WET testing, dated May 13, 2014, was used for the above calculations and dilution series.

**WET Limits**

Has reasonable potential been determined? ☐ YES ☒ NO

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

**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 as needed and BPJ. Instantaneous Maximum (IMAX) limits are generally determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

**Outfall 001, Effective Period: from Permit Effective Date through Start-up Date of Expanded Treatment Plant.**

| Parameter                                     | Effluent Limitations                |                     |                       |                    |                     |                     | Monitoring Requirements                            |                            |
|---|-------------------------------------|---------------------|-----------------------|--------------------|---------------------|---------------------|--|----------------------------|
|   | Mass Units (lbs/day) <sup>(1)</sup> |                     | Concentrations (mg/L) |                    |                     |                     | Minimum <sup>(2)</sup><br>Measurement<br>Frequency | Required<br>Sample<br>Type |
|   | Average<br>Monthly                  | Weekly<br>Average   | Instant.<br>Minimum   | Average<br>Monthly | Weekly<br>Average   | Instant.<br>Maximum |  |                            |
| Flow (MGD)                                    | Report                              | Report<br>Daily Max | XXX                   | XXX                | XXX                 | XXX                 | Continuous   | Measured                   |
| pH (S.U.)                                     | XXX                                 | XXX                 | 6.0                   | XXX                | XXX                 | 9.0                 | 1/day  | Grab                       |
| DO  | XXX                                 | XXX                 | 5.0                   | XXX                | XXX                 | XXX                 | 1/day  | Grab                       |
| TRC   | XXX                                 | XXX                 | XXX                   | 0.5                | XXX                 | 1.6                 | 1/day  | Grab                       |
| CBOD5   | 458                                 | 734                 | XXX                   | 25.0               | 40.0                | 50                  | 2/week   | 24-Hr<br>Composite         |
| BOD5<br>Raw Sewage Influent                   | Report                              | Report<br>Daily Max | XXX                   | Report             | XXX                 | XXX                 | 2/week   | 24-Hr<br>Composite         |
| TSS   | 550                                 | 825                 | XXX                   | 30.0               | 45.0                | 60                  | 2/week   | 24-Hr<br>Composite         |
| TSS<br>Raw Sewage Influent                    | Report                              | Report<br>Daily Max | XXX                   | Report             | XXX                 | XXX                 | 2/week   | 24-Hr<br>Composite         |
| Total Dissolved Solids                        | 18,348                              | XXX                 | XXX                   | 1000.0             | XXX                 | 2000                | 2/week   | 24-Hr<br>Composite         |
| Fecal Coliform (No./100 ml)<br>Oct 1 - Apr 30 | XXX                                 | XXX                 | XXX                   | 2000<br>Geo Mean   | XXX                 | 10000               | 2/week   | Grab                       |
| Fecal Coliform (No./100 ml)<br>May 1 - Sep 30 | XXX                                 | XXX                 | XXX                   | 200<br>Geo Mean    | XXX                 | 1000                | 2/week   | Grab                       |
| E. Coli (No./100 ml)                          | XXX                                 | XXX                 | XXX                   | XXX                | XXX                 | Report              | 1/month  | Grab                       |
| Nitrate-Nitrite as Nitrogen                   | XXX                                 | XXX                 | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |

| Parameter                 | Effluent Limitations                |                   |                       |                    |                     |                     | Monitoring Requirements                            |                            |
|---------------------------|-------------------------------------|-------------------|-----------------------|--------------------|---------------------|---------------------|--|----------------------------|
|                           | Mass Units (lbs/day) <sup>(1)</sup> |                   | Concentrations (mg/L) |                    |                     |                     | Minimum <sup>(2)</sup><br>Measurement<br>Frequency | Required<br>Sample<br>Type |
|                           | Average<br>Monthly                  | Weekly<br>Average | Instant.<br>Minimum   | Average<br>Monthly | Weekly<br>Average   | Instant.<br>Maximum |  |                            |
| Total Nitrogen            | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | Calculation                |
| Ammonia<br>Nov 1 - Apr 30 | 220                                 | XXX               | XXX                   | 12.0               | XXX                 | 24                  | 2/week   | 24-Hr<br>Composite         |
| Ammonia<br>May 1 - Oct 31 | 73                                  | XXX               | XXX                   | 4.0                | XXX                 | 8                   | 2/week   | 24-Hr<br>Composite         |
| Total Kjeldahl Nitrogen   | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| Total Phosphorus          | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| Total Copper              | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| Total Thallium            | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| PCBs (Dry Weather) (pg/L) | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/year   | 24-Hr<br>Composite         |
| PCBs (Wet Weather) (pg/L) | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/year   | 24-Hr<br>Composite         |

Compliance Sampling Location: at 001

Other Comments:

See PART C Conditions for PCB monitoring

**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 as needed and BPJ. Instantaneous Maximum (IMAX) limits are generally determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

**Outfall 001, Effective Period: from Start-up Date of Expanded Treatment Plant through Permit Expiration Date.**

| Parameter                                     | Effluent Limitations                |                     |                       |                    |                     |                     | Monitoring Requirements                            |                            |
|---|-------------------------------------|---------------------|-----------------------|--------------------|---------------------|---------------------|--|----------------------------|
|   | Mass Units (lbs/day) <sup>(1)</sup> |                     | Concentrations (mg/L) |                    |                     |                     | Minimum <sup>(2)</sup><br>Measurement<br>Frequency | Required<br>Sample<br>Type |
|   | Average<br>Monthly                  | Weekly<br>Average   | Instant.<br>Minimum   | Average<br>Monthly | Weekly<br>Average   | Instant.<br>Maximum |  |                            |
| Flow (MGD)                                    | Report                              | Report<br>Daily Max | XXX                   | XXX                | XXX                 | XXX                 | Continuous   | Measured                   |
| pH (S.U.)                                     | XXX                                 | XXX                 | 6.0                   | XXX                | XXX                 | 9.0                 | 1/day  | Grab                       |
| DO  | XXX                                 | XXX                 | 5.0                   | XXX                | XXX                 | XXX                 | 1/day  | Grab                       |
| TRC   | XXX                                 | XXX                 | XXX                   | 0.5                | XXX                 | 1.6                 | 1/day  | Grab                       |
| Ultraviolet Light<br>Transmittance (%)        | XXX                                 | XXX                 | Report                | XXX                | XXX                 | XXX                 | 1/day  | Recorded                   |
| CBOD5   | 460                                 | 701                 | XXX                   | 19.0               | 29.0                | 38                  | 2/week   | 24-Hr<br>Composite         |
| BOD5<br>Raw Sewage Influent                   | Report                              | Report<br>Daily Max | XXX                   | Report             | XXX                 | XXX                 | 2/week   | 24-Hr<br>Composite         |
| TSS   | 726                                 | 1088                | XXX                   | 30.0               | 45.0                | 60                  | 2/week   | 24-Hr<br>Composite         |
| TSS<br>Raw Sewage Influent                    | Report                              | Report<br>Daily Max | XXX                   | Report             | XXX                 | XXX                 | 2/week   | 24-Hr<br>Composite         |
| Total Dissolved Solids                        | 24,186                              | XXX                 | XXX                   | 1000.0             | XXX                 | 2000                | 2/week   | 24-Hr<br>Composite         |
| Fecal Coliform (No./100 ml)<br>Oct 1 - Apr 30 | XXX                                 | XXX                 | XXX                   | 2000<br>Geo Mean   | XXX                 | 10000               | 2/week   | Grab                       |
| Fecal Coliform (No./100 ml)<br>May 1 - Sep 30 | XXX                                 | XXX                 | XXX                   | 200<br>Geo Mean    | XXX                 | 1000                | 2/week   | Grab                       |
| E. Coli (No./100 ml)                          | XXX                                 | XXX                 | XXX                   | XXX                | XXX                 | Report              | 1/month  | Grab                       |
| Nitrate-Nitrite as Nitrogen                   | XXX                                 | XXX                 | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |

| Parameter                 | Effluent Limitations                |                   |                       |                    |                     |                     | Monitoring Requirements                            |                            |
|---------------------------|-------------------------------------|-------------------|-----------------------|--------------------|---------------------|---------------------|--|----------------------------|
|                           | Mass Units (lbs/day) <sup>(1)</sup> |                   | Concentrations (mg/L) |                    |                     |                     | Minimum <sup>(2)</sup><br>Measurement<br>Frequency | Required<br>Sample<br>Type |
|                           | Average<br>Monthly                  | Weekly<br>Average | Instant.<br>Minimum   | Average<br>Monthly | Weekly<br>Average   | Instant.<br>Maximum |  |                            |
| Total Nitrogen            | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | Calculation                |
| Ammonia<br>Nov 1 - Apr 30 | 290                                 | XXX               | XXX                   | 12.0               | XXX                 | 24                  | 2/week   | 24-Hr<br>Composite         |
| Ammonia<br>May 1 - Oct 31 | 97                                  | XXX               | XXX                   | 4.0                | XXX                 | 8                   | 2/week   | 24-Hr<br>Composite         |
| Total Kjeldahl Nitrogen   | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| Total Phosphorus          | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| Total Copper              | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| Total Thallium            | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/month  | 24-Hr<br>Composite         |
| PCBs (Dry Weather) (pg/L) | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/year   | 24-Hr<br>Composite         |
| PCBs (Wet Weather) (pg/L) | XXX                                 | XXX               | XXX                   | XXX                | Report<br>Daily Max | XXX                 | 1/year   | 24-Hr<br>Composite         |

Compliance Sampling Location: at 001

Other Comments:

See PART C Conditions for PCB monitoring

| Tools and References Used to Develop Permit |  |
|---|--|
| <input checked="" type="checkbox"/>         | WQM for Windows Model (see Attachment)   |
| <input checked="" type="checkbox"/>         | Toxics Management Spreadsheet (see Attachment)   |
| <input checked="" type="checkbox"/>         | TRC Model Spreadsheet (see Attachment)   |
| <input type="checkbox"/>                    | Temperature Model Spreadsheet (see Attachment)   |
| <input checked="" type="checkbox"/>         | Water Quality Toxics Management Strategy, 361-0100-003, 4/06.  |
| <input checked="" type="checkbox"/>         | Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.   |
| <input type="checkbox"/>                    | Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.  |
| <input type="checkbox"/>                    | Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.  |
| <input type="checkbox"/>                    | Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.   |
| <input type="checkbox"/>                    | Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.  |
| <input type="checkbox"/>                    | Pennsylvania CSO Policy, 385-2000-011, 9/08.   |
| <input checked="" type="checkbox"/>         | Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.  |
| <input type="checkbox"/>                    | Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.   |
| <input checked="" type="checkbox"/>         | Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.  |
| <input checked="" type="checkbox"/>         | Implementation Guidance Design Conditions, 391-2000-006, 9/97.   |
| <input checked="" type="checkbox"/>         | Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.  |
| <input type="checkbox"/>                    | Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.   |
| <input type="checkbox"/>                    | Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.   |
| <input checked="" type="checkbox"/>         | Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.  |
| <input checked="" type="checkbox"/>         | Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.  |
| <input type="checkbox"/>                    | Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.   |
| <input checked="" type="checkbox"/>         | Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.   |
| <input type="checkbox"/>                    | Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.  |
| <input type="checkbox"/>                    | Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.   |
| <input type="checkbox"/>                    | Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.       |
| <input type="checkbox"/>                    | Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.   |
| <input type="checkbox"/>                    | Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999. |
| <input checked="" type="checkbox"/>         | Design Stream Flows, 391-2000-023, 9/98.   |
| <input type="checkbox"/>                    | Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.                                     |
| <input type="checkbox"/>                    | Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.   |
| <input type="checkbox"/>                    | Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.   |
| <input checked="" type="checkbox"/>         | Standard Operating Procedure (SOP) for Clean Water Program Whole Effluent Toxicity (WET), SOP No. BPNPSM-PMT-03, Revised, May 13, 2014, Version 1.4.   |
| <input checked="" type="checkbox"/>         | SOP: Establishing Effluent Limitations for Individual Sewage Permits, March 24, 2021, Vsn 1.9.   |
| <input checked="" type="checkbox"/>         | SOP: Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers, SOP No. BCW-PMT-037, Revised May 20, 2021, Version 1.5.  |
|   |  |





## pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
WATER MANAGEMENT PROGRAM

December 7, 2010

Amity Township  
c/o Township Secretary  
2004 Weavertown Road  
Douglassville, PA 19518

Re: Act 537 Plan Update  
APS ID No. 541430  
DEP Code No. B2-06917-ACT  
Amity Township, Berks County

Ladies and Gentlemen:

We have reviewed your August 2010 Act 537 Plan, submitted on November 24, 2010, prepared by ARRO Engineering and Environmental Consultants, and entitled Amity Township Act 537 Plan Update. The submission is consistent with the planning requirements given in Chapter 71 of the rules and regulations of the Department. The plan provides for an upgrade and expansion of the Amity Township Wastewater Treatment Plant to an average annual flow of 2.90 MGD.

The plan is approved with the following conditions:

1. The approved project will require an NPDES Permit for the proposed effluent discharge. The permit application must be submitted in the name of the municipality or authority, as appropriate.
2. The approved project will require a Water Management Part II Permit for the construction and operation of the proposed sewage facilities. The permit application must be submitted in the name of the municipality or authority, as appropriate. Issuance of a Part II Permit will be based upon a technical evaluation of the permit application and supporting documentation. Starting construction prior to obtaining a Part II Permit is a violation of The Clean Streams Law.
3. Other Departmental permits may be required for construction if encroachment to streams or wetlands will result. Information regarding the requirements for such permits or approvals can be obtained from the Department's Permitting and Technical Services Section, Watershed Management Program at the letterhead address or telephone 717.765.4802.

It is now Amity Township's responsibility to implement the 537 Plan in accordance with the schedules contained within the Plan.

---

Southcentral Regional Office | 909 Himerston Avenue | Harrisburg, PA 17110-8200

717.765.4707 | Fax: 717.765.4760

printed on recycled paper 

[www.depweb.state.pa.us](http://www.depweb.state.pa.us)

Amity Township

- 2 -

December 7, 2010

Since the Department has approved your Plan, you are now eligible to receive a 50 percent planning cost reimbursement as provided under Section 6 of the Sewage Facilities Act (Act 537). A copy of the reimbursement application is enclosed. You are reminded that reimbursement applications must show detailed cost breakdowns of tasks completed or you will place your reimbursement in jeopardy.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, PO Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

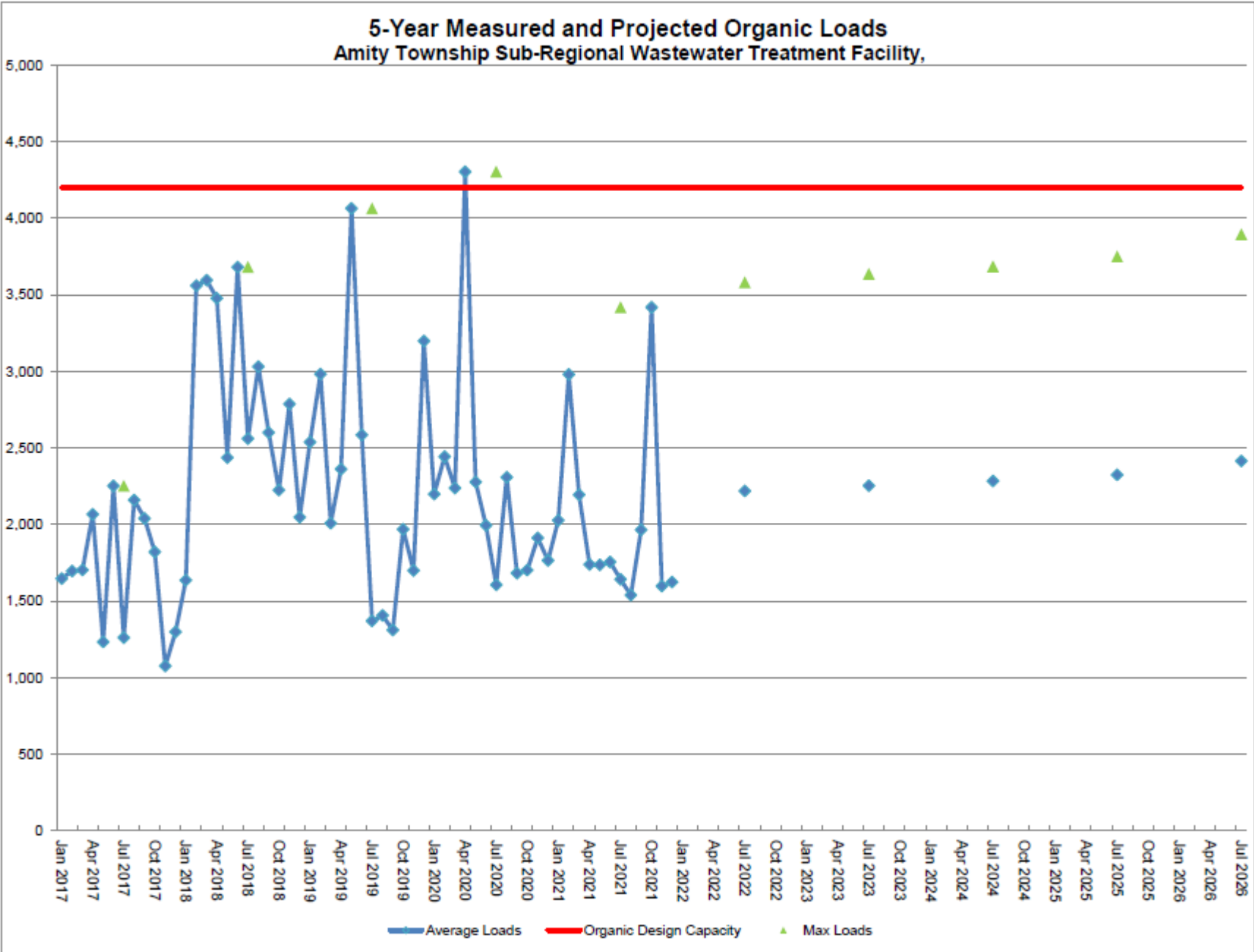
If you have any questions, please call Mr. David Gates at 717.705.4766.

Sincerely,



Lee A. McDonnell, P.E.  
Program Manager  
Water Management Program

cc: ARRO Engineering & Environmental Consultants



**NPDES Permit Fact Sheet**  
**Amity Township STP**

**NPDES Permit No. PA0070351**



**PADEP Chapter 94 Spreadsheet**  
**Sewage Treatment Plants**



Year: **2021**

Facility Name: **Amity Township Sub-Regional Wastewater Treatment Facility**

Permit No.: **PA0070351**

Persons/EDU: **2.73**

Existing Hydraulic Design Capacity: **2.2** MGD  
 Upgrade Planned in Next 5 Years? **NO** Year:   
 Future Hydraulic Design Capacity:  MGD

Existing Organic Design Capacity: **4.202** lbs BOD5/day  
 Upgrade Planned in Next 5 Years? **NO** Year:   
 Future Organic Design Capacity:  lbs BOD5/day

**Monthly Average Flows for Past Five Years (MGD)**

| Month     | 2017  | 2018  | 2019  | 2020  | 2021   |
|-----------|-------|-------|-------|-------|--------|
| January   | 1.345 | 1.278 | 2.116 | 1.591 | 1.057  |
| February  | 0.962 | 3.172 | 1.427 | 1.35  | 1.638  |
| March     | 2.577 | 2.465 | 1.72  | 1.42  | 1.937  |
| April     | 2.258 | 1.526 | 1.358 | 1.651 | 0.889  |
| May       | 1.142 | 1.84  | 2.126 | 1.188 | 0.8038 |
| June      | 1.219 | 1.513 | 1.35  | 0.83  | 0.898  |
| July      | 1.231 | 2.096 | 1.437 | 0.751 | 0.763  |
| August    | 1.077 | 2.7   | 0.845 | 0.996 | 0.752  |
| September | 0.97  | 2.831 | 0.52  | 0.787 | 1.559  |
| October   | 0.746 | 1.161 | 0.946 | 0.83  | 1.387  |
| November  | 0.819 | 3.665 | 1.168 | 1.042 | 0.725  |
| December  | 0.678 | 2.186 | 1.547 | 1.985 | 0.567  |

|                   |         |         |         |         |         |
|-------------------|---------|---------|---------|---------|---------|
| Annual Avg        | 1.252   | 2.203   | 1.363   | 1.202   | 1.0813  |
| Max 3-Mo Avg      | 1.992   | 2.552   | 2.656   | 1.496   | 1.56    |
| Max : Avg Ratio   | 1.59    | 1.16    | 1.95    | 1.24    | 1.44    |
| Existing EDUs     | 5,327.0 | 5,409.0 | 5,451.0 | 5,452.0 | 5,463.0 |
| Flow/EDU (GPD)    | 235.0   | 407.3   | 250.0   | 220.5   | 197.9   |
| Flow/Capita (GPD) | 86.1    | 149.2   | 91.6    | 80.8    | 72.5    |
| Exist. Overload?  | NO      | NO      | NO      | NO      | NO      |

**Projected Flows for Next Five Years (MGD)**

|                    | 2022   | 2023   | 2024   | 2025   | 2026   |
|--------------------|--------|--------|--------|--------|--------|
| New EDUs           | 45.0   | 85.0   | 75.0   | 100.0  | 222.0  |
| New EDU Flow       | 0.0118 | 0.0223 | 0.0197 | 0.0262 | 0.0582 |
| Proj. Annual Avg   | 1.4321 | 1.4544 | 1.4741 | 1.5003 | 1.5585 |
| Proj. Max 3-Mo Avg | 2.1153 | 2.1483 | 2.1774 | 2.2161 | 2.302  |
| Proj. Overload?    | NO     | NO     | NO     | YES    | YES    |

**Monthly Average BOD5 Loads for Past Five Years (lbs/day)**

| Month     | 2017  | 2018  | 2019  | 2020  | 2021  |
|-----------|-------|-------|-------|-------|-------|
| January   | 1,647 | 1,637 | 2,539 | 2,199 | 2,027 |
| February  | 1,697 | 3,560 | 2,983 | 2,443 | 2,980 |
| March     | 1,704 | 3,596 | 2,009 | 2,238 | 2,195 |
| April     | 2,067 | 3,478 | 2,362 | 4,304 | 1,739 |
| May       | 1,234 | 2,437 | 4,064 | 2,278 | 1,737 |
| June      | 2,252 | 3,682 | 2,585 | 1,995 | 1,755 |
| July      | 1,262 | 2,560 | 1,371 | 1,606 | 1,642 |
| August    | 2,160 | 3,032 | 1,406 | 2,309 | 1,539 |
| September | 2,041 | 2,601 | 1,310 | 1,682 | 1,965 |
| October   | 1,821 | 2,225 | 1,970 | 1,702 | 3,419 |
| November  | 1,076 | 2,787 | 1,700 | 1,913 | 1,598 |
| December  | 1,299 | 2,048 | 3,198 | 1,766 | 1,624 |

|                  |       |       |       |       |       |
|------------------|-------|-------|-------|-------|-------|
| Annual Avg       | 1,688 | 2,804 | 2,291 | 2,203 | 2,018 |
| Max Mo Avg       | 2,252 | 3,682 | 4,064 | 4,304 | 3,419 |
| Max : Avg Ratio  | 1.33  | 1.31  | 1.77  | 1.95  | 1.69  |
| Existing EDUs    | 5,327 | 5,409 | 5,451 | 5,452 | 5,463 |
| Load/EDU         | 0.317 | 0.518 | 0.420 | 0.404 | 0.369 |
| Load/Capita      | 0.116 | 0.190 | 0.154 | 0.148 | 0.135 |
| Exist. Overload? | NO    | NO    | NO    | YES   | NO    |

**Projected BOD5 Loads for Next Five Years (lbs/day)**

|                  | 2022   | 2023   | 2024   | 2025   | 2026   |
|------------------|--------|--------|--------|--------|--------|
| New EDUs         | 45     | 85     | 75     | 100    | 222    |
| New EDU Load     | 18,262 | 34,495 | 30,437 | 40,583 | 90,094 |
| Proj. Annual Avg | 2,219  | 2,254  | 2,284  | 2,325  | 2,415  |
| Proj. Max Avg    | 3,581  | 3,637  | 3,686  | 3,751  | 3,897  |
| Proj. Overload?  | NO     | NO     | NO     | NO     | NO     |

|  |                           |        |           |           |           |
|--|---------------------------|--------|-----------|-----------|-----------|
| StreamStats Output Report -Amity STP 001                     |                           |        |           |           |           |
| State/Region ID  | PA                        |        |           |           |           |
| Workspace ID   | PA20230130210526726000    |        |           |           |           |
| Latitude   | 40.25118                  |        |           |           |           |
| Longitude  | -75.72706                 |        |           |           |           |
| Time   | 1/30/2023 4:05:52 PM      |        |           |           |           |
| Low-Flow Statistics Parameter 12.8 Percent Low Flow Region 1 |                           |        |           |           |           |
| Parameter Code   | Parameter Name            | Value  | Units     | Min Limit | Max Limit |
| DRNAREA  | Drainage Area             | 1040   | square mi | 4.78      | 1150      |
| BSLOPD   | Mean Basin Slope degrees  | 6.5526 | degrees   | 1.7       | 6.4       |
| ROCKDEP  | Depth to Rock             | 4.4    | feet      | 4.13      | 5.21      |
| URBAN  | Percent Urban             | 6.5898 | percent   | 0         | 89        |
| Low-Flow Statistics Parameter 87.2 Percent Low Flow Region 2 |                           |        |           |           |           |
| Parameter Code   | Parameter Name            | Value  | Units     | Min Limit | Max Limit |
| DRNAREA  | Drainage Area             | 1040   | square mi | 4.93      | 1280      |
| PRECIP   | Mean Annual Precipitation | 47     | inches    | 35        | 50.4      |
| STRDEN   | Stream Density            | 1.35   | miles per | 0.51      | 3.1       |
| ROCKDEP  | Depth to Rock             | 4.4    | feet      | 3.32      | 5.65      |
| CARBON   | Percent Carbonate         | 18.61  | percent   | 0         | 99        |
| Low-Flow Statistics Flow 12.8 Percent Low Flow Region 1      |                           |        |           |           |           |
| Statistic  | Value                     | Unit   |           |           |           |
| 7 Day 2 Year Low Flow  | 269                       | ft^3/s |           |           |           |
| 30 Day 2 Year Low Flow                                       | 326                       | ft^3/s |           |           |           |
| 7 Day 10 Year Low Flow                                       | 168                       | ft^3/s |           |           |           |
| 30 Day 10 Year Low Flow                                      | 199                       | ft^3/s |           |           |           |
| 90 Day 10 Year Low Flow                                      | 253                       | ft^3/s |           |           |           |
| Low-Flow Statistics Flow 87.2 Percent Low Flow Region 2      |                           |        |           |           |           |
| Statistic  | Value                     | Unit   | SE        | ASEp      |           |
| 7 Day 2 Year Low Flow  | 450                       | ft^3/s | 38        | 38        |           |
| 30 Day 2 Year Low Flow                                       | 528                       | ft^3/s | 33        | 33        |           |
| 7 Day 10 Year Low Flow                                       | 292                       | ft^3/s | 51        | 51        |           |
| 30 Day 10 Year Low Flow                                      | 345                       | ft^3/s | 46        | 46        |           |
| 90 Day 10 Year Low Flow                                      | 419                       | ft^3/s | 36        | 36        |           |
| Low-Flow Statistics Flow Area-Averaged                       |                           |        |           |           |           |
| Statistic  | Value                     | Unit   |           |           |           |
| 7 Day 2 Year Low Flow  | 427                       | ft^3/s |           |           |           |
| 30 Day 2 Year Low Flow                                       | 502                       | ft^3/s |           |           |           |
| 7 Day 10 Year Low Flow                                       | 276                       | ft^3/s |           |           |           |
| 30 Day 10 Year Low Flow                                      | 326                       | ft^3/s |           |           |           |
| 90 Day 10 Year Low Flow                                      | 398                       | ft^3/s |           |           |           |

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered preliminary.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only.

Application Version: 4.12.0

StreamStats Services Version: 1.2.22

NPDES Services Version: 2.2.1

|  |                                |        |           |           |           |
|--|--------------------------------|--------|-----------|-----------|-----------|
| StreamStats Output Report-@ downstrm PWS |                                |        |           |           |           |
| State/Reg                                | PA                             |        |           |           |           |
| Workspace                                | PA20230201203405543000         |        |           |           |           |
| Latitude                                 |                                |        |           |           |           |
| Longitude                                |                                |        |           |           |           |
| Time                                     | 2/1/2023 3:34:29 PM            |        |           |           |           |
| Low-Flow                                 | 13.8 Percent Low Flow Region 1 |        |           |           |           |
| Parameter                                | Parameter Name                 | Value  | Units     | Min Limit | Max Limit |
| DRNAREA                                  | Drainage Area                  | 1050   | square mi | 4.78      | 1150      |
| BSLOPD                                   | Mean Basin Slope degrees       | 6.5303 | degrees   | 1.7       | 6.4       |
| ROCKDEP                                  | Depth to Rock                  | 4.4    | feet      | 4.13      | 5.21      |
| URBAN                                    | Percent Urban                  | 6.5759 | percent   | 0         | 89        |
| Low-Flow                                 | 86.2 Percent Low Flow Region 2 |        |           |           |           |
| Parameter                                | Parameter Name                 | Value  | Units     | Min Limit | Max Limit |
| DRNAREA                                  | Drainage Area                  | 1050   | square mi | 4.93      | 1280      |
| PRECIP                                   | Mean Annual Precipitation      | 47     | inches    | 35        | 50.4      |
| STRDEN                                   | Stream Density                 | 1.36   | miles per | 0.51      | 3.1       |
| ROCKDEP                                  | Depth to Rock                  | 4.4    | feet      | 3.32      | 5.65      |
| CARBON                                   | Percent Carbonate              | 18.38  | percent   | 0         | 99        |
| Low-Flow                                 | 13.8 Percent Low Flow Region 1 |        |           |           |           |
| Statistic                                | Value                          | Unit   |           |           |           |
| 7 Day 2 Ye                               | 271                            | ft^3/s |           |           |           |
| 30 Day 2 Y                               | 328                            | ft^3/s |           |           |           |
| 7 Day 10 Y                               | 168                            | ft^3/s |           |           |           |
| 30 Day 10                                | 200                            | ft^3/s |           |           |           |
| 90 Day 10                                | 254                            | ft^3/s |           |           |           |
| Low-Flow                                 | 86.2 Percent Low Flow Region 2 |        |           |           |           |
| Statistic                                | Value                          | Unit   | SE        | ASEp      |           |
| 7 Day 2 Ye                               | 451                            | ft^3/s | 38        | 38        |           |
| 30 Day 2 Y                               | 529                            | ft^3/s | 33        | 33        |           |
| 7 Day 10 Y                               | 292                            | ft^3/s | 51        | 51        |           |
| 30 Day 10                                | 345                            | ft^3/s | 46        | 46        |           |
| 90 Day 10                                | 419                            | ft^3/s | 36        | 36        |           |
| Low-Flow                                 | Area-Averaged                  |        |           |           |           |
| Statistic                                | Value                          | Unit   |           |           |           |
| 7 Day 2 Ye                               | 426                            | ft^3/s |           |           |           |
| 30 Day 2 Y                               | 501                            | ft^3/s |           |           |           |
| 7 Day 10 Y                               | 275                            | ft^3/s |           |           |           |
| 30 Day 10                                | 325                            | ft^3/s |           |           |           |
| 90 Day 10                                | 396                            | ft^3/s |           |           |           |

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Application Version: 4.12.0

StreamStats Services Version: 1.2.22

USGS Services Version: 2.2.1

|   |                           |            |           |           |           |
|---|---------------------------|------------|-----------|-----------|-----------|
| StreamStats Output Report-confl Hay Crk & Schuyl R      |                           |            |           |           |           |
| State/Region ID   | PA                        |            |           |           |           |
| Workspace ID  | PA20230201210743871000    |            |           |           |           |
| Latitude  | 40.27091                  |            |           |           |           |
| Longitude   | -75.8003                  |            |           |           |           |
| Time  | 2/1/2023                  | 4:08:08 PM |           |           |           |
| Low-Flow Statistics Para 9.4 Percent Low Flow Region 1  |                           |            |           |           |           |
| Parameter Code  | Parameter Name            | Value      | Units     | Min Limit | Max Limit |
| DRNAREA   | Drainage Area             | 999        | square mi | 4.78      | 1150      |
| BSLOPD  | Mean Basin Slope degrees  | 6.585      | degrees   | 1.7       | 6.4       |
| ROCKDEP   | Depth to Rock             | 4.4        | feet      | 4.13      | 5.21      |
| URBAN   | Percent Urban             | 6.6524     | percent   | 0         | 89        |
| Low-Flow Statistics Para 90.6 Percent Low Flow Region 2 |                           |            |           |           |           |
| Parameter Code  | Parameter Name            | Value      | Units     | Min Limit | Max Limit |
| DRNAREA   | Drainage Area             | 999        | square mi | 4.93      | 1280      |
| PRECIP  | Mean Annual Precipitation | 47         | inches    | 35        | 50.4      |
| STRDEN  | Stream Density            | 1.32       | miles per | 0.51      | 3.1       |
| ROCKDEP   | Depth to Rock             | 4.4        | feet      | 3.32      | 5.65      |
| CARBON  | Percent Carbonate         | 18.58      | percent   | 0         | 99        |
| Low-Flow Statistics Flow 9.4 Percent Low Flow Region 1  |                           |            |           |           |           |
| Statistic   | Value                     | Unit       |           |           |           |
| 7 Day 2 Year Low Flow                                   | 260                       | ft^3/s     |           |           |           |
| 30 Day 2 Year Low Flow                                  | 315                       | ft^3/s     |           |           |           |
| 7 Day 10 Year Low Flow                                  | 162                       | ft^3/s     |           |           |           |
| 30 Day 10 Year Low Flow                                 | 193                       | ft^3/s     |           |           |           |
| 90 Day 10 Year Low Flow                                 | 244                       | ft^3/s     |           |           |           |
| Low-Flow Statistics Flow 90.6 Percent Low Flow Region 2 |                           |            |           |           |           |
| Statistic   | Value                     | Unit       | SE        | ASEp      |           |
| 7 Day 2 Year Low Flow                                   | 439                       | ft^3/s     | 38        | 38        |           |
| 30 Day 2 Year Low Flow                                  | 515                       | ft^3/s     | 33        | 33        |           |
| 7 Day 10 Year Low Flow                                  | 285                       | ft^3/s     | 51        | 51        |           |
| 30 Day 10 Year Low Flow                                 | 336                       | ft^3/s     | 46        | 46        |           |
| 90 Day 10 Year Low Flow                                 | 409                       | ft^3/s     | 36        | 36        |           |
| Low-Flow Statistics Flow Area-Averaged                  |                           |            |           |           |           |
| Statistic   | Value                     | Unit       |           |           |           |
| 7 Day 2 Year Low Flow                                   | 422                       | ft^3/s     |           |           |           |
| 30 Day 2 Year Low Flow                                  | 496                       | ft^3/s     |           |           |           |
| 7 Day 10 Year Low Flow                                  | 273                       | ft^3/s     |           |           |           |
| 30 Day 10 Year Low Flow                                 | 323                       | ft^3/s     |           |           |           |
| 90 Day 10 Year Low Flow                                 | 393                       | ft^3/s     |           |           |           |

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Application Version: 4.12.0

StreamStats Services Version: 1.2.22

NPS Services Version: 2.2.1

WQM Model with Amity design flow of 2.2 MGD

(and Drainage Area/3 to account for wide river and including upstream discharger Birdsboro STP and downstream public water supply intake).....

Input Data WQM 7.0

General Data

General

Stream

Discharge and Parameters

| Stream Code | RMI    | Elevation (ft) | Drainage Area (sq mi) | LFY (cfs) | Slope (ft/ft) | PWS With (mgd) | Apply FC                            |
|-------------|--------|----------------|-----------------------|-----------|---------------|----------------|-------------------------------------|
| 833         | 63.400 | 160            | 333                   | 0.28      | 0             | 0              | <input checked="" type="checkbox"/> |
| 833         | 58.800 | 145            | 347                   | 0.28      | 0             | 0              | <input checked="" type="checkbox"/> |
| 833         | 57.000 | 135            | 350                   | 0.28      | 0             | 12             | <input checked="" type="checkbox"/> |

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Input Data WQM 7.0

Stream Data

General

Stream

Discharge and Parameters

Design Condition

☒ Q7-10
 ☐ Q1-10
 ☐ Q30-10

| RMI      | Trib Flow<br>(cfs) | Stream<br>Flow<br>(cfs) | Rch<br>Trav<br>Time<br>(days) | Rch<br>Velocity<br>(fps) | WD Ratio | Rch<br>Width<br>(ft) | Rch<br>Depth<br>(ft) | Tributary<br>Temp<br>(°C) | pH   | Stream<br>Temp<br>(°C) | pH   |
|----------|--------------------|-------------------------|-------------------------------|--------------------------|----------|----------------------|----------------------|---------------------------|------|------------------------|------|
| ▶ 63.400 | 0.00               | 0.00                    | 0.000                         | 0.00                     | 100      | 0.00                 | 0.00                 | 25.00                     | 7.00 | 0.000                  | 0.00 |
| 58.800   | 0.00               | 0.00                    | 0.000                         | 0.00                     | 100      | 0.00                 | 0.00                 | 25.00                     | 7.00 | 0.000                  | 0.00 |
| 57.000   | 0.00               | 0.00                    | 0.000                         | 0.00                     | 100      | 0.00                 | 0.00                 | 25.00                     | 7.00 | 0.000                  | 0.00 |

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Input Data WQM 7.0

Discharge and Parameter Data

General

Stream

Discharge and Parameters

Discharge Data

| RMI    | Name         | Permit Number | Existing<br>Disc Flow<br>(mgd) | Permitted<br>Disc Flow<br>(mgd) | Design<br>Disc Flow<br>(mgd) | Reserve<br>Factor | Disc<br>Temp<br>(°C) | Disc<br>pH |
|--------|--------------|---------------|--------------------------------|---------------------------------|------------------------------|-------------------|----------------------|------------|
| 63.400 | BirdsboroSTP | PA0021709     | 0.0000                         | 1.3500                          | 0.0000                       | 0.000             | 25.00                | 7.00       |

Parameter Data

| Parameter Name   | Disc<br>Conc<br>(mg/L) | Trib Conc<br>(mg/L) | Stream<br>Conc<br>(mg/L) | Fate Coef<br>(1/day) |
|------------------|------------------------|---------------------|--------------------------|----------------------|
| CBOD5            | 25.00                  | 2.00                | 0.00                     | 1.50                 |
| NH3-N            | 4.70                   | 0.00                | 0.00                     | 0.70                 |
| Dissolved Oxygen | 5.00                   | 8.24                | 0.00                     | 0.00                 |

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Discharge and Parameter Data

General

Stream

Discharge and Parameters

Discharge Data

| RMI    | Name      | Permit Number | Existing<br>Disc Flow<br>(mgd) | Permitted<br>Disc Flow<br>(mgd) | Design<br>Disc Flow<br>(mgd) | Reserve<br>Factor | Disc<br>Temp<br>(°C) | Disc<br>pH |
|--------|-----------|---------------|--------------------------------|---------------------------------|------------------------------|-------------------|----------------------|------------|
| 58.800 | Amity STP | PA0070351     | 0.0000                         | 2.2000                          | 0.0000                       | 0.000             | 25.00                | 7.00       |

Parameter Data

| Parameter Name   | Disc<br>Conc<br>(mg/L) | Trib Conc<br>(mg/L) | Stream<br>Conc<br>(mg/L) | Fate Coef<br>(1/day) |
|------------------|------------------------|---------------------|--------------------------|----------------------|
| CBOD5            | 25.00                  | 2.00                | 0.00                     | 1.50                 |
| NH3-N            | 4.00                   | 0.00                | 0.00                     | 0.70                 |
| Dissolved Oxygen | 5.00                   | 8.24                | 0.00                     | 0.00                 |

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Input Data WQM 7.0

Discharge and Parameter Data

General

Stream

Discharge and Parameters

Discharge Data

| RMI    | Name         | Permit Number | Existing<br>Disc Flow<br>(mgd) | Permitted<br>Disc Flow<br>(mgd) | Design<br>Disc Flow<br>(mgd) | Reserve<br>Factor | Disc<br>Temp<br>(°C) | Disc<br>pH |
|--------|--------------|---------------|--------------------------------|---------------------------------|------------------------------|-------------------|----------------------|------------|
| 57.000 | downstrmPw/S |               | 0.0000                         | 0.0000                          | 0.0000                       | 0.000             | 25.00                | 7.00       |

Parameter Data

| Parameter Name   | Disc<br>Conc<br>(mg/L) | Trib Conc<br>(mg/L) | Stream<br>Conc<br>(mg/L) | Fate Coef<br>(1/day) |
|------------------|------------------------|---------------------|--------------------------|----------------------|
| CBOD5            | 2.00                   | 2.00                | 0.00                     | 1.50                 |
| NH3-N            | 0.00                   | 0.00                | 0.00                     | 0.70                 |
| Dissolved Oxygen | 5.00                   | 8.24                | 0.00                     | 0.00                 |

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Hydrodynamics

NH3-N Allocations

D.O. Allocations

D.O. Simulation

Effluent Limitations

|                          |                            |                           |                      |
|--------------------------|----------------------------|---------------------------|----------------------|
| RMI                      | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH          |
| 58.800                   | 3.550                      | 25.000                    | 7.000                |
| Reach Width (ft)         | Reach Depth (ft)           | Reach WD Ratio            | Reach Velocity (fps) |
| 147.550                  | 1.020                      | 144.624                   | 0.682                |
| Reach C-BOD5 (mg/L)      | Reach Kc (1/days)          | Reach NH3-N (mg/L)        | Reach Kn (1/days)    |
| 2.94                     | 0.484                      | 0.19                      | 1.029                |
| Reach DO (mg/L)          | Reach Kr (1/days)          | Kr Equation               | Reach DO Goal (mg/L) |
| 7.481                    | 3.768                      | Tsivoglou                 | 5                    |
| Reach Travel Time (days) | Subreach Results           |                           |                      |
| 0.161                    | TravTime (days)            | CBOD5 (mg/L)              | NH3-N (mg/L)         |
|                          |                            |                           | D.O. (mg/L)          |
|                          | 0.016                      | 2.91                      | 0.19                 |
|                          | 0.032                      | 2.88                      | 0.19                 |
|                          | 0.048                      | 2.86                      | 0.18                 |
|                          | 0.065                      | 2.83                      | 0.18                 |
|                          | 0.081                      | 2.80                      | 0.18                 |
|                          | 0.097                      | 2.77                      | 0.17                 |
|                          | 0.113                      | 2.75                      | 0.17                 |
|                          | 0.129                      | 2.72                      | 0.17                 |
|                          | 0.145                      | 2.69                      | 0.17                 |
|                          | 0.161                      | 2.67                      | 0.16                 |

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Hydrodynamics

NH3-N Allocations

D.O. Allocations

D.O. Simulation

Effluent Limitations

|       |                |               |                 |
|-------|----------------|---------------|-----------------|
| RMI   | Discharge Name | Permit Number | Disc Flow (mgd) |
| 58.80 | Amity STP      | PA0070351     | 0.0000          |

| Parameter        | Effluent Limit<br>30 Day Average<br>(mg/L) | Effluent Limit<br>Maximum<br>(mg/L) | Effluent Limit<br>Minimum<br>(mg/L) |
|------------------|--|-------------------------------------|-------------------------------------|
| CBOD5            | 25   |                                     |                                     |
| NH3-N            | 4  | 8                                   |                                     |
| Dissolved Oxygen |  |                                     | 5                                   |

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Re-Run WQM 7.0 Model with Amity design flow of 2.9 MGD.....next pages

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General Data

General

Stream

Discharge and Parameters

| Stream Code | RMI    | Elevation (ft) | Drainage Area (sq mi) | LFY (cfs/m) | Slope (ft/ft) | Pw/S With (mgd) | Apply FC                            |
|-------------|--------|----------------|-----------------------|-------------|---------------|-----------------|-------------------------------------|
| ▶ 833       | 63.400 | 160            | 333                   | 0.28        | 0             | 0               | <input checked="" type="checkbox"/> |
| 833         | 58.800 | 145            | 347                   | 0.28        | 0             | 0               | <input checked="" type="checkbox"/> |
| 833         | 57.000 | 135            | 350                   | 0.28        | 0             | 12              | <input checked="" type="checkbox"/> |

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Input Data WQM 7.0

Stream Data

General

Stream

Discharge and Parameters

Design Condition

☒ Q7-10
 ☐ Q1-10
 ☐ Q30-10

|   | RMI    | Trib Flow<br>(cfs) | Stream<br>Flow<br>(cfs) | Rch<br>Trav<br>Time<br>(days) | Rch<br>Velocity<br>(fps) | WD Ratio | Rch<br>Width<br>(ft) | Rch<br>Depth<br>(ft) | Tributary<br>Temp<br>(°C) | pH   | Stream<br>Temp<br>(°C) | pH   |
|---|--------|--------------------|-------------------------|-------------------------------|--------------------------|----------|----------------------|----------------------|---------------------------|------|------------------------|------|
| ▶ | 63.400 | 0.00               | 0.00                    | 0.000                         | 0.00                     | 100      | 0.00                 | 0.00                 | 25.00                     | 7.00 | 0.000                  | 0.00 |
|   | 58.800 | 0.00               | 0.00                    | 0.000                         | 0.00                     | 100      | 0.00                 | 0.00                 | 25.00                     | 7.00 | 0.000                  | 0.00 |
|   | 57.000 | 0.00               | 0.00                    | 0.000                         | 0.00                     | 100      | 0.00                 | 0.00                 | 25.00                     | 7.00 | 0.000                  | 0.00 |

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Input Data WQM 7.0

Discharge and Parameter Data

General

Stream

Discharge and Parameters

Discharge Data

| RMI    | Name          | Permit Number | Existing<br>Disc Flow<br>(mgd) | Permitted<br>Disc Flow<br>(mgd) | Design<br>Disc Flow<br>(mgd) | Reserve<br>Factor | Disc<br>Temp<br>(°C) | Disc<br>pH |
|--------|---------------|---------------|--------------------------------|---------------------------------|------------------------------|-------------------|----------------------|------------|
| 63.400 | Birdsboro STP | PA0021709     | 0.0000                         | 1.3500                          | 0.0000                       | 0.000             | 25.00                | 7.00       |

Parameter Data

| Parameter Name   | Disc<br>Conc<br>(mg/L) | Trib Conc<br>(mg/L) | Stream<br>Conc<br>(mg/L) | Fate Coef<br>(1/day) |
|------------------|------------------------|---------------------|--------------------------|----------------------|
| CBOD5            | 25.00                  | 2.00                | 0.00                     | 1.50                 |
| NH3-N            | 4.70                   | 0.00                | 0.00                     | 0.70                 |
| Dissolved Oxygen | 5.00                   | 8.24                | 0.00                     | 0.00                 |

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Discharge and Parameter Data

General

Stream

Discharge and Parameters

Discharge Data

| RMI    | Name      | Permit Number | Existing<br>Disc Flow<br>(mgd) | Permitted<br>Disc Flow<br>(mgd) | Design<br>Disc Flow<br>(mgd) | Reserve<br>Factor | Disc<br>Temp<br>(°C) | Disc<br>pH |
|--------|-----------|---------------|--------------------------------|---------------------------------|------------------------------|-------------------|----------------------|------------|
| 58.800 | Amity STP | PA0070351     | 0.0000                         | 2.9000                          | 0.0000                       | 0.000             | 25.00                | 7.00       |

Parameter Data

| Parameter Name   | Disc<br>Conc<br>(mg/L) | Trib Conc<br>(mg/L) | Stream<br>Conc<br>(mg/L) | Fate Coef<br>(1/day) |
|------------------|------------------------|---------------------|--------------------------|----------------------|
| CBOD5            | 19.00                  | 2.00                | 0.00                     | 1.50                 |
| NH3-N            | 4.00                   | 0.00                | 0.00                     | 0.70                 |
| Dissolved Oxygen | 5.00                   | 8.24                | 0.00                     | 0.00                 |

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Discharge and Parameter Data

General

Stream

Discharge and Parameters

Discharge Data

| RMI    | Name          | Permit Number | Existing<br>Disc Flow<br>(mgd) | Permitted<br>Disc Flow<br>(mgd) | Design<br>Disc Flow<br>(mgd) | Reserve<br>Factor | Disc<br>Temp<br>(°C) | Disc<br>pH |
|--------|---------------|---------------|--------------------------------|---------------------------------|------------------------------|-------------------|----------------------|------------|
| 57.000 | before PADWIS |               | 0.0000                         | 0.0000                          | 0.0000                       | 0.000             | 25.00                | 7.00       |

Parameter Data

| Parameter Name   | Disc<br>Conc<br>(mg/L) | Trib Conc<br>(mg/L) | Stream<br>Conc<br>(mg/L) | Fate Coef<br>(1/day) |
|------------------|------------------------|---------------------|--------------------------|----------------------|
| CBOD5            | 2.00                   | 2.00                | 0.00                     | 1.50                 |
| NH3-N            | 0.00                   | 0.00                | 0.00                     | 0.70                 |
| Dissolved Oxygen | 5.00                   | 8.24                | 0.00                     | 0.00                 |

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Analysis Results WQM 7.0

Hydrodynamics

NH3-N Allocations

D.O. Allocations

D.O. Simulation

Effluent Limitations

|                     |                            |                           |                      |
|---------------------|----------------------------|---------------------------|----------------------|
| RMI                 | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH          |
| 58.800              | 4.250                      | 25.000                    | 7.000                |
| Reach Width (ft)    | Reach Depth (ft)           | Reach WD Ratio            | Reach Velocity (fps) |
| 148.166             | 1.021                      | 145.161                   | 0.686                |
| Reach C-BOD5 (mg/L) | Reach Kc (1/days)          | Reach NH3-N (mg/L)        | Reach Kn (1/days)    |
| 2.91                | 0.485                      | 0.23                      | 1.029                |
| Reach DO (mg/L)     | Reach Kr (1/days)          | Kr Equation               | Reach DO Goal (mg/L) |
| 7.455               | 3.790                      | Tsivoglou                 | 5                    |

Reach Travel Time (days)

0.160

Subreach Results

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|-----------------|--------------|--------------|-------------|
| 0.016           | 2.88         | 0.23         | 7.45        |
| 0.032           | 2.86         | 0.23         | 7.45        |
| 0.048           | 2.83         | 0.22         | 7.45        |
| 0.064           | 2.80         | 0.22         | 7.45        |
| 0.080           | 2.77         | 0.21         | 7.44        |
| 0.096           | 2.75         | 0.21         | 7.44        |
| 0.112           | 2.72         | 0.21         | 7.45        |
| 0.128           | 2.69         | 0.20         | 7.45        |
| 0.144           | 2.67         | 0.20         | 7.45        |
| 0.160           | 2.64         | 0.20         | 7.45        |

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Hydrodynamics

NH3-N Allocations

D.O. Allocations

D.O. Simulation

Effluent Limitations

|       |                |               |                 |
|-------|----------------|---------------|-----------------|
| RMI   | Discharge Name | Permit Number | Disc Flow (mgd) |
| 63.40 | Birdsboro STP  | PA0021709     | 0.0000          |

| Parameter        | Effluent Limit<br>30 Day Average<br>(mg/L) | Effluent Limit<br>Maximum<br>(mg/L) | Effluent Limit<br>Minimum<br>(mg/L) |
|------------------|--|-------------------------------------|-------------------------------------|
| CBOD5            | 25   |                                     |                                     |
| NH3-N            | 4.7  | 9.4                                 |                                     |
| Dissolved Oxygen |  |                                     | 5                                   |

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Hydrodynamics

NH3-N Allocations

D.O. Allocations

D.O. Simulation

Effluent Limitations

|       |                |               |                 |
|-------|----------------|---------------|-----------------|
| RMI   | Discharge Name | Permit Number | Disc Flow (mgd) |
| 58.80 | Amity STP      | PA0070351     | 0.0000          |

| Parameter        | Effluent Limit<br>30 Day Average<br>(mg/L) | Effluent Limit<br>Maximum<br>(mg/L) | Effluent Limit<br>Minimum<br>(mg/L) |
|------------------|--|-------------------------------------|-------------------------------------|
| CBOD5            | 19   |                                     |                                     |
| NH3-N            | 4  | 8                                   |                                     |
| Dissolved Oxygen |  |                                     | 5                                   |

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**NPDES Permit Fact Sheet**  
**Amity Township STP**

**NPDES Permit No. PA0070351**

|                        |   |               |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---------------|--|--|--|--|--|--|--|--|--|--|--|
|                        | <b>Facility:</b>  | Amity Twp STP |  |  |  |  |  |  |  |  |  |  |  |
|                        | <b>NPDES #:</b>   | PA0070351     |  |  |  |  |  |  |  |  |  |  |  |
|                        | <b>Outfall No:</b>  | 001           |  |  |  |  |  |  |  |  |  |  |  |
|                        | <b>n (Samples/Month):</b>   | 4             |  |  |  |  |  |  |  |  |  |  |  |
|                        | <b>Reviewer/Permit Engineer:</b>  | B.Boylan      |  |  |  |  |  |  |  |  |  |  |  |
| <b>Parameter Name</b>  | T.Copper  |               |  |  |  |  |  |  |  |  |  |  |  |
| <b>Units</b>           | µg/L  |               |  |  |  |  |  |  |  |  |  |  |  |
| <b>Detection Limit</b> | 1   |               |  |  |  |  |  |  |  |  |  |  |  |
| <b>Sample Date</b>     | <i>When entering values below the detection limit, enter "ND" or use the &lt; notation (eg. &lt;0.02)</i> |               |  |  |  |  |  |  |  |  |  |  |  |
| 2/1/2020               | 48  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 17  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 20  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 19  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 35  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 16  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 19  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 25  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 16  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 30  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 19  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 19  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 13  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 21  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 17  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 23  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 20  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 35  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 28  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 17  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 26  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 47  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 30  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 15  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 15  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 32  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 13  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 14  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 32  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 30  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 29  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 19  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 17  |               |  |  |  |  |  |  |  |  |  |  |  |
|                        | 21  |               |  |  |  |  |  |  |  |  |  |  |  |
| Dec-22                 | 22  |               |  |  |  |  |  |  |  |  |  |  |  |

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Toxics Management Spreadsheet  
Version 1.3, March 2021

## Discharge Information

Instructions Discharge Stream

Facility: Amity Twp NPDES Permit No.: PA0070351 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: domestic ww

| Discharge Characteristics |                  |          |                            |     |     |     |                          |                |
|---------------------------|------------------|----------|----------------------------|-----|-----|-----|--------------------------|----------------|
| Design Flow (MGD)*        | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) |     |     |     | Complete Mix Times (min) |                |
|                           |                  |          | AFC                        | CFC | THH | CRL | Q <sub>7-10</sub>        | Q <sub>b</sub> |
| 2.2                       | 245              | 7        |                            |     |     |     |                          |                |

| Discharge Pollutant | Units                           | Max Discharge Conc | 0 if left blank |             | 0.5 if left blank |           | 0 if left blank |            |     | 1 if left blank |             |
|---------------------|---------------------------------|--------------------|-----------------|-------------|-------------------|-----------|-----------------|------------|-----|-----------------|-------------|
|                     |                                 |                    | Trib Conc       | Stream Conc | Daily CV          | Hourly CV | Stream CV       | Fate Coeff | FOS | Criteria Mod    | Chem Transl |
| Group 1             | Total Dissolved Solids (PWS)    | mg/L               |                 | 668         |                   |           |                 |            |     |                 |             |
|                     | Chloride (PWS)                  | mg/L               |                 | 280         |                   |           |                 |            |     |                 |             |
|                     | Bromide                         | mg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Sulfate (PWS)                   | mg/L               |                 | 79.3        |                   |           |                 |            |     |                 |             |
|                     | Fluoride (PWS)                  | mg/L               |                 |             |                   |           |                 |            |     |                 |             |
| Group 2             | Total Aluminum                  | µg/L               |                 | 20          |                   |           |                 |            |     |                 |             |
|                     | Total Antimony                  | µg/L               |                 | 0.7         |                   |           |                 |            |     |                 |             |
|                     | Total Arsenic                   | µg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Total Barium                    | µg/L               |                 | 161         |                   |           |                 |            |     |                 |             |
|                     | Total Beryllium                 | µg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Total Boron                     | µg/L               |                 | 200         |                   |           |                 |            |     |                 |             |
|                     | Total Cadmium                   | µg/L               | <               | 0.1         |                   |           |                 |            |     |                 |             |
|                     | Total Chromium (III)            | µg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Hexavalent Chromium             | µg/L               | <               | 0.25        |                   |           |                 |            |     |                 |             |
|                     | Total Cobalt                    | µg/L               |                 | 0.2         |                   |           |                 |            |     |                 |             |
|                     | Total Copper                    | µg/L               |                 | 34.63       | 0.3541            |           |                 |            |     |                 |             |
|                     | Free Cyanide                    | µg/L               |                 | 6           |                   |           |                 |            |     |                 |             |
|                     | Total Cyanide                   | µg/L               |                 | 22          |                   |           |                 |            |     |                 |             |
|                     | Dissolved Iron                  | µg/L               |                 | 20          |                   |           |                 |            |     |                 |             |
|                     | Total Iron                      | µg/L               |                 | 40          |                   |           |                 |            |     |                 |             |
|                     | Total Lead                      | µg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Total Manganese                 | µg/L               |                 | 5           |                   |           |                 |            |     |                 |             |
|                     | Total Mercury                   | µg/L               | <               | 0.2         |                   |           |                 |            |     |                 |             |
|                     | Total Nickel                    | µg/L               |                 | 3           |                   |           |                 |            |     |                 |             |
|                     | Total Phenols (Phenolics) (PWS) | µg/L               |                 | 7           |                   |           |                 |            |     |                 |             |
|                     | Total Selenium                  | µg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Total Silver                    | µg/L               | <               | 1           |                   |           |                 |            |     |                 |             |
|                     | Total Thallium                  | µg/L               | <               | 3           |                   |           |                 |            |     |                 |             |
|                     | Total Zinc                      | µg/L               |                 | 42          |                   |           |                 |            |     |                 |             |
|                     | Total Molybdenum                | µg/L               |                 |             |                   |           |                 |            |     |                 |             |
|                     | Acrolein                        | µg/L               | <               | 2           |                   |           |                 |            |     |                 |             |
|                     | Acrylamide                      | µg/L               | <               |             |                   |           |                 |            |     |                 |             |
|                     | Acrylonitrile                   | µg/L               | <               | 2           |                   |           |                 |            |     |                 |             |
|                     | Benzene                         | µg/L               | <               | 0.5         |                   |           |                 |            |     |                 |             |
|                     | Bromoform                       | µg/L               | <               | 0.5         |                   |           |                 |            |     |                 |             |

[illegible]

|         |                             |      |   |     |  |  |  |  |  |  |  |  |
|---------|-----------------------------|------|---|-----|--|--|--|--|--|--|--|--|
| Group 5 | Bis(2-Chloroethyl)Ether     | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Bis(2-Chloroisopropyl)Ether | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Bis(2-Ethylhexyl)Phthalate  | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | 4-Bromophenyl Phenyl Ether  | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Butyl Benzyl Phthalate      | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | 2-Chloronaphthalene         | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | 4-Chlorophenyl Phenyl Ether | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Chrysene                    | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |
|         | Dibenzo(a,h)Anthracene      | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |
|         | 1,2-Dichlorobenzene         | µg/L | < | 0.5 |  |  |  |  |  |  |  |  |
|         | 1,3-Dichlorobenzene         | µg/L | < | 0.5 |  |  |  |  |  |  |  |  |
|         | 1,4-Dichlorobenzene         | µg/L | < | 0.5 |  |  |  |  |  |  |  |  |
|         | 3,3-Dichlorobenzidine       | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Diethyl Phthalate           | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Dimethyl Phthalate          | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | Di-n-Butyl Phthalate        | µg/L | < | 5   |  |  |  |  |  |  |  |  |
|         | 2,4-Dinitrotoluene          | µg/L | < | 5   |  |  |  |  |  |  |  |  |

Discharge Information

2/1/2023

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|                           |      |   |     |  |  |  |  |  |  |  |  |  |
|---------------------------|------|---|-----|--|--|--|--|--|--|--|--|--|
| 2,6-Dinitrotoluene        | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| Di-n-Octyl Phthalate      | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| 1,2-Diphenylhydrazine     | µg/L | < | 10  |  |  |  |  |  |  |  |  |  |
| Fluoranthene              | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |  |
| Fluorene                  | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |  |
| Hexachlorobenzene         | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| Hexachlorobutadiene       | µg/L | < | 0.5 |  |  |  |  |  |  |  |  |  |
| Hexachlorocyclopentadiene | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| Hexachloroethane          | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| Indeno(1,2,3-cd)Pyrene    | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |  |
| Isophorone                | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| Naphthalene               | µg/L | < | 0.5 |  |  |  |  |  |  |  |  |  |
| Nitrobenzene              | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| n-Nitrosodimethylamine    | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| n-Nitrosodi-n-Propylamine | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| n-Nitrosodiphenylamine    | µg/L | < | 5   |  |  |  |  |  |  |  |  |  |
| Phenanthrene              | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |  |
| Pyrene                    | µg/L | < | 2.5 |  |  |  |  |  |  |  |  |  |
| 1,2,4-Trichlorobenzene    | µg/L | < | 0.5 |  |  |  |  |  |  |  |  |  |
| 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 | < |     |  |  |  |  |  |  |  |  |  |

Permit No. PA0070351

|         |                    |         |   |         |  |  |  |  |  |  |  |  |  |
|---------|--------------------|---------|---|---------|--|--|--|--|--|--|--|--|--|
| Group 6 | 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    |   | 0.00125 |  |  |  |  |  |  |  |  |  |
|         | 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   | mOsi/kg |   |         |  |  |  |  |  |  |  |  |  |
|         |                    |         |   |         |  |  |  |  |  |  |  |  |  |
|         |                    |         |   |         |  |  |  |  |  |  |  |  |  |
|         |                    |         |   |         |  |  |  |  |  |  |  |  |  |
|         |                    |         |   |         |  |  |  |  |  |  |  |  |  |



## Stream / Surface Water Information

Amity Twp, NPDES Permit No. PA0070351, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: **Schuylkill River**

No. Reaches to Model: **1**

- ☒ Statewide Criteria  
☐ Great Lakes Criteria  
☐ ORSANCO Criteria

| Location           | Stream Code* | RMI* | Elevation (ft)* | DA (mi <sup>2</sup> )* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|--------------------|--------------|------|-----------------|------------------------|---------------|----------------------|----------------------|
| Point of Discharge | 000833       | 58.8 | 145             | 1040                   |               |                      | Yes                  |
| End of Reach 1     | 000833       | 57   | 135             | 1050                   |               | 12                   | Yes                  |

**Q<sub>7-10</sub>**

| Location           | RMI  | LFY (cfs/mi <sup>2</sup> )* | 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 | 58.8 | 0.28                        |            |           | 100       |            |            |                |                    |           |    | 143       | 7   |          |    |
| End of Reach 1     | 57   | 0.28                        |            |           | 100       |            |            |                |                    |           |    |           |     |          |    |

**Q<sub>h</sub>**

| Location           | RMI  | LFY (cfs/mi <sup>2</sup> )* | 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 | 58.8 |                             |            |           |           |            |            |                |                    |           |    |          |    |          |    |
| End of Reach 1     | 57   |                             |            |           |           |            |            |                |                    |           |    |          |    |          |    |

☒ **Hydrodynamics**

**Q<sub>7-10</sub>**

| 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) |
|------|-------------------|----------------------|-----------------------|-------------------------------|---------------|------------|------------|-----------|----------------|--------------------|-------------------------|
| 58.8 | 291.20            |                      | 291.20                | 3.403                         | 0.001         | 1.135      | 113.543    | 100.      | 0.938          | 0.117              | 439.915                 |
| 57   | 294.00            | 18.564               | 275.436               |                               |               |            |            | 100.000   |                |                    |                         |

**Q<sub>h</sub>**

| 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) |
|------|-------------------|----------------------|-----------------------|-------------------------------|---------------|------------|------------|-----------|----------------|--------------------|-------------------------|
| 58.8 | 1058.50           |                      | 1058.50               | 3.403                         | 0.001         | 1.996      | 113.543    | 56.884    | 1.923          | 0.057              | 191.934                 |
| 57   | 1067.393          | 18.564               | 1048.83               |                               |               |            |            |           |                |                    |                         |

☒ **Wasteload Allocations**

☒ **AFC**

CCT (min):

15

PMF:

0.185

Analysis Hardness (mg/l):

149.07

Analysis pH:

7.00

| Pollutants                   | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments                         |
|------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|----------------------------------|
| Total Dissolved Solids (PWS) | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |                                  |
| Chloride (PWS)               | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |                                  |
| Sulfate (PWS)                | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |                                  |
| Total Aluminum               | 0                  | 0         |                  | 0         | 750        | 750           | 12,600     |                                  |
| Total Antimony               | 0                  | 0         |                  | 0         | 1,100      | 1,100         | 18,479     |                                  |
| Total Arsenic                | 0                  | 0         |                  | 0         | 340        | 340           | 5,712      | Chem Translator of 1 applied     |
| Total Barium                 | 0                  | 0         |                  | 0         | 21,000     | 21,000        | 352,787    |                                  |
| Total Boron                  | 0                  | 0         |                  | 0         | 8,100      | 8,100         | 136,075    |                                  |
| Total Cadmium                | 0                  | 0         |                  | 0         | 2.968      | 3.2           | 53.8       | Chem Translator of 0.927 applied |
| Total Chromium (III)         | 0                  | 0         |                  | 0         | 790.142    | 2,500         | 42,006     | Chem Translator of 0.316 applied |
| Hexavalent Chromium          | 0                  | 0         |                  | 0         | 16         | 16.3          | 274        | Chem Translator of 0.982 applied |
| Total Cobalt                 | 0                  | 0         |                  | 0         | 95         | 95.0          | 1,596      |                                  |
| Total Copper                 | 0                  | 0         |                  | 0         | 19.577     | 20.4          | 343        | Chem Translator of 0.96 applied  |
| Free Cyanide                 | 0                  | 0         |                  | 0         | 22         | 22.0          | 370        |                                  |

|                                 |   |   |  |   |         |        |         |                                  |
|---------------------------------|---|---|--|---|---------|--------|---------|----------------------------------|
| 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 | 99.463  | 136    | 2,280   | Chem Translator of 0.733 applied |
| Total Manganese                 | 0 | 0 |  | 0 | N/A     | N/A    | N/A     |                                  |
| Total Mercury                   | 0 | 0 |  | 0 | 1.400   | 1.65   | 27.7    | Chem Translator of 0.85 applied  |
| Total Nickel                    | 0 | 0 |  | 0 | 656.382 | 658    | 11,049  | 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 | 6.392   | 7.52   | 126     | Chem Translator of 0.85 applied  |
| Total Thallium                  | 0 | 0 |  | 0 | 65      | 65.0   | 1,092   |                                  |
| Total Zinc                      | 0 | 0 |  | 0 | 164.351 | 168    | 2,823   | Chem Translator of 0.978 applied |
| Acrolein                        | 0 | 0 |  | 0 | 3       | 3.0    | 50.4    |                                  |
| Acrylonitrile                   | 0 | 0 |  | 0 | 650     | 650    | 10,920  |                                  |
| Benzene                         | 0 | 0 |  | 0 | 640     | 640    | 10,752  |                                  |
| Bromoform                       | 0 | 0 |  | 0 | 1,800   | 1,800  | 30,239  |                                  |
| Carbon Tetrachloride            | 0 | 0 |  | 0 | 2,800   | 2,800  | 47,038  |                                  |
| Chlorobenzene                   | 0 | 0 |  | 0 | 1,200   | 1,200  | 20,159  |                                  |
| Chlorodibromomethane            | 0 | 0 |  | 0 | N/A     | N/A    | N/A     |                                  |
| 2-Chloroethyl Vinyl Ether       | 0 | 0 |  | 0 | 18,000  | 18,000 | 302,389 |                                  |
| Chloroform                      | 0 | 0 |  | 0 | 1,900   | 1,900  | 31,919  |                                  |
| Dichlorobromomethane            | 0 | 0 |  | 0 | N/A     | N/A    | N/A     |                                  |
| 1,2-Dichloroethane              | 0 | 0 |  | 0 | 15,000  | 15,000 | 251,991 |                                  |
| 1,1-Dichloroethylene            | 0 | 0 |  | 0 | 7,500   | 7,500  | 125,995 |                                  |
| 1,2-Dichloropropane             | 0 | 0 |  | 0 | 11,000  | 11,000 | 184,793 |                                  |
| 1,3-Dichloropropylene           | 0 | 0 |  | 0 | 310     | 310    | 5,208   |                                  |
| Ethylbenzene                    | 0 | 0 |  | 0 | 2,900   | 2,900  | 48,718  |                                  |
| Methyl Bromide                  | 0 | 0 |  | 0 | 550     | 550    | 9,240   |                                  |
| Methyl Chloride                 | 0 | 0 |  | 0 | 28,000  | 28,000 | 470,382 |                                  |
| Methylene Chloride              | 0 | 0 |  | 0 | 12,000  | 12,000 | 201,592 |                                  |
| 1,1,2,2-Tetrachloroethane       | 0 | 0 |  | 0 | 1,000   | 1,000  | 16,799  |                                  |
| Tetrachloroethylene             | 0 | 0 |  | 0 | 700     | 700    | 11,760  |                                  |
| Toluene                         | 0 | 0 |  | 0 | 1,700   | 1,700  | 28,559  |                                  |
| 1,2-trans-Dichloroethylene      | 0 | 0 |  | 0 | 6,800   | 6,800  | 114,236 |                                  |
| 1,1,1-Trichloroethane           | 0 | 0 |  | 0 | 3,000   | 3,000  | 50,398  |                                  |
| 1,1,2-Trichloroethane           | 0 | 0 |  | 0 | 3,400   | 3,400  | 57,118  |                                  |
| Trichloroethylene               | 0 | 0 |  | 0 | 2,300   | 2,300  | 38,639  |                                  |
| Methyl Chloride                 | 0 | 0 |  | 0 | N/A     | N/A    | N/A     |                                  |

☒ CFC

CCT (min): #####

PMF: 1

Analysis Hardness (mg/l): 144.18

Analysis pH: 7.00

| Pollutants                   | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|----------|
| Total Dissolved Solids (PWS) | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |          |

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|                                 |   |   |  |   |         |       |         |                                  |
|---------------------------------|---|---|--|---|---------|-------|---------|----------------------------------|
| Chloride (PWS)                  | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Sulfate (PWS)                   | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Aluminum                  | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Antimony                  | 0 | 0 |  | 0 | 220     | 220   | 19,044  |                                  |
| Total Arsenic                   | 0 | 0 |  | 0 | 150     | 150   | 12,984  | Chem Translator of 1 applied     |
| Total Barium                    | 0 | 0 |  | 0 | 4,100   | 4,100 | 354,902 |                                  |
| Total Boron                     | 0 | 0 |  | 0 | 1,600   | 1,600 | 138,498 |                                  |
| Total Cadmium                   | 0 | 0 |  | 0 | 0.317   | 0.35  | 30.7    | Chem Translator of 0.894 applied |
| Total Chromium (III)            | 0 | 0 |  | 0 | 100.010 | 116   | 10,066  | Chem Translator of 0.86 applied  |
| Hexavalent Chromium             | 0 | 0 |  | 0 | 10      | 10.4  | 900     | Chem Translator of 0.962 applied |
| Total Cobalt                    | 0 | 0 |  | 0 | 19      | 19.0  | 1,645   |                                  |
| Total Copper                    | 0 | 0 |  | 0 | 12.243  | 12.8  | 1,104   | Chem Translator of 0.96 applied  |
| Free Cyanide                    | 0 | 0 |  | 0 | 5.2     | 5.2   | 450     |                                  |
| Dissolved Iron                  | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Iron                      | 0 | 0 |  | 0 | 1,500   | 1,500 | 129,842 | WQC = 30 day average; PMF = 1    |
| Total Lead                      | 0 | 0 |  | 0 | 3.739   | 5.07  | 439     | Chem Translator of 0.738 applied |
| Total Manganese                 | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Mercury                   | 0 | 0 |  | 0 | 0.770   | 0.91  | 78.4    | Chem Translator of 0.85 applied  |
| Total Nickel                    | 0 | 0 |  | 0 | 70.874  | 71.1  | 6,153   | 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  | 432     | Chem Translator of 0.922 applied |
| Total Silver                    | 0 | 0 |  | 0 | N/A     | N/A   | N/A     | Chem Translator of 1 applied     |
| Total Thallium                  | 0 | 0 |  | 0 | 13      | 13.0  | 1,125   |                                  |
| Total Zinc                      | 0 | 0 |  | 0 | 161.075 | 163   | 14,141  | Chem Translator of 0.986 applied |
| Acrolein                        | 0 | 0 |  | 0 | 3       | 3.0   | 260     |                                  |
| Acrylonitrile                   | 0 | 0 |  | 0 | 130     | 130   | 11,253  |                                  |



☒ **THH** CCT (min): **#####** THH PMF: **1** Analysis Hardness (mg/l): **N/A** Analysis pH: **N/A** PWS PMF: **0.6196**

| 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       | 27,262,465 | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| Chloride (PWS)                  | 0                  | 0         |                  | 0         | 250,000    | 250,000       | 13,631,232 | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| Sulfate (PWS)                   | 0                  | 0         |                  | 0         | 250,000    | 250,000       | 13,631,232 | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| Total Aluminum                  | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Antimony                  | 0                  | 0         |                  | 0         | 5.6        | 5.6           | 302        | THH WQC applied at PWS at RMI 57                           |
| Total Arsenic                   | 0                  | 0         |                  | 0         | 10         | 10.0          | 540        | THH WQC applied at PWS at RMI 57                           |
| Total Barium                    | 0                  | 0         |                  | 0         | 2,400      | 2,400         | 129,636    | THH WQC applied at PWS at RMI 57                           |
| Total Boron                     | 0                  | 0         |                  | 0         | 3,100      | 3,100         | 167,447    | THH WQC applied at PWS at RMI 57                           |
| Total Cadmium                   | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Chromium (III)            | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Hexavalent Chromium             | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Cobalt                    | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Copper                    | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Free Cyanide                    | 0                  | 0         |                  | 0         | 4          | 4.0           | 216        | THH WQC applied at PWS at RMI 57                           |
| Dissolved Iron                  | 0                  | 0         |                  | 0         | 300        | 300           | 16,205     | THH WQC applied at PWS at RMI 57                           |
| 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         | 54,015     | THH WQC applied at PWS at RMI 57                           |
| Total Mercury                   | 0                  | 0         |                  | 0         | 0.050      | 0.05          | 2.7        | THH WQC applied at PWS at RMI 57                           |
| Total Nickel                    | 0                  | 0         |                  | 0         | 610        | 610           | 32,949     | THH WQC applied at PWS at RMI 57                           |
| Total Phenols (Phenolics) (PWS) | 0                  | 0         |                  | 0         | 5          | 5.0           | 273        | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| 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          | 13.0       | THH WQC applied at PWS at RMI 57                           |
| Total Zinc                      | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Acrolein                        | 0                  | 0         |                  | 0         | 3          | 3.0           | 162        | THH WQC applied at PWS at RMI 57                           |
| Acrylonitrile                   | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |

|                        |   |   |  |   |          |         |      |  |
|------------------------|---|---|--|---|----------|---------|------|--|
| Phenanthrene           | 0 | 0 |  | 0 | N/A      | N/A     | N/A  |  |
| Pyrene                 | 0 | 0 |  | 0 | N/A      | N/A     | N/A  |  |
| 1,2,4-Trichlorobenzene | 0 | 0 |  | 0 | N/A      | N/A     | N/A  |  |
| PCBs, Total            | 0 | 0 |  | 0 | 0.000064 | 0.00006 | 0.02 |  |

☒ **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 Copper   | Report        | Report        | Report               | Report | Report | µg/L  | 189             | AFC         | Discharge Conc > 10% WQBEL (no RP) |
| Total Thallium | Report        | Report        | Report               | Report | Report | µg/L  | 13.0            | 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) | 27,262          | mg/L  | Discharge Conc ≤ 10% WQBEL |
| Chloride (PWS)               | 13,631          | mg/L  | Discharge Conc ≤ 10% WQBEL |
| Bromide                      | N/A             | N/A   | No WQS                     |
| Sulfate (PWS)                | 13,631          | mg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Aluminum               | 8,076           | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Antimony               | 302             | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Arsenic                | N/A             | N/A   | Discharge Conc < TQL       |
| Total Barium                 | 129,636         | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium              | N/A             | N/A   | No WQS                     |
| Total Boron                  | 87,219          | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Cadmium                | 30.7            | µg/L  | Discharge Conc < TQL       |
| Total Chromium (III)         | 10,066          | µg/L  | Discharge Conc < TQL       |
| Hexavalent Chromium          | 175             | µg/L  | Discharge Conc < TQL       |
| Total Cobalt                 | 1,023           | µg/L  | Discharge Conc ≤ 10% WQBEL |

|                 |         |      |                            |
|-----------------|---------|------|----------------------------|
| Total Cobalt    | 1,023   | µg/L | Discharge Conc ≤ 10% WQBEL |
| Free Cyanide    | 216     | µg/L | Discharge Conc ≤ 25% WQBEL |
| Total Cyanide   | N/A     | N/A  | No WQS                     |
| Dissolved Iron  | 16,205  | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Iron      | 129,842 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead      | 439     | µg/L | Discharge Conc < TQL       |
| Total Manganese | 54,015  | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Mercury   | 2.7     | µg/L | Discharge Conc < TQL       |

Model Results

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|                                 |         |      |                            |
|---------------------------------|---------|------|----------------------------|
| Total Nickel                    | 6,153   | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Phenols (Phenolics) (PWS) | 273     | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Selenium                  | 432     | µg/L | Discharge Conc < TQL       |
| Total Silver                    | 81.0    | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Zinc                      | 1,809   | µg/L | Discharge Conc ≤ 10% WQBEL |
| Acrolein                        | 32.3    | µg/L | Discharge Conc < TQL       |
| Acrylonitrile                   | 18.7    | µg/L | Discharge Conc < TQL       |
| Benzene                         | 181     | µg/L | Discharge Conc < TQL       |
| Bromoform                       | 2,184   | µg/L | Discharge Conc < TQL       |
| Carbon Tetrachloride            | 125     | µg/L | Discharge Conc < TQL       |
| Chlorobenzene                   | 5,402   | µg/L | Discharge Conc < TQL       |
| Chlorodibromomethane            | 250     | µg/L | Discharge Conc < TQL       |
| Chloroethane                    | N/A     | N/A  | No WQS                     |
| 2-Chloroethyl Vinyl Ether       | 193,819 | µg/L | Discharge Conc < TQL       |
| Chloroform                      | 308     | µg/L | Discharge Conc ≤ 25% WQBEL |
| Dichlorobromomethane            | 296     | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1-Dichloroethane              | N/A     | N/A  | No WQS                     |
| 1,2-Dichloroethane              | 3,089   | µg/L | Discharge Conc < TQL       |
| 1,1-Dichloroethylene            | 1,783   | µg/L | Discharge Conc < TQL       |
| 1,2-Dichloropropane             | 281     | µg/L | Discharge Conc < TQL       |
| 1,3-Dichloropropylene           | 84.2    | µg/L | Discharge Conc < TQL       |
| 1,4-Dioxane                     | N/A     | N/A  | No WQS                     |
| Ethylbenzene                    | 3,673   | µg/L | Discharge Conc < TQL       |

|                            |         |      |                            |
|----------------------------|---------|------|----------------------------|
| Ethylbenzene               | 3,673   | µg/L | Discharge Conc < TQL       |
| Methyl Bromide             | 5,402   | µg/L | Discharge Conc < TQL       |
| Methyl Chloride            | 301,496 | µg/L | Discharge Conc < TQL       |
| Methylene Chloride         | 6,240   | µg/L | Discharge Conc < TQL       |
| 1,1,2,2-Tetrachloroethane  | 62.4    | µg/L | Discharge Conc < TQL       |
| Tetrachloroethylene        | 3,120   | µg/L | Discharge Conc < TQL       |
| Toluene                    | 3,079   | µg/L | Discharge Conc < TQL       |
| 1,2-trans-Dichloroethylene | 5,402   | µg/L | Discharge Conc < TQL       |
| 1,1,1-Trichloroethane      | 32,303  | µg/L | Discharge Conc < TQL       |
| 1,1,2-Trichloroethane      | 172     | µg/L | Discharge Conc < TQL       |
| Trichloroethylene          | 187     | µg/L | Discharge Conc < TQL       |
| Vinyl Chloride             | 6.24    | µg/L | Discharge Conc < TQL       |
| 2-Chlorophenol             | 1,620   | µg/L | Discharge Conc < TQL       |
| 2,4-Dichlorophenol         | 540     | µg/L | Discharge Conc < TQL       |
| 2,4-Dimethylphenol         | 5,402   | µg/L | Discharge Conc < TQL       |
| 4,6-Dinitro-o-Cresol       | 108     | µg/L | Discharge Conc < TQL       |
| 2,4-Dinitrophenol          | 540     | µg/L | Discharge Conc < TQL       |
| 2-Nitrophenol              | 86,142  | µg/L | Discharge Conc < TQL       |
| 4-Nitrophenol              | 24,766  | µg/L | Discharge Conc < TQL       |
| p-Chloro-m-Cresol          | 1,723   | µg/L | Discharge Conc < TQL       |
| Pentachlorophenol          | 9.36    | µg/L | Discharge Conc < TQL       |
| Phenol                     | 216,061 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 2,4,6-Trichlorophenol      | 468     | µg/L | Discharge Conc < TQL       |

Model Results

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|                       |        |      |                      |
|-----------------------|--------|------|----------------------|
| Acenaphthene          | 894    | µg/L | Discharge Conc < TQL |
| Acenaphthylene        | N/A    | N/A  | No WQS               |
| Anthracene            | 16,205 | µg/L | Discharge Conc < TQL |
| Benzidine             | 0.031  | µg/L | Discharge Conc < TQL |
| Benzo(a)Anthracene    | 0.31   | µg/L | Discharge Conc < TQL |
| Benzo(a)Pyrene        | 0.031  | µg/L | Discharge Conc < TQL |
| 3,4-Benzofluoranthene | 0.31   | µg/L | Discharge Conc < TQL |
| Benzo(ghi)Perylene    | N/A    | N/A  | No WQS               |

|                             |        |      |                      |
|-----------------------------|--------|------|----------------------|
| Benzo(k)Fluoranthene        | 3.12   | µg/L | Discharge Conc < TQL |
| Bis(2-Chloroethoxy)Methane  | N/A    | N/A  | No WQS               |
| Bis(2-Chloroethyl)Ether     | 9.36   | µg/L | Discharge Conc < TQL |
| Bis(2-Chloroisopropyl)Ether | 10,803 | µg/L | Discharge Conc < TQL |
| Bis(2-Ethylhexyl)Phthalate  | 99.8   | µg/L | Discharge Conc < TQL |
| 4-Bromophenyl Phenyl Ether  | 2,907  | µg/L | Discharge Conc < TQL |
| Butyl Benzyl Phthalate      | 5.4    | µg/L | Discharge Conc < TQL |
| 2-Chloronaphthalene         | 43,212 | µg/L | Discharge Conc < TQL |
| 4-Chlorophenyl Phenyl Ether | N/A    | N/A  | No WQS               |
| Chrysene                    | 37.4   | µg/L | Discharge Conc < TQL |
| Dibenzo(a,h)Anthracene      | 0.031  | µg/L | Discharge Conc < TQL |
| 1,2-Dichlorobenzene         | 8,830  | µg/L | Discharge Conc < TQL |
| 1,3-Dichlorobenzene         | 378    | µg/L | Discharge Conc < TQL |
| 1,4-Dichlorobenzene         | 7,860  | µg/L | Discharge Conc < TQL |
| 3,3-Dichlorobenzidine       | 15.6   | µg/L | Discharge Conc < TQL |
| Diethyl Phthalate           | 32,409 | µg/L | Discharge Conc < TQL |
| Dimethyl Phthalate          | 26,919 | µg/L | Discharge Conc < TQL |
| Di-n-Butyl Phthalate        | 1,080  | µg/L | Discharge Conc < TQL |
| 2,4-Dinitrotoluene          | 15.6   | µg/L | Discharge Conc < TQL |
| 2,6-Dinitrotoluene          | 15.6   | µg/L | Discharge Conc < TQL |
| Di-n-Octyl Phthalate        | N/A    | N/A  | No WQS               |
| 1,2-Diphenylhydrazine       | 9.36   | µg/L | Discharge Conc < TQL |
| Fluoranthene                | 1,080  | µg/L | Discharge Conc < TQL |
| Fluorene                    | 2,701  | µg/L | Discharge Conc < TQL |
| Hexachlorobenzene           | 0.025  | µg/L | Discharge Conc < TQL |
| Hexachlorobutadiene         | 3.12   | µg/L | Discharge Conc < TQL |
| Hexachlorocyclopentadiene   | 53.8   | µg/L | Discharge Conc < TQL |
| Hexachloroethane            | 31.2   | µg/L | Discharge Conc < TQL |
| Indeno(1,2,3-cd)Pyrene      | 0.31   | µg/L | Discharge Conc < TQL |
| Isophorone                  | 1,837  | µg/L | Discharge Conc < TQL |
| Naphthalene                 | 1,507  | µg/L | Discharge Conc < TQL |
| Nitrobenzene                | 540    | µg/L | Discharge Conc < TQL |
| n-Nitrosodimethylamine      | 0.22   | µg/L | Discharge Conc < TQL |
| n-Nitrosodi-n-Propylamine   | 1.56   | µg/L | Discharge Conc < TQL |
| n-Nitrosodiphenylamine      | 1,030  | µg/L | Discharge Conc < TQL |

| Concentration (µg/L)   | Conc  | Unit | Discharge Conc < TQL |
|------------------------|-------|------|----------------------|
| n-Nitrosodiphenylamine | 1,030 | µg/L | Discharge Conc < TQL |
| Phenanthrene           | 53.8  | µg/L | Discharge Conc < TQL |
| Pyrene                 | 1,080 | µg/L | Discharge Conc < TQL |

Model Results

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|                        |      |      |                            |
|------------------------|------|------|----------------------------|
| 1,2,4-Trichlorobenzene | 3.78 | µg/L | Discharge Conc < TQL       |
| PCBs, Total            | 0.02 | µg/L | Discharge Conc ≤ 25% WQBEL |

Re-run of TMS model with Qd of 2.9 MGD.....starts next page.....



## Discharge Information

Instructions Discharge Stream

Facility: Amity Twp STP NPDES Permit No.: PA0070351 Outfall No.: 001  
Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: domestic ww

| Discharge Characteristics |                  |          |                            |     |     |     |                          |                |
|---------------------------|------------------|----------|----------------------------|-----|-----|-----|--------------------------|----------------|
| Design Flow (MGD)*        | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) |     |     |     | Complete Mix Times (min) |                |
|                           |                  |          | AFC                        | CFC | THH | CRL | Q <sub>7-10</sub>        | Q <sub>n</sub> |
| 2.9                       | 245              | 7        |                            |     |     |     |                          |                |

| Discharge Pollutant | Units                           | Max Discharge Conc | 0 if left blank |             | 0.5 if left blank |           | 0 if left blank |            |     | 1 if left blank |             |
|---------------------|---------------------------------|--------------------|-----------------|-------------|-------------------|-----------|-----------------|------------|-----|-----------------|-------------|
|                     |                                 |                    | Trib Conc       | stream Conc | Daily CV          | Hourly CV | Stream CV       | Fate Coeff | FOS | Criteria Mod    | Chem Transl |
| Group 1             | Total Dissolved Solids (PWS)    | mg/L               | 668             |             |                   |           |                 |            |     |                 |             |
|                     | Chloride (PWS)                  | mg/L               | 280             |             |                   |           |                 |            |     |                 |             |
|                     | Bromide                         | mg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
|                     | Sulfate (PWS)                   | mg/L               | 79.3            |             |                   |           |                 |            |     |                 |             |
|                     | Fluoride (PWS)                  | mg/L               |                 |             |                   |           |                 |            |     |                 |             |
|                     | Total Aluminum                  | µg/L               | 20              |             |                   |           |                 |            |     |                 |             |
|                     | Total Antimony                  | µg/L               | 0.7             |             |                   |           |                 |            |     |                 |             |
|                     | Total Arsenic                   | µg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
|                     | Total Barium                    | µg/L               | 161             |             |                   |           |                 |            |     |                 |             |
|                     | Total Beryllium                 | µg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
| Group 2             | Total Boron                     | µg/L               | 200             |             |                   |           |                 |            |     |                 |             |
|                     | Total Cadmium                   | µg/L               | < 0.1           |             |                   |           |                 |            |     |                 |             |
|                     | Total Chromium (III)            | µg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
|                     | Hexavalent Chromium             | µg/L               | < 0.25          |             |                   |           |                 |            |     |                 |             |
|                     | Total Cobalt                    | µg/L               | 0.2             |             |                   |           |                 |            |     |                 |             |
|                     | Total Copper                    | µg/L               | 34.63           |             | 0.3541            |           |                 |            |     |                 |             |
|                     | Free Cyanide                    | µg/L               | 6               |             |                   |           |                 |            |     |                 |             |
|                     | Total Cyanide                   | µg/L               | 22              |             |                   |           |                 |            |     |                 |             |
|                     | Dissolved Iron                  | µg/L               | 20              |             |                   |           |                 |            |     |                 |             |
|                     | Total Iron                      | µg/L               | 40              |             |                   |           |                 |            |     |                 |             |
|                     | Total Lead                      | µg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
|                     | Total Manganese                 | µg/L               | 5               |             |                   |           |                 |            |     |                 |             |
|                     | Total Mercury                   | µg/L               | < 0.2           |             |                   |           |                 |            |     |                 |             |
|                     | Total Nickel                    | µg/L               | 3               |             |                   |           |                 |            |     |                 |             |
|                     | Total Phenols (Phenolics) (PWS) | µg/L               | 7               |             |                   |           |                 |            |     |                 |             |
|                     | Total Selenium                  | µg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
|                     | Total Silver                    | µg/L               | < 1             |             |                   |           |                 |            |     |                 |             |
|                     | Total Thallium                  | µg/L               | < 3             |             |                   |           |                 |            |     |                 |             |
|                     | Total Zinc                      | µg/L               | 5               |             |                   |           |                 |            |     |                 |             |
|                     | Total Molybdenum                | µg/L               | < 3             |             |                   |           |                 |            |     |                 |             |
|                     | Acrolein                        | µg/L               | < 2             |             |                   |           |                 |            |     |                 |             |
|                     | Acrylamide                      | µg/L               | < 5             |             |                   |           |                 |            |     |                 |             |
|                     | Acrylonitrile                   | µg/L               | < 5             |             |                   |           |                 |            |     |                 |             |
|                     | Benzene                         | µg/L               | < 0.5           |             |                   |           |                 |            |     |                 |             |
|                     | Bromoform                       | µg/L               | < 0.5           |             |                   |           |                 |            |     |                 |             |



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## Group 5

Page 2

|         |                        |       |   |          |  |  |  |  |  |  |  |  |  |
|---------|------------------------|-------|---|----------|--|--|--|--|--|--|--|--|--|
| Group 6 | n-Nitrosodiphenylamine | µg/L  | < | 5        |  |  |  |  |  |  |  |  |  |
|         | Phenanthrene           | µg/L  | < | 2.5      |  |  |  |  |  |  |  |  |  |
|         | Pyrene                 | µg/L  | < | 2.5      |  |  |  |  |  |  |  |  |  |
|         | 1,2,4-Trichlorobenzene | µg/L  | < | 0.5      |  |  |  |  |  |  |  |  |  |
|         | 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  |   | 0.001254 |  |  |  |  |  |  |  |  |  |
|         | 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 | < |          |  |  |  |  |  |  |  |  |  |



## Stream / Surface Water Information

Amity Twp STP, NPDES Permit No. PA0070351, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: **Schuylkill River**

No. Reaches to Model: **1**

- ☒ Statewide Criteria  
☐ Great Lakes Criteria  
☐ ORSANCO Criteria

| Location           | Stream Code* | RMI* | Elevation (ft)* | DA (mi <sup>2</sup> )* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|--------------------|--------------|------|-----------------|------------------------|---------------|----------------------|----------------------|
| Point of Discharge | 000833       | 58.8 | 145             | 1040                   |               |                      | Yes                  |
| End of Reach 1     | 000833       | 57   | 135             | 1050                   |               | 12                   | Yes                  |

**Q<sub>7-10</sub>**

| Location           | RMI  | LFY (cfs/mi <sup>2</sup> )* | 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 | 58.8 | 0.28                        |            |           | 100       |            |            |                |                    |           |    | 143       | 7   |          |    |
| End of Reach 1     | 57   | 0.28                        |            |           |           |            |            |                |                    |           |    |           |     |          |    |

**Q<sub>h</sub>**

| Location           | RMI  | LFY (cfs/mi <sup>2</sup> )* | 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 | 58.8 |                             |            |           |           |            |            |                |                    |           |    |          |    |          |    |
| End of Reach 1     | 57   |                             |            |           |           |            |            |                |                    |           |    |          |    |          |    |

Instructions

Results

RETURN TO INPUTS

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☒ 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) |
|------|-------------------|----------------------|-----------------------|-------------------------------|---------------|------------|------------|-----------|----------------|--------------------|-------------------------|
| 58.8 | 291.20            |                      | 291.20                | 4.486                         | 0.001         | 1.135      | 113.537    | 100.      | 0.94           | 0.117              | 436.687                 |
| 57   | 294.00            | 18.564               | 275.436               |                               |               |            |            |           |                |                    |                         |

 $Q_h$ 

| 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) |
|------|-------------------|----------------------|-----------------------|-------------------------------|---------------|------------|------------|-----------|----------------|--------------------|-------------------------|
| 58.8 | 1058.50           |                      | 1058.50               | 4.486                         | 0.001         | 1.994      | 113.537    | 56.95     | 1.924          | 0.057              | 191.874                 |
| 57   | 1067.393          | 18.564               | 1048.83               |                               |               |            |            |           |                |                    |                         |

☒ Wasteload Allocations

☒ AFC

CCT (min): 15

PMF: 0.185

Analysis Hardness (mg/l): 150.83

Analysis pH: 7.00

| Pollutants                   | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments                         |
|------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|----------------------------------|
| Total Dissolved Solids (PWS) | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |                                  |
| Chloride (PWS)               | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |                                  |
| Sulfate (PWS)                | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |                                  |
| Total Aluminum               | 0                  | 0         |                  | 0         | 750        | 750           | 9,772      |                                  |
| Total Antimony               | 0                  | 0         |                  | 0         | 1,100      | 1,100         | 14,333     |                                  |
| Total Arsenic                | 0                  | 0         |                  | 0         | 340        | 340           | 4,430      | Chem Translator of 1 applied     |
| Total Barium                 | 0                  | 0         |                  | 0         | 21,000     | 21,000        | 273,629    |                                  |
| Total Boron                  | 0                  | 0         |                  | 0         | 8,100      | 8,100         | 105,543    |                                  |
| Total Cadmium                | 0                  | 0         |                  | 0         | 3.002      | 3.24          | 42.2       | Chem Translator of 0.927 applied |
| Total Chromium (III)         | 0                  | 0         |                  | 0         | 797.759    | 2,525         | 32,895     | Chem Translator of 0.316 applied |
| Hexavalent Chromium          | 0                  | 0         |                  | 0         | 16         | 16.3          | 212        | Chem Translator of 0.982 applied |
| Total Cobalt                 | 0                  | 0         |                  | 0         | 95         | 95.0          | 1,238      |                                  |
| Total Copper                 | 0                  | 0         |                  | 0         | 19.794     | 20.6          | 269        | Chem Translator of 0.96 applied  |
| Free Cyanide                 | 0                  | 0         |                  | 0         | 22         | 22.0          | 287        |                                  |

☒ CFC

CCT (min): #####

PMF: 1

Analysis Hardness (mg/l): 144.55

Analysis pH: 7.00

| Pollutants                   | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|----------|
| Total Dissolved Solids (PWS) | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |          |

Model Results

2/2/2023

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|                                 |   |   |  |   |         |       |         |                                  |
|---------------------------------|---|---|--|---|---------|-------|---------|----------------------------------|
| Chloride (PWS)                  | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Sulfate (PWS)                   | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Aluminum                  | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Antimony                  | 0 | 0 |  | 0 | 220     | 220   | 14,500  |                                  |
| Total Arsenic                   | 0 | 0 |  | 0 | 150     | 150   | 9,886   | Chem Translator of 1 applied     |
| Total Barium                    | 0 | 0 |  | 0 | 4,100   | 4,100 | 270,226 |                                  |
| Total Boron                     | 0 | 0 |  | 0 | 1,600   | 1,600 | 105,454 |                                  |
| Total Cadmium                   | 0 | 0 |  | 0 | 0.318   | 0.36  | 23.4    | Chem Translator of 0.894 applied |
| Total Chromium (III)            | 0 | 0 |  | 0 | 100.219 | 117   | 7,681   | Chem Translator of 0.86 applied  |
| Hexavalent Chromium             | 0 | 0 |  | 0 | 10      | 10.4  | 685     | Chem Translator of 0.962 applied |
| Total Cobalt                    | 0 | 0 |  | 0 | 19      | 19.0  | 1,252   |                                  |
| Total Copper                    | 0 | 0 |  | 0 | 12.270  | 12.8  | 842     | Chem Translator of 0.96 applied  |
| Free Cyanide                    | 0 | 0 |  | 0 | 5.2     | 5.2   | 343     |                                  |
| Dissolved Iron                  | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Iron                      | 0 | 0 |  | 0 | 1,500   | 1,500 | 98,863  | WQC = 30 day average; PMF = 1    |
| Total Lead                      | 0 | 0 |  | 0 | 3.750   | 5.09  | 335     | Chem Translator of 0.737 applied |
| Total Manganese                 | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Mercury                   | 0 | 0 |  | 0 | 0.770   | 0.91  | 59.7    | Chem Translator of 0.85 applied  |
| Total Nickel                    | 0 | 0 |  | 0 | 71.028  | 71.2  | 4,695   | 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  | 329     | Chem Translator of 0.922 applied |
| Total Silver                    | 0 | 0 |  | 0 | N/A     | N/A   | N/A     | Chem Translator of 1 applied     |



|                                 |   |   |  |   |         |       |         |                                  |
|---------------------------------|---|---|--|---|---------|-------|---------|----------------------------------|
| Total Lead                      | 0 | 0 |  | 0 | 3.750   | 5.09  | 333     | Chem Translator of 0.737 applied |
| Total Manganese                 | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| Total Mercury                   | 0 | 0 |  | 0 | 0.770   | 0.91  | 59.7    | Chem Translator of 0.85 applied  |
| Total Nickel                    | 0 | 0 |  | 0 | 71.028  | 71.2  | 4,695   | 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  | 329     | 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  | 857     |                                  |
| Total Zinc                      | 0 | 0 |  | 0 | 161.425 | 164   | 10,790  | Chem Translator of 0.986 applied |
| Acrolein                        | 0 | 0 |  | 0 | 3       | 3.0   | 198     |                                  |
| Acrylonitrile                   | 0 | 0 |  | 0 | 130     | 130   | 8,568   |                                  |
| Benzene                         | 0 | 0 |  | 0 | 130     | 130   | 8,568   |                                  |
| Bromoform                       | 0 | 0 |  | 0 | 370     | 370   | 24,386  |                                  |
| Carbon Tetrachloride            | 0 | 0 |  | 0 | 560     | 560   | 36,909  |                                  |
| Chlorobenzene                   | 0 | 0 |  | 0 | 240     | 240   | 15,818  |                                  |
| Chlorodibromomethane            | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| 2-Chloroethyl Vinyl Ether       | 0 | 0 |  | 0 | 3,500   | 3,500 | 230,681 |                                  |
| Chloroform                      | 0 | 0 |  | 0 | 390     | 390   | 25,704  |                                  |
| Dichlorobromomethane            | 0 | 0 |  | 0 | N/A     | N/A   | N/A     |                                  |
| 1,2-Dichloroethane              | 0 | 0 |  | 0 | 3,100   | 3,100 | 204,317 |                                  |
| 1,1-Dichloroethylene            | 0 | 0 |  | 0 | 1,500   | 1,500 | 98,863  |                                  |
| 1,2-Dichloropropane             | 0 | 0 |  | 0 | 2,200   | 2,200 | 144,999 |                                  |
| 1,3-Dichloropropylene           | 0 | 0 |  | 0 | 61      | 61.0  | 4,020   |                                  |
| Ethylbenzene                    | 0 | 0 |  | 0 | 580     | 580   | 38,227  |                                  |
| Methyl Bromide                  | 0 | 0 |  | 0 | 110     | 110   | 7,250   |                                  |
| Methyl Chloride                 | 0 | 0 |  | 0 | 5,500   | 5,500 | 362,498 |                                  |
| Methylene Chloride              | 0 | 0 |  | 0 | 2,400   | 2,400 | 158,181 |                                  |
| 1,1,2,2-Tetrachloroethane       | 0 | 0 |  | 0 | 210     | 210   | 13,841  |                                  |
| Tetrachloroethylene             | 0 | 0 |  | 0 | 140     | 140   | 9,227   |                                  |
| Toluene                         | 0 | 0 |  | 0 | 330     | 330   | 21,750  |                                  |

☒ **THH**      CCT (min): **#####**      THH PMF: **1**      Analysis Hardness (mg/l): **N/A**      Analysis pH: **N/A**      PWS PMF: **0.6213**

| 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       | 20,856,533 | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| Chloride (PWS)                  | 0                  | 0         |                  | 0         | 250,000    | 250,000       | 10,428,267 | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| Sulfate (PWS)                   | 0                  | 0         |                  | 0         | 250,000    | 250,000       | 10,428,267 | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| Total Aluminum                  | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Antimony                  | 0                  | 0         |                  | 0         | 5.6        | 5.6           | 231        | THH WQC applied at PWS at RMI 57                           |
| Total Arsenic                   | 0                  | 0         |                  | 0         | 10         | 10.0          | 413        | THH WQC applied at PWS at RMI 57                           |
| Total Barium                    | 0                  | 0         |                  | 0         | 2,400      | 2,400         | 99,181     | THH WQC applied at PWS at RMI 57                           |
| Total Boron                     | 0                  | 0         |                  | 0         | 3,100      | 3,100         | 128,109    | THH WQC applied at PWS at RMI 57                           |
| Total Cadmium                   | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Chromium (III)            | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Hexavalent Chromium             | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Cobalt                    | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Total Copper                    | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Free Cyanide                    | 0                  | 0         |                  | 0         | 4          | 4.0           | 165        | THH WQC applied at PWS at RMI 57                           |
| Dissolved Iron                  | 0                  | 0         |                  | 0         | 300        | 300           | 12,398     | THH WQC applied at PWS at RMI 57                           |
| 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         | 41,325     | THH WQC applied at PWS at RMI 57                           |
| Total Mercury                   | 0                  | 0         |                  | 0         | 0.050      | 0.05          | 2.07       | THH WQC applied at PWS at RMI 57                           |
| Total Nickel                    | 0                  | 0         |                  | 0         | 610        | 610           | 25,208     | THH WQC applied at PWS at RMI 57                           |
| Total Phenols (Phenolics) (PWS) | 0                  | 0         |                  | 0         | 5          | 5.0           | 209        | WQC applied at RMI 57 with a design stream flow of 294 cfs |
| 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          | 9.92       | THH WQC applied at PWS at RMI 57                           |
| Total Zinc                      | 0                  | 0         |                  | 0         | N/A        | N/A           | N/A        |  |
| Acrolein                        | 0                  | 0         |                  | 0         | 3          | 3.0           | 124        | THH WQC applied at PWS at RMI 57                           |
| Acrylonitrile                   | 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 Copper   | Report        | Report        | Report               | Report | Report | µg/L  | 148             | AFC         | Discharge Conc > 10% WQBEL (no RP) |
| Total Thallium | Report        | Report        | Report               | Report | Report | µg/L  | 9.92            | 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) | 20,857          | mg/L  | Discharge Conc ≤ 10% WQBEL |
| Chloride (PWS)               | 10,428          | mg/L  | Discharge Conc ≤ 10% WQBEL |
| Bromide                      | N/A             | N/A   | No WQS                     |
| Sulfate (PWS)                | 10,428          | mg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Aluminum               | 6,264           | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Antimony               | 231             | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Arsenic                | N/A             | N/A   | Discharge Conc < TQL       |
| Total Barium                 | 99,181          | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium              | N/A             | N/A   | No WQS                     |
| Total Boron                  | 67,649          | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Total Cadmium                | 23.4            | µg/L  | Discharge Conc < TQL       |
| Total Chromium (III)         | 7,681           | µg/L  | Discharge Conc < TQL       |
| Hexavalent Chromium          | 136             | µg/L  | Discharge Conc < TQL       |
| Total Cobalt                 | 793             | µg/L  | Discharge Conc ≤ 10% WQBEL |
| Free Cyanide                 | 165             | µg/L  | Discharge Conc ≤ 25% WQBEL |
| Total Cyanide                | N/A             | N/A   | No WQS                     |
| Dissolved Iron               | 12,398          | µg/L  | Discharge Conc ≤ 10% WQBEL |



|                 |        |      |                            |
|-----------------|--------|------|----------------------------|
| Dissolved Iron  | 12,398 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Iron      | 98,863 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead      | 335    | µg/L | Discharge Conc < TQL       |
| Total Manganese | 41,325 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Mercury   | 2.07   | µg/L | Discharge Conc < TQL       |
| Total Nickel    | 4,695  | µg/L | Discharge Conc ≤ 10% WQBEL |

Model Results

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|                                 |         |      |                            |
|---------------------------------|---------|------|----------------------------|
| Total Phenols (Phenolics) (PWS) | 209     | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Selenium                  | 329     | µg/L | Discharge Conc < TQL       |
| Total Silver                    | 64.1    | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Zinc                      | 1,417   | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Molybdenum                | N/A     | N/A  | No WQS                     |
| Acrolein                        | 25.1    | µg/L | Discharge Conc < TQL       |
| Acrylonitrile                   | 14.2    | µg/L | Discharge Conc < TQL       |
| Benzene                         | 137     | µg/L | Discharge Conc < TQL       |
| Bromoform                       | 1,659   | µg/L | Discharge Conc < TQL       |
| Carbon Tetrachloride            | 94.8    | µg/L | Discharge Conc < TQL       |
| Chlorobenzene                   | 4,133   | µg/L | Discharge Conc ≤ 25% WQBEL |
| Chlorodibromomethane            | 190     | µg/L | Discharge Conc < TQL       |
| Chloroethane                    | N/A     | N/A  | No WQS                     |
| 2-Chloroethyl Vinyl Ether       | 150,330 | µg/L | Discharge Conc < TQL       |
| Chloroform                      | 236     | µg/L | Discharge Conc ≤ 25% WQBEL |
| Dichlorobromomethane            | 225     | µg/L | Discharge Conc ≤ 25% WQBEL |
| 1,1-Dichloroethane              | N/A     | N/A  | No WQS                     |
| 1,2-Dichloroethane              | 2,346   | µg/L | Discharge Conc < TQL       |
| 1,1-Dichloroethylene            | 1,364   | µg/L | Discharge Conc < TQL       |
| 1,2-Dichloropropane             | 213     | µg/L | Discharge Conc < TQL       |
| 1,3-Dichloropropylene           | 64.0    | µg/L | Discharge Conc < TQL       |
| 1,4-Dioxane                     | N/A     | N/A  | No WQS                     |
| Ethylbenzene                    | 2,810   | µg/L | Discharge Conc < TQL       |
| Methyl Bromide                  | 4,133   | µg/L | Discharge Conc < TQL       |
| Methyl Chloride                 | 233,847 | µg/L | Discharge Conc < TQL       |

|                            |         |      |                            |
|----------------------------|---------|------|----------------------------|
| Methylene Chloride         | 4,739   | µg/L | Discharge Conc < TQL       |
| 1,1,2,2-Tetrachloroethane  | 47.4    | µg/L | Discharge Conc < TQL       |
| Tetrachloroethylene        | 2,369   | µg/L | Discharge Conc < TQL       |
| Toluene                    | 2,356   | µg/L | Discharge Conc < TQL       |
| 1,2-trans-Dichloroethylene | 4,133   | µg/L | Discharge Conc < TQL       |
| 1,1,1-Trichloroethane      | 25,055  | µg/L | Discharge Conc < TQL       |
| 1,1,2-Trichloroethane      | 130     | µg/L | Discharge Conc < TQL       |
| Trichloroethylene          | 142     | µg/L | Discharge Conc < TQL       |
| Vinyl Chloride             | 4.74    | µg/L | Discharge Conc < TQL       |
| 2-Chlorophenol             | 1,240   | µg/L | Discharge Conc < TQL       |
| 2,4-Dichlorophenol         | 413     | µg/L | Discharge Conc < TQL       |
| 2,4-Dimethylphenol         | 4,133   | µg/L | Discharge Conc < TQL       |
| 4,6-Dinitro-o-Cresol       | 82.7    | µg/L | Discharge Conc < TQL       |
| 2,4-Dinitrophenol          | 413     | µg/L | Discharge Conc < TQL       |
| 2-Nitrophenol              | 66,813  | µg/L | Discharge Conc < TQL       |
| 4-Nitrophenol              | 19,209  | µg/L | Discharge Conc < TQL       |
| p-Chloro-m-Cresol          | 1,336   | µg/L | Discharge Conc < TQL       |
| Pentachlorophenol          | 7.11    | µg/L | Discharge Conc < TQL       |
| Phenol                     | 165,301 | µg/L | Discharge Conc ≤ 25% WQBEL |
| 2,4,6-Trichlorophenol      | 355     | µg/L | Discharge Conc < TQL       |

Model Results

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|                       |        |      |                      |
|-----------------------|--------|------|----------------------|
| Acenaphthene          | 693    | µg/L | Discharge Conc < TQL |
| Acenaphthylene        | N/A    | N/A  | No WQS               |
| Anthracene            | 12,398 | µg/L | Discharge Conc < TQL |
| Benzidine             | 0.024  | µg/L | Discharge Conc < TQL |
| Benzo(a)Anthracene    | 0.24   | µg/L | Discharge Conc < TQL |
| Benzo(a)Pyrene        | 0.024  | µg/L | Discharge Conc < TQL |
| 3,4-Benzofluoranthene | 0.24   | µg/L | Discharge Conc < TQL |
| Benzo(ghi)Perylene    | N/A    | N/A  | No WQS               |
| Benzo(k)Fluoranthene  | 2.37   | µg/L | Discharge Conc < TQL |

|                             |        |      |                      |
|-----------------------------|--------|------|----------------------|
| Benzo(ghi)Perylene          | N/A    | N/A  | No WQS               |
| Benzo(k)Fluoranthene        | 2.37   | µg/L | Discharge Conc < TQL |
| Bis(2-Chloroethoxy)Methane  | N/A    | N/A  | No WQS               |
| Bis(2-Chloroethyl)Ether     | 7.11   | µg/L | Discharge Conc < TQL |
| Bis(2-Chloroisopropyl)Ether | 8,265  | µg/L | Discharge Conc < TQL |
| Bis(2-Ethylhexyl)Phthalate  | 75.8   | µg/L | Discharge Conc < TQL |
| 4-Bromophenyl Phenyl Ether  | 2,255  | µg/L | Discharge Conc < TQL |
| Butyl Benzyl Phthalate      | 4.13   | µg/L | Discharge Conc < TQL |
| 2-Chloronaphthalene         | 33,060 | µg/L | Discharge Conc < TQL |
| 4-Chlorophenyl Phenyl Ether | N/A    | N/A  | No WQS               |
| Chrysene                    | 28.4   | µg/L | Discharge Conc < TQL |
| Dibenzo(a,h)Anthracene      | 0.024  | µg/L | Discharge Conc < TQL |
| 1,2-Dichlorobenzene         | 6,848  | µg/L | Discharge Conc < TQL |
| 1,3-Dichlorobenzene         | 289    | µg/L | Discharge Conc < TQL |
| 1,4-Dichlorobenzene         | 6,097  | µg/L | Discharge Conc < TQL |
| 3,3-Dichlorobenzidine       | 11.8   | µg/L | Discharge Conc < TQL |
| Diethyl Phthalate           | 24,795 | µg/L | Discharge Conc < TQL |
| Dimethyl Phthalate          | 20,879 | µg/L | Discharge Conc < TQL |
| Di-n-Butyl Phthalate        | 827    | µg/L | Discharge Conc < TQL |
| 2,4-Dinitrotoluene          | 11.8   | µg/L | Discharge Conc < TQL |
| 2,6-Dinitrotoluene          | 11.8   | µg/L | Discharge Conc < TQL |
| Di-n-Octyl Phthalate        | N/A    | N/A  | No WQS               |
| 1,2-Diphenylhydrazine       | 7.11   | µg/L | Discharge Conc < TQL |
| Fluoranthene                | 827    | µg/L | Discharge Conc < TQL |
| Fluorene                    | 2,066  | µg/L | Discharge Conc < TQL |
| Hexachlorobenzene           | 0.019  | µg/L | Discharge Conc < TQL |
| Hexachlorobutadiene         | 2.37   | µg/L | Discharge Conc < TQL |
| Hexachlorocyclopentadiene   | 41.8   | µg/L | Discharge Conc < TQL |
| Hexachloroethane            | 23.7   | µg/L | Discharge Conc < TQL |
| Indeno(1,2,3-cd)Pyrene      | 0.24   | µg/L | Discharge Conc < TQL |
| Isophorone                  | 1,405  | µg/L | Discharge Conc < TQL |
| Naphthalene                 | 1,169  | µg/L | Discharge Conc < TQL |
| Nitrobenzene                | 413    | µg/L | Discharge Conc < TQL |
| n-Nitrosodimethylamine      | 0.17   | µg/L | Discharge Conc < TQL |
| n-Nitrosodi-n-Propylamine   | 1.18   | µg/L | Discharge Conc < TQL |

|                        |      |      |                      |
|------------------------|------|------|----------------------|
| n-Nitrosodiphenylamine | 782  | µg/L | Discharge Conc < TQL |
| Phenanthrene           | 41.8 | µg/L | Discharge Conc < TQL |
| Pyrene                 | 827  | µg/L | Discharge Conc < TQL |

Model Results

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|                        |       |      |                            |
|------------------------|-------|------|----------------------------|
| 1,2,4-Trichlorobenzene | 2.89  | µg/L | Discharge Conc < TQL       |
| PCBs, Total            | 0.015 | µg/L | Discharge Conc ≤ 25% WQBEL |

## TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

|     |                                |     |                                      |
|-----|--------------------------------|-----|--------------------------------------|
| 292 | = Q stream (cfs)               | 0.5 | = CV Daily                           |
| 2.9 | = Q discharge (MGD)            | 0.5 | = CV Hourly                          |
| 30  | = no. samples                  | 0.2 | = AFC_Partial Mix Factor             |
| 0.3 | = Chlorine Demand of Stream    | 1   | = CFC_Partial Mix Factor             |
| 0   | = Chlorine Demand of Discharge | 15  | = AFC_Criteria Compliance Time (min) |
| 0.5 | = BAT/BPJ Value                | 720 | = CFC_Criteria Compliance Time (min) |
| 0   | = % Factor of Safety (FOS)     |     | =Decay Coefficient (K)               |

| Source       | Reference | AFC Calculations    | Reference | CFC Calculations    |
|--------------|-----------|---------------------|-----------|---------------------|
| TRC          | 1.3.2.iii | WLA afc = 4.172     | 1.3.2.iii | WLA cfc = 20.253    |
| PENTOXSD TRG | 5.1a      | LTAMULT afc = 0.373 | 5.1c      | LTAMULT cfc = 0.581 |
| PENTOXSD TRG | 5.1b      | LTA_afc= 1.554      | 5.1d      | LTA_cfc = 11.774    |

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

|                |  |
|----------------|--|
| WLA afc        | $(.019/e(-k*AFC\_tc)) + [(AFC\_Yc*Qs*.019/Qd*e(-k*AFC\_tc))... + Xd + (AFC\_Yc*Qs*Xs/Qd)]*(1-FOS/100)$ |
| LTAMULT afc    | $EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)$   |
| LTA_afc        | $wla\_afc*LTAMULT\_afc$  |
| WLA_cfc        | $(.011/e(-k*CFC\_tc) + [(CFC\_Yc*Qs*.011/Qd*e(-k*CFC\_tc) )... + Xd + (CFC\_Yc*Qs*Xs/Qd)]*(1-FOS/100)$ |
| LTAMULT_cfc    | $EXP((0.5*LN(cvd^2/no\_samples+1))-2.326*LN(cvd^2/no\_samples+1)^0.5)$                                 |
| LTA_cfc        | $wla\_cfc*LTAMULT\_cfc$  |
| AML MULT       | $EXP(2.326*LN((cvd^2/no\_samples+1)^0.5)-0.5*LN(cvd^2/no\_samples+1))$                                 |
| AVG MON LIMIT  | $MIN(BAT\_BPJ,MIN(LTA\_afc,LTA\_cfc)*AML\_MULT)$   |
| INST MAX LIMIT | $1.5*((av\_mon\_limit/AML\_MULT)/LTAMULT\_afc)$  |

$(0.011/EXP(-K*CFC\_tc/1440))+(((CFC\_Yc*Qs*0.011)/(1.547*Qd))....$   
 $....*EXP(-K*CFC\_tc/1440)))+Xd+(CFC\_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)$

NPDES Permit Number: PA0070351

Facility Name: Amity Township

Species Tested: ☐ *Cariodaphnia dubia* ☒ *Pimephales promelas* Test Type: ☒ Chronic ☐ AcuteRe-Test? ☐ Yes ☒ No (If Yes, indicate the date of original test completion: \_\_\_\_\_)

| SAMPLE INFORMATION |                |               |             |              |            |   |
|--------------------|----------------|---------------|-------------|--------------|------------|---|
|                    | Date/Time      | Sample Source | Temperature | Holding Time | Chlorine   | Dechlorinated?  |
| 1.                 | 11/7/22, 0800  | Outfall 001   | 1.1°C       | <36 hrs      | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2.                 | 11/9/22, 0800  | Outfall 001   | 1.0°C       | <36 hrs      | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 3.                 | 11/11/22, 0800 | Outfall 001   | 1.1°C       | <36 hrs      | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

| TEST CONDITIONS   |  |
|---|--|
| Date/Time of Test Initiation: 11/8/22, 1340   | Date/Time of Test Termination: 11/15/22, 1300  |
| <input checked="" type="checkbox"/> Renewal Test <input type="checkbox"/> Non-Renewal Test          | Frequency of Renewals: Daily   |
| Dilution Series: 1%, 2%, 30%, 60%, 100%   | Target Instream Waste Concentration (TIWC): 2%   |
| Age of Organisms at Start of Tests: <24 hrs   |  |
| Number of Replicates: 4   | Number of Organisms per Replicate: 10  |
| Source of Organisms: Aquatic BioSystems   | Feeding Regimen: Thrice/day <i>Artemia</i> spp. nauplii                                |
| Light Intensity: 50-100 foot candles  | Photoperiod: 16L: 8D   |
| Temperature measurements made at least once per 24-hour period?                                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| DO measured daily in at least one replicate of each concentration?                                  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| Were the test chambers aerated?   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rate:              |
| pH measured daily in at least one replicate of each concentration?                                  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| Were test acceptability criteria in the EPA method met?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                    |
| Were there any modifications to or deviations from EPA methods (if Yes, explain on separate sheet)? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                    |

| DILUTION / REAGENT WATER                  |                            |
|---|----------------------------|
| Date of Last Test for Chemistry: 11/14/22 | Conductivity: 309 µmhos/cm |
| pH: 8.3                                   | TRC: <0.01 mg/L            |

| CONTROL RESULTS                                 |   |
|---|---|
| <i>Cariodaphnia dubia</i>                       | <i>Pimephales promelas</i>                            |
| Survival:                                       | Survival: 100   |
| Percent that produced 3 broods (if applicable): | % Mean Dry Weight of Survivors (if applicable): 0.879 |
| Young per Surviving Female (if applicable):     |   |

| REFERENCE TOXICITY TESTS                                |  |
|---|--|
| Date of most recent test: 11/8/22                       | Same conditions as test? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Were test acceptability criteria in the EPA method met? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                          |

| TEST RESULTS   |  |
|--|--|
| Control compared to: <input checked="" type="checkbox"/> TIWC Dilution <input type="checkbox"/> Other: |  |
| Survival: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                       | Growth: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |
|  | Reproduction: <input type="checkbox"/> Pass <input type="checkbox"/> Fail      |

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of the individuals personally responsible for obtaining the information, I believe the attached information is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment as provided by 18 Pa. C.S. §4904.

Michael K. Chanov II

Name of Laboratory Manager

  
Signature of Laboratory Manager11/23/22  
Date68-01459  
DEP Lab ID No.

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name  
**Amity Township**  
Permit No.  
**PA0070351**

| Test Completion Date<br>11/23/2021 |         |      |
|------------------------------------|---------|------|
| Replicate No.                      | Control | TIWC |
| 1                                  | 9       | 8    |
| 2                                  | 10      | 10   |
| 3                                  | 9       | 10   |
| 4                                  | 10      | 10   |
| 5                                  |         |      |
| 6                                  |         |      |
| 7                                  |         |      |
| 8                                  |         |      |
| 9                                  |         |      |
| 10                                 |         |      |
| 11                                 |         |      |
| 12                                 |         |      |
| 13                                 |         |      |
| 14                                 |         |      |
| 15                                 |         |      |

Mean 9.500 9.500  
Std Dev. 0.577 1.000  
# Replicates 4 4

T-Test Result 4.0232  
Deg. of Freedom 4  
Critical T Value 0.7407  
Pass or Fail **PASS**

| Test Completion Date<br>11/15/2022 |         |      |
|------------------------------------|---------|------|
| Replicate No.                      | Control | TIWC |
| 1                                  | 10      | 10   |
| 2                                  | 10      | 10   |
| 3                                  | 10      | 10   |
| 4                                  | 10      | 10   |
| 5                                  |         |      |
| 6                                  |         |      |
| 7                                  |         |      |
| 8                                  |         |      |
| 9                                  |         |      |
| 10                                 |         |      |
| 11                                 |         |      |
| 12                                 |         |      |
| 13                                 |         |      |
| 14                                 |         |      |
| 15                                 |         |      |

Mean 10.000 10.000  
Std Dev. 0.000 0.000  
# Replicates 4 4

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name  
Amity Township

Permit No.  
PA0070351

| Test Completion Date<br>11/23/2021 |         |       |
|------------------------------------|---------|-------|
| Replicate No.                      | Control | TIWC  |
| 1                                  | 0.717   | 0.599 |
| 2                                  | 0.783   | 0.628 |
| 3                                  | 0.602   | 0.754 |
| 4                                  | 0.655   | 0.706 |
| 5                                  |         |       |
| 6                                  |         |       |
| 7                                  |         |       |
| 8                                  |         |       |
| 9                                  |         |       |
| 10                                 |         |       |
| 11                                 |         |       |
| 12                                 |         |       |
| 13                                 |         |       |
| 14                                 |         |       |
| 15                                 |         |       |

Mean 0.689 0.672  
Std Dev. 0.078 0.071  
# Replicates 4 4

T-Test Result 3.3607  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

| Test Completion Date<br>11/15/2022 |         |       |
|------------------------------------|---------|-------|
| Replicate No.                      | Control | TIWC  |
| 1                                  | 0.819   | 0.986 |
| 2                                  | 0.921   | 0.865 |
| 3                                  | 0.849   | 0.841 |
| 4                                  | 0.925   | 0.916 |
| 5                                  |         |       |
| 6                                  |         |       |
| 7                                  |         |       |
| 8                                  |         |       |
| 9                                  |         |       |
| 10                                 |         |       |
| 11                                 |         |       |
| 12                                 |         |       |
| 13                                 |         |       |
| 14                                 |         |       |
| 15                                 |         |       |

Mean 0.879 0.902  
Std Dev. 0.053 0.064  
# Replicates 4 4

T-Test Result 6.4490  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**



# COVER SHEET

NPDES Permit Number: PA0070351

Facility Name: Amity Township

Species Tested: ☒ *Ceriodaphnia dubia* ☐ *Pimephales promelas* Test Type: ☒ Chronic ☐ Acute

Re-Test? ☐ Yes ☒ No (if Yes, indicate the date of original test completion: \_\_\_\_\_)

| SAMPLE INFORMATION |                |               |             |              |            |   |
|--------------------|----------------|---------------|-------------|--------------|------------|---|
|                    | Date/Time      | Sample Source | Temperature | Holding Time | Chlorine   | Dechlorinated?  |
| 1.                 | 11/7/22, 0800  | Outfall 001   | 1.1°C       | <36 Hours    | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2.                 | 11/9/22, 0800  | Outfall 001   | 1.0°C       | <36 Hours    | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 3.                 | 11/11/22, 0800 | Outfall 001   | 1.1°C       | <36 Hours    | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

| TEST CONDITIONS   |  |
|---|--|
| Date/Time of Test Initiation: 11/8/22, 1000   | Date/Time of Test Termination: 11/14/22, 1000  |
| <input checked="" type="checkbox"/> Renewal Test <input type="checkbox"/> Non-Renewal Test  | Frequency of Renewals: Daily   |
| Dilution Series: 1%, 2%, 30%, 60%, 100%   | Target Instream Waste Concentration (TIWC): 2%   |
| Age of Organisms at Start of Tests: <24 Hours   | Number of Organisms per Replicate: 1   |
| Number of Replicates: 10  | Feeding Regimen: Once/day <i>Raphidocelis subcapitata</i> and YCT  |
| Source of Organisms: In-house Cultures  | Photoperiod: 16L-8D  |
| Light Intensity: 50-100 foot candles  | Temperature measurements made at least once per 24-hour period? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| DO measured daily in at least one replicate of each concentration? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet)               | Were the test chambers aerated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rate:  |
| pH measured daily in at least one replicate of each concentration? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet)               | Were test acceptability criteria in the EPA method met? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                            |
| Were there any modifications to or deviations from EPA methods (if Yes, explain on separate sheet)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |  |

| DILUTION / REAGENT WATER                  |                            |
|---|----------------------------|
| Date of Last Test for Chemistry: 11/13/22 | Conductivity: 321 µmhos/cm |
| pH: 7.8                                   | TRC: <0.01 mg/L            |

| CONTROL RESULTS                                       |   |
|---|---|
| <i>Ceriodaphnia dubia</i>                             | <i>Pimephales promelas</i>                    |
| Survival: 100%  | Survival:                                     |
| Percent that produced 3 broods (if applicable): 100 % | Mean Dry Weight of Survivors (if applicable): |
| Young per Surviving Female (if applicable): 27.6      |   |

| REFERENCE TOXICITY TESTS  |  |
|---|--|
| Date of most recent test: 11/1/22   | Same conditions as test? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Were test acceptability criteria in the EPA method met? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |

| TEST RESULTS   |   |
|--|---|
| Control compared to: <input checked="" type="checkbox"/> TIWC Dilution <input type="checkbox"/> Other: |   |
| Survival: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                       | Growth: <input type="checkbox"/> Pass <input type="checkbox"/> Fail |
| Reproduction: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                   |   |

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of the individuals personally responsible for obtaining the information, I believe the attached information is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment as provided by 18 Pa. C.S. §4904.

|                            |   |          |                |
|----------------------------|---|----------|----------------|
| Michael K. Chanov II       |  | 11/23/22 | 68-01459       |
| Name of Laboratory Manager | Signature of Laboratory Manager   | Date     | DEP Lab ID No. |

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

|                |
|----------------|
| Facility Name  |
| Amity Township |

|            |
|------------|
| Permit No. |
| PA0070351  |

| Test Completion Date |         |      |
|----------------------|---------|------|
| 11/22/2021           |         |      |
| Replicate No.        | Control | TIWC |
| 1                    | 1       | 1    |
| 2                    | 1       | 1    |
| 3                    | 1       | 1    |
| 4                    | 1       | 1    |
| 5                    | 1       | 1    |
| 6                    | 1       | 1    |
| 7                    | 1       | 1    |
| 8                    | 1       | 1    |
| 9                    | 1       | 1    |
| 10                   | 1       | 1    |
| 11                   |         |      |
| 12                   |         |      |
| 13                   |         |      |
| 14                   |         |      |
| 15                   |         |      |

|              |       |       |
|--------------|-------|-------|
| Mean         | 1.000 | 1.000 |
| Std Dev.     | 0.000 | 0.000 |
| # Replicates | 10    | 10    |

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

PASS

| Test Completion Date |         |      |
|----------------------|---------|------|
| 11/14/2022           |         |      |
| Replicate No.        | Control | TIWC |
| 1                    | 1       | 1    |
| 2                    | 1       | 1    |
| 3                    | 1       | 1    |
| 4                    | 1       | 1    |
| 5                    | 1       | 1    |
| 6                    | 1       | 1    |
| 7                    | 1       | 1    |
| 8                    | 1       | 1    |
| 9                    | 1       | 1    |
| 10                   | 1       | 1    |
| 11                   |         |      |
| 12                   |         |      |
| 13                   |         |      |
| 14                   |         |      |
| 15                   |         |      |

|              |       |       |
|--------------|-------|-------|
| Mean         | 1.000 | 1.000 |
| Std Dev.     | 0.000 | 0.000 |
| # Replicates | 10    | 10    |

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

PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

|                |
|----------------|
| Facility Name  |
| Amity Township |
| Permit No.     |
| PA0070351      |

| Replicate | Test Completion Date |      |
|-----------|----------------------|------|
|           | 11/22/2021           |      |
| No.       | Control              | TIWC |
| 1         | 34                   | 36   |
| 2         | 31                   | 33   |
| 3         | 34                   | 29   |
| 4         | 33                   | 34   |
| 5         | 35                   | 28   |
| 6         | 38                   | 31   |
| 7         | 33                   | 30   |
| 8         | 30                   | 30   |
| 9         | 33                   | 31   |
| 10        | 31                   | 29   |
| 11        |                      |      |
| 12        |                      |      |
| 13        |                      |      |
| 14        |                      |      |
| 15        |                      |      |

|              |        |        |
|--------------|--------|--------|
| Mean         | 33.200 | 31.100 |
| Std Dev.     | 2.300  | 2.514  |
| # Replicates | 10     | 10     |

|                  |        |
|------------------|--------|
| T-Test Result    | 6.4301 |
| Deg. of Freedom  | 18     |
| Critical T Value | 0.8647 |
| Pass or Fail     | PASS   |

| Replicate | Test Completion Date |      |
|-----------|----------------------|------|
|           | 11/14/2022           |      |
| No.       | Control              | TIWC |
| 1         | 28                   | 27   |
| 2         | 33                   | 27   |
| 3         | 31                   | 26   |
| 4         | 24                   | 23   |
| 5         | 23                   | 21   |
| 6         | 32                   | 27   |
| 7         | 20                   | 32   |
| 8         | 28                   | 32   |
| 9         | 32                   | 29   |
| 10        | 25                   | 29   |
| 11        |                      |      |
| 12        |                      |      |
| 13        |                      |      |
| 14        |                      |      |
| 15        |                      |      |

|              |        |        |
|--------------|--------|--------|
| Mean         | 27.600 | 27.300 |
| Std Dev.     | 4.452  | 3.498  |
| # Replicates | 10     | 10     |

|                  |        |
|------------------|--------|
| T-Test Result    | 4.3161 |
| Deg. of Freedom  | 17     |
| Critical T Value | 0.8633 |
| Pass or Fail     | PASS   |

3800-FM-BPMPSM0485 Rev. 10/2013  
Cover Sheetpennsylvania  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTIONCOMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENTWHOLE EFFLUENT TOXICITY (WET) TEST SUMMARY REPORT  
COVER SHEET

NPDES Permit Number: PA0070351

Facility Name: Amity Township

Species Tested: ☐ *Caridaphnia dubia* ☒ *Pimephales promelas* Test Type: ☒ Chronic ☐ AcuteRe-Test? ☐ Yes ☒ No (If Yes, indicate the date of original test completion: \_\_\_\_\_)

| SAMPLE INFORMATION |                |               |             |              |            |
|--------------------|----------------|---------------|-------------|--------------|------------|
|                    | Date/Time      | Sample Source | Temperature | Holding Time | Chlorine   |
| 1.                 | 11/15/21, 0800 | Outfall 001   | 14°C        | <36hrs       | <0.01 mg/L |
| 2.                 | 11/17/21, 0800 | Outfall 001   | 24°C        | <36hrs       | <0.01 mg/L |
| 3.                 | 11/19/21, 0800 | Outfall 001   | 22°C        | <36hrs       | <0.01 mg/L |

Dechlorinated?

☐ Yes ☒ No☐ Yes ☒ No☐ Yes ☒ No

## TEST CONDITIONS

Date/Time of Test Initiation: 11/16/21, 1157

Date/Time of Test Termination: 11/23/21, 1110

☒ Renewal Test ☐ Non-Renewal Test

Frequency of Renewals: Daily

Dilution Series: 1, 2, 30, 60, 100%

Target Instream Waste Concentration (TIWC): 2

Age of Organisms at Start of Tests: &lt;24 hours

Number of Replicates: 4

Number of Organisms per Replicate: 10

Source of Organisms: Aquatic BioSystems

Feeding Regimen: Thrice/daily *Artemia* spp. nauplii

Light Intensity: 50-100 foot candles

Photoperiod: 16L-8D

Temperature measurements made at least once per 24-hour period? ☒ Yes ☐ No (attach log sheet)DO measured daily in at least one replicate of each concentration? ☒ Yes ☐ No (attach log sheet)Were the test chambers aerated? ☐ Yes ☒ No Rate:pH measured daily in at least one replicate of each concentration? ☒ Yes ☐ No (attach log sheet)Were test acceptability criteria in the EPA method met? ☒ Yes ☐ NoWere there any modifications to or deviations from EPA methods (if Yes, explain on separate sheet)? ☐ Yes ☒ No

## DILUTION / REAGENT WATER

Date of Last Test for Chemistry: 11/22/21

Conductivity: 315 µmhos/cm

pH: 8.1

TRC: &lt;0.01 mg/L

## CONTROL RESULTS

*Caridaphnia dubia**Pimephales promelas*

Survival:

Survival: 95

Percent that produced 3 broods (if applicable):

% Mean Dry Weight of Survivors (if applicable): 0.889

Young per Surviving Female (if applicable):

## REFERENCE TOXICITY TESTS

Date of most recent test: 11/2/21

Same conditions as test? ☒ Yes ☐ NoWere test acceptability criteria in the EPA method met? ☒ Yes ☐ No

## TEST RESULTS

Control compared to: ☒ TIWC Dilution ☐ Other:Survival: ☒ Pass ☐ Fail Growth: ☒ Pass ☐ Fail Reproduction: ☐ Pass ☐ Fail

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of the individuals personally responsible for obtaining the information, I believe the attached information is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment as provided by 18 Pa. C.S. §4904.

Michael K. Chanov II  
Name of Laboratory Manager

Signature of Laboratory Manager

12/7/21  
Date00-01459  
DEP Lab ID No.

3856-FM-SPNPSM0485 Rev. 10/2013

Cover Sheet

pennsylvania  
Department of Environmental  
ProtectionCOMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENTWHOLE EFFLUENT TOXICITY (WET) TEST SUMMARY REPORT  
COVER SHEET

NPDES Permit Number: PA0070351

Facility Name: Amity Township

Species Tested: ☒ *Caridaphnia dubia* ☐ *Pimephales promelas* Test Type: ☒ Chronic ☐ AcuteRe-Test? ☐ Yes ☒ No (If Yes, indicate the date of original test completion: \_\_\_\_\_)

| SAMPLE INFORMATION |               |             |              |            |   |
|--------------------|---------------|-------------|--------------|------------|---|
| Date/Time          | Sample Source | Temperature | Holding Time | Chlorine   | Dechlorinated?  |
| 1. 11/15/21, 0800  | Outfall 001   | 1.4°C       | <36hrs       | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2. 11/17/21, 0800  | Outfall 001   | 2.4°C       | <36hrs       | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 3. 11/18/21, 0800  | Outfall 001   | 2.2°C       | <36hrs       | <0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

| TEST CONDITIONS   |  |
|---|--|
| Date/Time of Test Initiation: 11/16/21, 0815  | Date/Time of Test Termination: 11/22/21, 0937  |
| <input checked="" type="checkbox"/> Renewal Test <input type="checkbox"/> Non-Renewal Test          | Frequency of Renewals: Daily   |
| Dilution Series: 1, 2, 30, 60, 100%   | Target Instream Waste Concentration (TIWC): 2  |
| Age of Organisms at Start of Tests: <24 hours   |  |
| Number of Replicates: 10  | Number of Organisms per Replicate: 1   |
| Source of Organisms: In-house Cultures  | Feeding Regimen: Oncoidey Raphidocella subcapitata and YGT                             |
| Light Intensity: 50-100 foot candles  | Photoperiod: 16L-8D  |
| Temperature measurements made at least once per 24-hour period?                                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| DO measured daily in at least one replicate of each concentration?                                  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| Were the test chambers aerated?   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                    |
| pH measured daily in at least one replicate of each concentration?                                  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (attach log sheet) |
| Were test acceptability criteria in the EPA method met?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                    |
| Were there any modifications to or deviations from EPA methods (if Yes, explain on separate sheet)? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                    |

| DILUTION / REAGENT WATER                  |                            |
|---|----------------------------|
| Date of Last Test for Chemistry: 11/21/21 | Conductivity: 325 µmhos/cm |
| pH: 8.2                                   | TRC: <0.01 mg/L            |

| CONTROL RESULTS                                       |   |
|---|---|
| <i>Caridaphnia dubia</i>                              | <i>Pimephales promelas</i>                    |
| Survival: 100   | Survival:                                     |
| Percent that produced 3 broods (if applicable): 100 % | Mean Dry Weight of Survivors (if applicable): |
| Young per Surviving Female (if applicable): 33.2      |   |

| REFERENCE TOXICITY TESTS                                |  |
|---|--|
| Date of most recent test: 11/2/21                       | Same conditions as test? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Were test acceptability criteria in the EPA method met? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                          |

| TEST RESULTS   |  |
|--|--|
| Control compared to: <input checked="" type="checkbox"/> TIWC Dilution <input type="checkbox"/> Other: |  |
| Survival: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                       | Growth: <input type="checkbox"/> Pass <input type="checkbox"/> Fail                  |
|  | Reproduction: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of the individuals personally responsible for obtaining the information, I believe the attached information is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment as provided by 18 Pa. C.S. §4904.

Michael K. Chanov II  
Name of Laboratory Manager  
Signature of Laboratory Manager11/17/21  
Date63-01423  
DEP Lab ID No.

| DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet |            |  |                |  |  |
|--|------------|--|----------------|--|--|
| Type of Test   | Chronic    |  | Facility Name  |  |  |
| Species Tested   | Pimephales |  |                |  |  |
| Endpoint   | Survival   |  | Amity Township |  |  |
| TIWC (decimal)   | 0.02       |  |                |  |  |
| No. Per Replicate                                      | 10         |  | Permit No.     |  |  |
| TST b value  | 0.75       |  | PA0070351      |  |  |
| TST alpha value  | 0.25       |  |                |  |  |

| Test Completion Date |            |      | Test Completion Date |         |      |
|----------------------|------------|------|----------------------|---------|------|
| Replicate            | 11/23/2021 |      | Replicate            |         |      |
| No.                  | Control    | TIWC | No.                  | Control | TIWC |
| 1                    | 9          | 8    | 1                    |         |      |
| 2                    | 10         | 10   | 2                    |         |      |
| 3                    | 9          | 10   | 3                    |         |      |
| 4                    | 10         | 10   | 4                    |         |      |
| 5                    |            |      | 5                    |         |      |
| 6                    |            |      | 6                    |         |      |
| 7                    |            |      | 7                    |         |      |
| 8                    |            |      | 8                    |         |      |
| 9                    |            |      | 9                    |         |      |
| 10                   |            |      | 10                   |         |      |
| 11                   |            |      | 11                   |         |      |
| 12                   |            |      | 12                   |         |      |
| 13                   |            |      | 13                   |         |      |
| 14                   |            |      | 14                   |         |      |
| 15                   |            |      | 15                   |         |      |

|                  |        |       |                  |       |       |
|------------------|--------|-------|------------------|-------|-------|
| Mean             | 9.500  | 9.500 | Mean             | 0.000 | 0.000 |
| Std Dev.         | 0.577  | 1.000 | Std Dev.         |       |       |
| # Replicates     | 4      | 4     | # Replicates     |       |       |
| T-Test Result    | 4.0232 |       | T-Test Result    |       |       |
| Deg. of Freedom  | 4      |       | Deg. of Freedom  |       |       |
| Critical T Value | 0.7407 |       | Critical T Value |       |       |
| Pass or Fail     | PASS   |       | Pass or Fail     |       |       |

|                      |                      |
|----------------------|----------------------|
| Test Completion Date | Test Completion Date |
|----------------------|----------------------|

| DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet |            |   |  |  |  |
|--|------------|---|--|--|--|
| Type of Test   | Chronic    | <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>Facility Name</b><br/> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Amity Township</div> </div> <div style="width: 45%;"> <b>Permit No.</b><br/> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">PA0070351</div> </div> </div> |  |  |  |
| Species Tested   | Pimephales |   |  |  |  |
| Endpoint   | Growth     |   |  |  |  |
| TIWC (decimal)   | 0.02       |   |  |  |  |
| No. Per Replicate                                      | 1          |   |  |  |  |
| TST b value  | 0.75       |   |  |  |  |
| TST alpha value  | 0.25       |   |  |  |  |

| Test Completion Date |            |       | Test Completion Date |         |       |
|----------------------|------------|-------|----------------------|---------|-------|
| Replicate            | 11/23/2021 |       | Replicate            |         |       |
| No.                  | Control    | TIWC  | No.                  | Control | TIWC  |
| 1                    | 0.717      | 0.599 | 1                    |         |       |
| 2                    | 0.783      | 0.628 | 2                    |         |       |
| 3                    | 0.602      | 0.754 | 3                    |         |       |
| 4                    | 0.655      | 0.706 | 4                    |         |       |
| 5                    |            |       | 5                    |         |       |
| 6                    |            |       | 6                    |         |       |
| 7                    |            |       | 7                    |         |       |
| 8                    |            |       | 8                    |         |       |
| 9                    |            |       | 9                    |         |       |
| 10                   |            |       | 10                   |         |       |
| 11                   |            |       | 11                   |         |       |
| 12                   |            |       | 12                   |         |       |
| 13                   |            |       | 13                   |         |       |
| 14                   |            |       | 14                   |         |       |
| 15                   |            |       | 15                   |         |       |
| Mean                 | 0.689      | 0.672 | Mean                 | 0.000   | 0.000 |
| Std Dev.             | 0.078      | 0.071 | Std Dev.             |         |       |
| # Replicates         | 4          | 4     | # Replicates         |         |       |
| T-Test Result        | 3.3607     |       | T-Test Result        |         |       |
| Deg. of Freedom      | 5          |       | Deg. of Freedom      |         |       |
| Critical T Value     | 0.7267     |       | Critical T Value     |         |       |
| Pass or Fail         | PASS       |       | Pass or Fail         |         |       |

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name

Amity Township

Permit No.

PA0070351

| Replicate No. | Test Completion Date |      |
|---------------|----------------------|------|
|               | Control              | TIWC |
| 1             | 1                    | 1    |
| 2             | 1                    | 1    |
| 3             | 1                    | 1    |
| 4             | 1                    | 1    |
| 5             | 1                    | 1    |
| 6             | 1                    | 1    |
| 7             | 1                    | 1    |
| 8             | 1                    | 1    |
| 9             | 1                    | 1    |
| 10            | 1                    | 1    |
| 11            |                      |      |
| 12            |                      |      |
| 13            |                      |      |
| 14            |                      |      |
| 15            |                      |      |

Mean 1.000 1.000  
Std Dev. 0.000 0.000  
# Replicates 10 10

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

PASS

| Replicate No. | Test Completion Date |      |
|---------------|----------------------|------|
|               | Control              | TIWC |
| 1             |                      |      |
| 2             |                      |      |
| 3             |                      |      |
| 4             |                      |      |
| 5             |                      |      |
| 6             |                      |      |
| 7             |                      |      |
| 8             |                      |      |
| 9             |                      |      |
| 10            |                      |      |
| 11            |                      |      |
| 12            |                      |      |
| 13            |                      |      |
| 14            |                      |      |
| 15            |                      |      |

Mean 0.000 0.000  
Std Dev.  
# Replicates

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



DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name

Amity Township

Permit No.

PA0070351

Test Completion Date

11/22/2021

| Replicate No. | Control | TIWC |
|---------------|---------|------|
| 1             | 34      | 36   |
| 2             | 31      | 33   |
| 3             | 34      | 29   |
| 4             | 33      | 34   |
| 5             | 35      | 28   |
| 6             | 38      | 31   |
| 7             | 33      | 30   |
| 8             | 30      | 30   |
| 9             | 33      | 31   |
| 10            | 31      | 29   |
| 11            |         |      |
| 12            |         |      |
| 13            |         |      |
| 14            |         |      |
| 15            |         |      |

Mean 33.200 31.100  
Std Dev. 2.300 2.514  
# Replicates 10 10

T-Test Result 6.4301  
Deg. of Freedom 18  
Critical T Value 0.8847  
Pass or Fail **PASS**

Test Completion Date

| Replicate No. | Control | TIWC |
|---------------|---------|------|
| 1             |         |      |
| 2             |         |      |
| 3             |         |      |
| 4             |         |      |
| 5             |         |      |
| 6             |         |      |
| 7             |         |      |
| 8             |         |      |
| 9             |         |      |
| 10            |         |      |
| 11            |         |      |
| 12            |         |      |
| 13            |         |      |
| 14            |         |      |
| 15            |         |      |

Mean 0.000 0.000  
Std Dev. 0.000 0.000  
# Replicates 10 10

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

3808-FM-BPSP-SM0005 Rev. 10/2013  
Instructions

PA35-03724

WHOLE EFFLUENT TOXICITY (WET) TEST SUMMARY REPORT - COVER SHEET

NPDES Permit Number: PA0070351 Facility Name: Amity Township  
Species Tested: *Ceriodaphnia dubia* ☒ *Pimephales promelas* Test Type: ☒ Chronic ☐ Acute  
Re-Test? ☐ Yes ☒ No (If Yes, indicate the date of original test completion: )

| SAMPLE INFORMATION |                |             |              |           |   |
|--------------------|----------------|-------------|--------------|-----------|---|
| Date/Time          | Sample Source  | Temperature | Holding Time | Chlorine  | Dechlorinated?  |
| 12/07/20, 0800     | Final effluent | 1.5 °C      | 24 hours     | 0.02 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 12/08/20, 0800     | Final effluent | 1.5 °C      | 24 hours     | 0.07 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 12/11/20, 0911     | Final effluent | 2.5 °C      | 24 hours     | 0.01 mg/L | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

| TEST CONDITIONS   |   |   |                                       |
|---|---|---|---------------------------------------|
| Date/Time of Test Initiation  | 12/08/20, 1840  | Date/Time of Test Termination               | 12/15/20, 1740                        |
| <input checked="" type="checkbox"/> Renewal Test  | Non-Renewal Test  | Frequency of Renewals:                      | Daily                                 |
| Dilution Series:  | 0, 1, 2, 10, 60, 100%   | Target Instream Waste Concentration (TIWC): | 2%                                    |
| Age of Organisms at Start of Test:  | <30 hours   |   |                                       |
| Number of Replicates:   | 4   | Number of Organisms per Replicate:          | 10                                    |
| Source of Organisms:  | ABS, Inc.   | Feeding Regimen:                            | Twice/day <i>Artemia</i> spp. nauplii |
| Light Intensity:  | 50-100 foot-candles   | Photoperiod:                                | 16L-8D                                |
| Temperature measurements made at least once per 24-hour period?                                     | <input checked="" type="checkbox"/> Yes                             | Temperature Range:                          | 24.3-26.3° C                          |
| DO measured daily in at least one replicate of each concentration?                                  | <input checked="" type="checkbox"/> Yes                             |   | (attach log sheet)                    |
| Were the chambers aerated?  | Yes <input checked="" type="checkbox"/> No                          | Rate:                                       |                                       |
| pH measured daily in at least one replicate of each concentration?                                  | <input checked="" type="checkbox"/> Yes                             |   | (attach log sheet)                    |
| Were test acceptability criteria in the EPA method met?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |   |                                       |
| Were there any modifications to or deviations from EPA methods (If Yes, explain on separate sheet)? | Yes <input checked="" type="checkbox"/> No                          |   |                                       |

| DILUTION / REAGENT WATER   |              |
|--|--------------|
| USEPA moderately hard reconstituted water as per EPA-821-R-02-013 2002 |              |
| Date of Last Test for Chemistry:                                       | 12/12/20     |
| Conductivity:  | 278 µmhos/cm |
| pH:  | 8.0          |
| Total Res. Cl:   | 0 mg/L       |

| CONTROL RESULTS                               |           |
|---|-----------|
| <u><i>Pimephales promelas</i></u>             |           |
| Survival:                                     | 100%      |
| Mean Dry Weight of Survivors (if applicable): | 0.3395 mg |

| REFERENCE TOXICITY TEST                                 |   |
|---|---|
| Date of most recent test:                               | 12/08/20  |
| Same conditions as test:                                | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Were test acceptability criteria in the EPA method met? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

| TEST RESULTS   |  |                           |  |
|--|--|---------------------------|--|
| <p>6. The permittee must report the results of each test endpoint that has a WET limit in Part A of this permit on the Discharge Monitoring Report (DMR). Test results shall be reported on the DMR in terms of acute or chronic Toxicity Units (TUs or TUC), where TUs is used for acute tests and TUC is used for chronic tests. If DEP's WET Analysis Spreadsheet indicates a passing result for an endpoint, report the value obtained from the expression "1/TIWC", which is equivalent to the permit limit. If the Spreadsheet indicates a failure, report the value obtained from the expression "&gt; 1/TIWC". If a dilution higher than the TIWC dilution is used for the comparison with the control, report the value obtained from the expression "1/dilution". For example, an acute test endpoint failure at a TIWC dilution of 50% would be reported as "&gt; 2.0 TUs" (1/0.5). Taken from PADEP SOP No. SP005M-DMT-001, page 11. For all language values, questions should be directed to the DEP's Bureau of Point and Non-Point Source Management at 717-782-2110 or your regional office.</p> |  |                           |  |
| Control compared to:   | TIWC <input type="checkbox"/> Other:     | Toxic Unit chronic (TUC): | 50.00 Survival                           |
| Survival:  | <input checked="" type="checkbox"/> PASS | Growth:                   | <input checked="" type="checkbox"/> PASS |
|  |  | 100% / 2%                 | 50.00 Growth                             |

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of the individuals personally responsible for obtaining the information, I believe the attached information is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment as provided by 18 Pa. C.S. §4904.

Christopher J. Nally  
Name of Laboratory Manager

Signature of Laboratory Manager

Date

12/15/20  
39-03724  
DEP Lab ID No.

American Aquatic Testing, Incorporated – 890 North Graham Street – Allentown, PA 18109  
www.AmericanAquatic.net

| DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet |            |  |                      |           |  |
|--|------------|--|----------------------|-----------|--|
| <b>Type of Test</b>                                    | Chronic    |  | <b>Facility Name</b> |           |  |
| <b>Species Tested</b>                                  | Pimephales |  |                      |           |  |
| <b>Endpoint</b>  | Growth     |  |                      |           |  |
| <b>TIWC (decimal)</b>                                  | 0.02       |  |                      |           |  |
| <b>No. Per Replicate</b>                               | 10         |  | <b>Permit No.</b>    | PA0070351 |  |
| <b>TST b value</b>                                     | 0.75       |  |                      |           |  |
| <b>TST alpha value</b>                                 | 0.25       |  |                      |           |  |

| Test Completion Date    |                |             | Test Completion Date    |                |             |
|-------------------------|----------------|-------------|-------------------------|----------------|-------------|
| <b>Replicate</b>        | 12/15/2020     |             | <b>Replicate</b>        |                |             |
| <b>No.</b>              | <b>Control</b> | <b>TIWC</b> | <b>No.</b>              | <b>Control</b> | <b>TIWC</b> |
| 1                       | 0.341          | 0.333       | 1                       |                |             |
| 2                       | 0.326          | 0.363       | 2                       |                |             |
| 3                       | 0.353          | 0.4         | 3                       |                |             |
| 4                       | 0.338          | 0.371       | 4                       |                |             |
| 5                       |                |             | 5                       |                |             |
| 6                       |                |             | 6                       |                |             |
| 7                       |                |             | 7                       |                |             |
| 8                       |                |             | 8                       |                |             |
| 9                       |                |             | 9                       |                |             |
| 10                      |                |             | 10                      |                |             |
| 11                      |                |             | 11                      |                |             |
| 12                      |                |             | 12                      |                |             |
| 13                      |                |             | 13                      |                |             |
| 14                      |                |             | 14                      |                |             |
| 15                      |                |             | 15                      |                |             |
| <b>Mean</b>             | 0.340          | 0.367       | <b>Mean</b>             | 0.000          | 0.000       |
| <b>Std Dev.</b>         | 0.011          | 0.028       | <b>Std Dev.</b>         |                |             |
| <b># Replicates</b>     | 4              | 4           | <b># Replicates</b>     |                |             |
| <b>T-Test Result</b>    | 7.7927         |             | <b>T-Test Result</b>    |                |             |
| <b>Deg. of Freedom</b>  | 4              |             | <b>Deg. of Freedom</b>  |                |             |
| <b>Critical T Value</b> | 0.7407         |             | <b>Critical T Value</b> |                |             |
| <b>Pass or Fail</b>     | PASS           |             | <b>Pass or Fail</b>     |                |             |

| DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet  |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|--|--|---------|-------------|----------|------|----|------|------|---|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|--|---------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>Type of Test:</b><br><b>Species Tested:</b><br><b>Endpoint:</b><br><b>TRWC (percent):</b><br><b>No. Per Replicate:</b><br><b>TST t-value:</b><br><b>TST alpha value:</b> |   | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Chronic</td></tr> <tr><td>Panoplistes</td></tr> <tr><td>Standard</td></tr> <tr><td>0.02</td></tr> <tr><td>10</td></tr> <tr><td>0.10</td></tr> <tr><td>0.25</td></tr> </table> |  | Chronic | Panoplistes | Standard | 0.02 | 10 | 0.10 | 0.25 | <b>Facility Name:</b><br><div style="border: 1px solid black; padding: 2px; text-align: center;">Amity</div><br><b>Permit No.:</b><br><div style="border: 1px solid black; padding: 2px; text-align: center;">PA0070351</div> |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Chronic   |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Panoplistes   |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Standard  |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.02  |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 0.10  |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0.25  |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Test Completion Date:</b><br><div style="border: 1px solid black; padding: 2px; text-align: center;">12/15/2025</div>  |   |  | <b>Test Completion Date:</b><br><div style="border: 1px solid black; padding: 2px; text-align: center;"></div> |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Replicate No.</b><br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15   | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Control</th> <th style="width: 50%;">TRWC</th> </tr> </thead> <tbody> <tr><td>10</td><td>10</td></tr> <tr><td>10</td><td>10</td></tr> <tr><td>10</td><td>10</td></tr> <tr><td>10</td><td>10</td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table> |  | Control  | TRWC    | 10          | 10       | 10   | 10 | 10   | 10   | 10  | 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | <b>Replicate No.</b><br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15 | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Control</th> <th style="width: 50%;">TRWC</th> </tr> </thead> <tbody> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table> |  | Control | TRWC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Control   | TRWC  |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <b>Mean:</b> 10.000 <b>Std Dev:</b> 0.000<br><b># Replicates:</b> 4              4  |   | <b>Mean:</b> 0.000 <b>Std Dev:</b> 0.000<br><b># Replicates:</b>   |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>T-Test Result:</b><br><b>Deg. of Freedom:</b><br><b>Critical T Value:</b><br><b>Pass or Fail:</b> <span style="border: 1px solid black; padding: 2px;">PASS</span>       |   |  | <b>T-Test Result:</b><br><b>Deg. of Freedom:</b><br><b>Critical T Value:</b><br><b>Pass or Fail:</b>           |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Test Completion Date:</b><br><div style="border: 1px solid black; padding: 2px; text-align: center;"></div>  |   |  | <b>Test Completion Date:</b><br><div style="border: 1px solid black; padding: 2px; text-align: center;"></div> |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Replicate No.</b><br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15   | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Control</th> <th style="width: 50%;">TRWC</th> </tr> </thead> <tbody> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table>                 |  | Control  | TRWC    |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | <b>Replicate No.</b><br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15 | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Control</th> <th style="width: 50%;">TRWC</th> </tr> </thead> <tbody> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table> |  | Control | TRWC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Control   | TRWC  |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Control   | TRWC  |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|   |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|   |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|   |   |  |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Mean:</b> 0.000 <b>Std Dev:</b> 0.000<br><b># Replicates:</b>  |   | <b>Mean:</b> <b>Std Dev:</b><br><b># Replicates:</b>   |  |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>T-Test Result:</b><br><b>Deg. of Freedom:</b><br><b>Critical T Value:</b><br><b>Pass or Fail:</b>  |   |  | <b>T-Test Result:</b><br><b>Deg. of Freedom:</b><br><b>Critical T Value:</b><br><b>Pass or Fail:</b>           |         |             |          |      |    |      |      |   |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |         |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Species Tested: ☒ *Ceriodaphnia dubia* ☐ *Pimephales promelas* Test Type: ☒ Chronic ☐ Acute  
Re-Test? Yes ☒ No (If Yes, indicate the date of original test completion:)

| SAMPLE INFORMATION  |                |  |              |  |   |
|---|----------------|--|--------------|--|---|
| Date/Time   | Sample Source  | Temperature                                | Holding Time | Chlorine   | Dechlorinated?  |
| 12/07/20, 0800  | Final effluent | 1.5 °C                                     | 24 hours     | 0.02 mg/L  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 12/09/20, 0800  | Final effluent | 1.5 °C                                     | 24 hours     | 0.07 mg/L  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 12/11/20, 0915  | Final effluent | 2.5 °C                                     | 24 hours     | 0.01 mg/L  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| TEST CONDITIONS   |                |  |              |  |   |
| Date/Time of Test Initiation  |                | 12/08/20, 1840                             |              | Date/Time of Test Termination  |   |
| X Renewal Test  |                | Non-Renewal Test                           |              | 12/15/20, 1740   |   |
| Dilution Series:  |                | 0, 1, 2, 30, 60, 100%                      |              | Frequency of Renewals: Daily   |   |
| Age of Organisms at Start of Test:  |                | <24 hours                                  |              | Target Instream Waste Concentration (TIWC): 2%                                     |   |
| Number of Replicates:   |                | 10   |              | Number of Organisms per 1 Replicate:   |   |
| Source of Organisms:  |                | In-house cultures                          |              | Feeding Regimen: Once/day <i>Selenastrum capricornutum</i> & YWT, at test exchange |   |
| Light Intensity:  |                | 50-100 foot-candles                        |              | Photoperiod: 16L-8D  |   |
| Temperature measurements made at least once per 24-hour period?   |                | X Yes                                      |              | Temperature Range: 24.3-26.3° C  |   |
| DO measured daily in at least one replicate of each concentration?  |                | X Yes                                      |              | (attach log sheet)   |   |
| Were the chambers aerated?  |                | Yes <input checked="" type="checkbox"/> No |              | Rate:  |   |
| pH measured daily in at least one replicate of each concentration?  |                | X Yes                                      |              | (attach log sheet)   |   |
| Were test acceptability criteria in the EPA method met?   |                | X Yes                                      |              | No   |   |
| Were there any modifications to or deviations from EPA methods (if Yes, explain on separate sheet)?   |                | Yes  |              | X No   |   |
| DILUTION / REAGENT WATER  |                |  |              |  |   |
| USEPA moderately hard reconstituted water as per EPA-821-R-02-013 2002  |                |  |              |  |   |
| Date of Last Test for Chemistry:  |                | 12/12/20                                   |              | Conductivity: 278 µmhos/cm   |   |
| pH: 8.0   |                |  |              | Total Res. Cl: 0 mg/L  |   |
| CONTROL RESULTS   |                |  |              |  |   |
| <i>Ceriodaphnia dubia</i>   |                |  |              |  |   |
| Survival:   |                | 100%                                       |              |  |   |
| Percent that produced 3 broods (if applicable):   |                | 100%                                       |              | Young per Surviving Female (if applicable): 37.5                                   |   |
| REFERENCE TOXICITY TEST   |                |  |              |  |   |
| Date of most recent test:   |                | 12/08/20                                   |              | Same conditions as test: X Yes No  |   |
| Were test acceptability criteria in the EPA method met?   |                | X Yes No                                   |              |  |   |
| TEST RESULTS  |                |  |              |  |   |
| 6. The permittee must report the results of each test endpoint that has a WET limit in Part A of this permit on the Discharge Monitoring Report (DMR). Test results shall be reported on the DMR in terms of acute or chronic Toxicity Units (TUA or TUC), where TUA is used for acute tests and TUC is used for chronic tests. If DEP's WET Analysis Spreadsheet indicates a passing result for an endpoint, report the value obtained from the expression "1/TIWC", which is equivalent to the permit limit. If the Spreadsheet indicates a failure, report the value obtained from the expression "> 1/TIWC". If a dilution higher than the TIWC dilution is used for the comparison with the control, report the value obtained from the expression "1/dilution". For example, an acute test endpoint failure at a TIWC dilution of 50% would be reported as "> 2.0 TUA" (1/0.5). Taken from PADEP SOP No. BPNP/SM-FMT-031, page 11. Permit language varies, questions should be directed to the DEP's Bureau of Point and Non-Point Source Management at 717-787-2187 or your regional office. |                |  |              |  |   |
| Control compared to: TIWC   |                | <input type="checkbox"/> Other:            |              | Toxic Unit chronic (TUC):  |   |
| Survival: X Pass  |                | Reproduction: X Pass                       |              | 100% / 2%  |   |
|   |                |  |              | 50.00 Survival   |   |
|   |                |  |              | 50.00 Reproduction   |   |

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of the individuals personally responsible for obtaining the information, I believe the attached information is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment as provided by 18 Pa. C.S. §4904.

Christopher J. Nally  
Name of Laboratory Manager

Signature of Laboratory Manager

Date

38-03724  
DEP Lab ID No.

American Aquatic Testing, Incorporated – 890 North Graham Street – Allentown, PA 18109  
www.AmericanAquatic.net

| DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet |              |                         |  |  |  |
|--|--------------|-------------------------|--|--|--|
| <b>Type of Test</b>                                    | Chronic      | <b>Facility Name</b>    |  |  |  |
| <b>Species Tested</b>                                  | Ceriodaphnia | Amity                   |  |  |  |
| <b>Endpoint</b>  | Survival     |                         |  |  |  |
| <b>TIWC (decimal)</b>                                  | 0.02         | Permit No.<br>PA0070351 |  |  |  |
| <b>No. Per Replicate</b>                               | 1            |                         |  |  |  |
| <b>TST b value</b>                                     | 0.75         |                         |  |  |  |
| <b>TST alpha value</b>                                 | 0.2          |                         |  |  |  |

**Test Completion Date**

| Replicate | 12/14/2020 |      |
|-----------|------------|------|
| No.       | Control    | TIWC |
| 1         | 1          | 1    |
| 2         | 1          | 1    |
| 3         | 1          | 1    |
| 4         | 1          | 1    |
| 5         | 1          | 1    |
| 6         | 1          | 1    |
| 7         | 1          | 1    |
| 8         | 1          | 1    |
| 9         | 1          | 1    |
| 10        | 1          | 1    |
| 11        |            |      |
| 12        |            |      |
| 13        |            |      |
| 14        |            |      |
| 15        |            |      |

|              |       |       |
|--------------|-------|-------|
| Mean         | 1.000 | 1.000 |
| Std Dev.     | 0.000 | 0.000 |
| # Replicates | 10    | 10    |

**T-Test Result**

Deg. of Freedom

Critical T Value

Pass or Fail PASS

**Test Completion Date**

| Replicate |         |      |
|-----------|---------|------|
| No.       | Control | TIWC |
| 1         |         |      |
| 2         |         |      |
| 3         |         |      |
| 4         |         |      |
| 5         |         |      |
| 6         |         |      |
| 7         |         |      |
| 8         |         |      |
| 9         |         |      |
| 10        |         |      |
| 11        |         |      |
| 12        |         |      |
| 13        |         |      |
| 14        |         |      |
| 15        |         |      |

|              |       |       |
|--------------|-------|-------|
| Mean         | 0.000 | 0.000 |
| Std Dev.     |       |       |
| # Replicates |       |       |

**T-Test Result**

Deg. of Freedom

Critical T Value

Pass or Fail

**Test Completion Date**

| Replicate |         |      |
|-----------|---------|------|
| No.       | Control | TIWC |
| 1         |         |      |
| 2         |         |      |

**Test Completion Date**

| Replicate |         |      |
|-----------|---------|------|
| No.       | Control | TIWC |
| 1         |         |      |
| 2         |         |      |

| DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet |              |  |  |  |  |
|--|--------------|--|--|--|--|
| <b>Type of Test</b>                                    | Chronic      | <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>Facility Name</b><br/> <div style="border: 1px solid black; padding: 2px; text-align: center;">Amity</div> </div> <div style="width: 45%;"> <b>Permit No.</b><br/> <div style="border: 1px solid black; padding: 2px; text-align: center;">PA0070351</div> </div> </div> |  |  |  |
| <b>Species Tested</b>                                  | Ceriodaphnia |  |  |  |  |
| <b>Endpoint</b>  | Reproduction |  |  |  |  |
| <b>TIWC (decimal)</b>                                  | 0.02         |  |  |  |  |
| <b>No. Per Replicate</b>                               | 1            |  |  |  |  |
| <b>TST b value</b>                                     | 0.75         |  |  |  |  |
| <b>TST alpha value</b>                                 | 0.2          |  |  |  |  |

| Test Completion Date    |                |             | Test Completion Date    |                |             |
|-------------------------|----------------|-------------|-------------------------|----------------|-------------|
| <b>Replicate</b>        | 12/14/2020     |             | <b>Replicate</b>        |                |             |
| <b>No.</b>              | <b>Control</b> | <b>TIWC</b> | <b>No.</b>              | <b>Control</b> | <b>TIWC</b> |
| 1                       | 39             | 33          | 1                       |                |             |
| 2                       | 38             | 37          | 2                       |                |             |
| 3                       | 42             | 38          | 3                       |                |             |
| 4                       | 44             | 28          | 4                       |                |             |
| 5                       | 29             | 38          | 5                       |                |             |
| 6                       | 40             | 30          | 6                       |                |             |
| 7                       | 34             | 32          | 7                       |                |             |
| 8                       | 35             | 31          | 8                       |                |             |
| 9                       | 40             | 36          | 9                       |                |             |
| 10                      | 34             | 38          | 10                      |                |             |
| 11                      |                |             | 11                      |                |             |
| 12                      |                |             | 12                      |                |             |
| 13                      |                |             | 13                      |                |             |
| 14                      |                |             | 14                      |                |             |
| 15                      |                |             | 15                      |                |             |
| <b>Mean</b>             | 37.500         | 34.100      | <b>Mean</b>             | 0.000          | 0.000       |
| <b>Std Dev.</b>         | 4.478          | 3.755       | <b>Std Dev.</b>         |                |             |
| <b># Replicates</b>     | 10             | 10          | <b># Replicates</b>     |                |             |
| <b>T-Test Result</b>    | 3.7504         |             | <b>T-Test Result</b>    |                |             |
| <b>Deg. of Freedom</b>  | 17             |             | <b>Deg. of Freedom</b>  |                |             |
| <b>Critical T Value</b> | 0.8633         |             | <b>Critical T Value</b> |                |             |
| <b>Pass or Fail</b>     | PASS           |             | <b>Pass or Fail</b>     |                |             |



Serial Number: 3392488

3620-FM-WQ0146 Rev. 3/99

COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER QUALITY PROTECTION



DATA SUMMARY FOR CERIODAPHNIA DUBIA WETT REPORT

NPDES #: PA0070351

Facility Contact: Dave Wheeler, 610.385.3400x1

Sample source: Final effluent, chlorinated

POTW Name: Amity Twp STP

Address: 120 Old Philadelphia Pike, Douglassville, PA 19518

Lab Performing Test: QC Laboratories 09-00131

**SAMPLE**

| Sample Date | Sample Time | Test Date | Test Time | Temperature of (°C) | Chlorine (mg/L) |
|-------------|-------------|-----------|-----------|---------------------|-----------------|
| 1 24-Feb-14 | 11:30       | 25-Feb-14 | 9:10      | 5.0                 | < 0.1           |
|             |             | 26-Feb-14 | 9:00      |                     |                 |
| 2 26-Feb-14 | 10:00       | 27-Feb-14 | 9:05      | 5.0                 | < 0.1           |
|             |             | 28-Feb-14 | 9:10      |                     |                 |
| 3 28-Feb-14 | 11:30       | 01-Mar-14 | 8:50      | 5.0                 | < 0.1           |
|             |             | 02-Mar-14 | 9:20      |                     |                 |

Concentrations Tested: 4, 8, 15, 58, 100.

Age of organisms at start of test: < 24 hours

Number of Reps: 10

Number of C. dubia/Rep: 1

Source of Organisms: In-house, EPA origin.

Feeding: Fed after adult is placed into new solution daily a solution of 0.1 ml Selenastrum capricornutum and 0.1 ml solution Y-C-T.

Dilution Water Composition: Moderately hard synthetic freshwater (EPA formulation).

Water hardness and how calculated: 92.92 mg/L as CaCO<sub>4</sub>. Analyzed and calculated by EPA Method 200.7 (ICP)

Vessel/solution volume: 30 / 15 mL

Renewal: 24 hours

Photo period: (Day / Night): 16 / 8

Light Intensity Range: Approximately 75 ft-ca

Test Temperature: 25.0°C

Max: 26.0

Min: 24.7

Mean: 25.6

Number of times temperature recorded/day: Continuously, and once per day electronically. See attached.

Calibration date of test thermometers: Monthly.

Date & time of test termination: 03/03/14 9:05

CONTROL:

Survival: 90%

Avg. Young: 20.7

60% or more produced 3 broods: Yes

TEST RESULTS: EPA Method 1002.0 Ceriodaphnia dubia, Survival and Reproduction Test

|                   |                           |        |   |
|-------------------|---------------------------|--------|---|
| Survival          | NOEC:                     | 100.0  | Fisher's  |
|                   | LOEC:                     | >100.0 |   |
|                   | NOEC in TU <sub>c</sub> : | 1.0    |   |
|                   | IC25                      | 99.1   |   |
| Reproduction      | NOEC:                     | 58.0   | Dunnell's   |
|                   | LOEC:                     | 100.0  |   |
|                   | NOEC in TU <sub>c</sub> : | 1.7    |   |
|                   | IC25                      | 19.2   |   |
| 48-Hour LC50      | Value:                    | >100.0 | No measurable acute toxicity at 48 hours                      |
|                   | LC50 in TU <sub>a</sub> : | < 1.0  | 100/EC50 or if EC50 > 100, then % mortality in 100% dose / 50 |
| 96-Hour LC50      | Value:                    | >100.0 | No measurable acute toxicity at 96 hours                      |
|                   | LC50 in TU <sub>a</sub> : | < 1.0  | 100/EC50 or if EC50 > 100, then % mortality in 100% dose / 50 |
| PMSD-Reproduction |                           | 34.0%  | MSDu x 100 / mean reproduction                                |

|                           |       |
|---------------------------|-------|
| Chronic NOEC Value.....   | 58.0% |
| NOEC in Chronic TU's..... | 1.7   |

|                         |       |
|-------------------------|-------|
| Acute LC50 Value.....   | >100% |
| LC50 in Acute TU's..... | < 1.0 |





Serial Number: 3392488

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3620-FM-WQ0146 Rev. 3/99

COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
3620-FM-WQ0146 Rev. 3/99



DATA SUMMARY FOR PIMEPHALES PROMELAS WETT REPORT

NPDES #: PA0070351

Facility Contact: Dave Wheeler, 610.385.3400x1

Sample source: Final effluent, chlorinated

POTW Name: Amity Twp STP

Address: 120 Old Philadelphia Pike, Douglassville, PA 19518

Lab Performing Test: QC Laboratories 09-00131

SAMPLE

| Sample<br>Date | Sample<br>Time | Test<br>Date | Test<br>Time | Temperature<br>of (°C) | Chlorine<br>(mg/L) |
|----------------|----------------|--------------|--------------|------------------------|--------------------|
| 1 24-Feb-14    | 11:30          | 25-Feb-14    | 11:30        | 5.0                    | < 0.1              |
|                |                | 26-Feb-14    | 11:25        |                        |                    |
| 2 26-Feb-14    | 10:00          | 27-Feb-14    | 11:12        | 5.0                    | < 0.1              |
|                |                | 28-Feb-14    | 11:08        |                        |                    |
| 3 28-Feb-14    | 11:30          | 01-Mar-14    | 11:00        | 5.0                    | < 0.1              |
|                |                | 02-Mar-14    | 10:18        |                        |                    |
|                |                | 03-Mar-14    | 10:55        |                        |                    |

Concentrations Tested: 4, 8, 15, 58, 100.

Age of fishes at start of test: < 48 hours

Number of Reps: 4

Number of Fishes/Rep: 10

Source of Fishes: MarInco

Feeding: Twice per day in AM and PM at a rate of 0.15 mL concentrated new born artemia (Argent, Platinum).

Dilution Water Composition: Moderately hard synthetic freshwater (EPA formulation).

Water hardness and how calculated: 92.92 mg/L as CaCO<sub>4</sub>. Analyzed and calculated by EPA Method 200.7 (ICP)

Vessel/solution volume: 500/ 250 mL

Renewal: 24 hours

Photo period: (Day / Night): 16 / 8

Light Intensity Range: 50-75 ft-ca

Test Temperature: 25.0°C

Max: 25.7

Min: 24.0

Mean: 24.8

Number of times temperature recorded/day: Continuously, and once per day electronically. See attachment.

Date & time of test termination: 03/04/14 11:00

Date & time larvae and pans in oven: 03/04/14 11:20

Date & time larvae and pans out of oven: 03/05/14 7:20

When were fish weighed: 03/05/14 7:50

Below 40% and super saturated: No

Test Aeration Range: NA

Max: NA Min: NA

CONTROL:

Survival: 100.0%

Percent CV survival: 0.0%

Percent CV weight: 5.1%

TEST RESULTS: EPA Method 1000.0 Fathead Minnow, Pimephales promelas, Larval Survival and Growth Test

|              |              |        |   |
|--------------|--------------|--------|---|
| Survival     | NOEC:        | 100.0  | Steel's   |
|              | LOEC:        | >100.0 |   |
|              | NOEC in TUc: | 1.0    |   |
|              | IC25         | >100.0 |   |
| Growth       | NOEC:        | 100.0  | Dunnett's   |
|              | LOEC:        | >100.0 |   |
|              | NOEC in TUc: | 1.0    |   |
|              | IC25         | >100.0 |   |
| 48-Hour LC50 | Value:       | >100.0 | No measurable acute toxicity at 48 hours                      |
|              | LC50 in TUa: | < 1.0  | 100/EC50 or if EC50 > 100, then % mortality in 100% dose / 50 |
| 96-Hour LC50 | Value:       | >100.0 | No measurable acute toxicity at 96 hours                      |
|              | LC50 in TUa: | < 1.0  | 100/EC50 or if EC50 > 100, then % mortality in 100% dose / 50 |
| PMSD/Growth  |              | 11.3%  | MSDu x 100 / mean control weight                              |

|                           |        |
|---------------------------|--------|
| Chronic NOEC Value.....   | 100.0% |
| NOEC in Chronic TU's..... | 1.0    |

|                         |       |
|-------------------------|-------|
| Acute LC50 Value.....   | >100% |
| LC50 in Acute TU's..... | < 1.0 |