pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0094455** |
| Facility Type | **Municipal** | APS ID | **783166** |
| Major / Minor | **Minor** | Authorization ID | **1188775** |

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Derry Township Municipal Authority** | Facility Name | **Dogwood Acres MHP** |
| Applicant Address | PO Box 250 | Facility Address | Sr 217 |
| | New Derry, PA 15671-0250 | | Derry, PA 15672 |
| Applicant Contact | Carol Henderson | Facility Contact | Carol Henderson |
| Applicant Phone | (724) 694-2513 | Facility Phone | (724) 694-2513 |
| Client ID | 43702 | Site ID | 240070 |
| Ch 94 Load Status | Not Overloaded | Municipality | Derry Township |
| Connection Status | | County | Westmoreland |
| Date Application Received | June 9, 2017 | EPA Waived? | Yes |
| Date Application Accepted | June 30, 2017 | If No, Reason | |

Purpose of Application: Renewal to discharge treated sewage from a mobile home park

## Summary of Review

This review is in response to a renewal application received on June 9, 2017. Derry Township Municipal Authority owns and operates an extended aeration sewage treatment plant for the Dogwood Acres mobile home park in Derry Township, Westmoreland County. Sewage from the mobile home park is treated with extended aeration, clarification and chlorination before discharging through outfall 001 to McGee Run.

This draft permit proposes seasonal limits for $CBOD_5$ and $NH_3N$. A review of the plant's discharge monitoring reports shows the plant is currently achieving the proposed limits.

Public Participation

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

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | *James Vanek*<br>James Vanek, P.E. / Environmental Engineer | January 14, 2022 |
| X | | *Christopher Kriley*<br>Christopher Kriley, P.E. / Program Manager | January 14, 2022 |

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

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | .035 |
| Latitude | 40º 21' 8.23" | Longitude | -79º 17' 20.81" |
| Quad Name | | Quad Code | |
| Wastewater Description: | Sewage Effluent | | |
| Receiving Waters | McGee Run | Stream Code | 44716 |
| NHD Com ID | 123718029 | RMI | 5.5 |
| Drainage Area | 7.3 | Yield (cfs/mi$^2$) | 0.084 |
| $Q_{7-10}$ Flow (cfs) | 0.5 | $Q_{7-10}$ Basis | Previous pollution report |
| Elevation (ft) | 900 | Slope (ft/ft) | |
| Watershed No. | 18-D | Chapter 93 Class. | TSF |
| Existing Use | | Existing Use Qualifier | |
| Exceptions to Use | none | Exceptions to Criteria | none |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | Excessive Algal Growth, Siltation | | |
| Source(s) of Impairment | On site Wastewater, On site Wastewater | | |
| TMDL Status | Tentative | Name | Kiskiminetas-Conemaugh River Watersheds TMDL |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | | |
| Temperature (°F) | | |
| Hardness (mg/L) | | |
| Other: | | |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | Buffalo Township Water Authority | | |
| PWS Waters | Allegheny River | Flow at Intake (cfs) | |
| PWS RMI | | Distance from Outfall (mi) | ➢ 20 miles |

Changes Since Last Permit Issuance:

Other Comments:

| Treatment Facility Summary | | | | |
|---|---|---|---|---|
| **Treatment Facility Name:** Dogwood Acres MHP STP | | | | |
| **WQM Permit No.** | **Issuance Date** | | | |
| | | | | |
| | | | | |
| **Waste Type** | **Degree of Treatment** | **Process Type** | **Disinfection** | **Avg Annual Flow (MGD)** |
| Sewage | Secondary with ammonia reduction | Extended aeration | Chlorination and de-chlorination | 0.035 |
| | | | | |
| **Hydraulic Capacity (MGD)** | **Organic Capacity (lbs/day)** | **Load Status** | **Biosolids Treatment** | **Biosolids Use/Disposal** |
| 0.035 | 58 | Not Overloaded | Aerated holding tank | Other WWTP |

Changes Since Last Permit Issuance:

Other Comments:

## Compliance History

**DMR Data for Outfall 001 (from December 1, 2019 to November 30, 2020)**

| Parameter | NOV-20 | OCT-20 | SEP-20 | AUG-20 | JUL-20 | JUN-20 | MAY-20 | APR-20 | MAR-20 | FEB-20 | JAN-20 | DEC-19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 0.018 | 0.014 | 0.016 | 0.022 | 0.019 | 0.0138 | 0.028 | 0.0287 | 0.027 | 0.037 | 0.032 | 0.028 |
| pH (S.U.) Minimum | 6.65 | 6.5 | 6.53 | 6.67 | 6.67 | 6.24 | 6.61 | 6.63 | 6.29 | 6.31 | 6.26 | 6.47 |
| pH (S.U.) Maximum | 7.65 | 7.84 | 7.26 | 7.79 | 8.71 | 7.09 | 7.83 | 7.53 | 7.33 | 6.81 | 7.81 | 7.81 |
| TRC (mg/L) Average Monthly | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TRC (mg/L) Instantaneous Maximum | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| CBOD5 (mg/L) Average Monthly | 3 | < 3 | < 3 | 3.3 | 3.5 | < 3.0 | < 3 | 8.55 | < 3 | 3.75 | 4.8 | 3.1 |
| CBOD5 (mg/L) Instantaneous Maximum | 3 | < 3 | < 3 | 3.6 | 4.0 | < 3 | < 3 | 13.2 | 3 | 4.3 | 5.0 | 3.2 |
| BOD5 (mg/L) Raw Sewage Influent <br/> Average Monthly | 261 | 156.5 | 156 | 218.5 | 247.5 | 347 | 190 | 125 | 140.5 | 112.5 | 144 | 135 |
| TSS (mg/L) Average Monthly | 4 | 8.5 | 5.5 | 9 | 8.5 | < 3 | < 3 | 12.5 | < 3 | 6.5 | 13.5 | 5.5 |
| TSS (mg/L) Raw Sewage Influent <br/> Average Monthly | 265 | 126 | 155 | 109 | 146.5 | 354 | 124 | 118 | 80 | 57 | 90 | 63 |
| TSS (mg/L) Instantaneous Maximum | 5 | 10 | 8 | 15 | 14 | < 3 | < 3 | 18 | < 3 | 10 | 20 | 9.0 |
| Fecal Coliform (CFU/100 ml) Geometric Mean | 1 | 1 | 1 | 1 | 1 | < 1.0 | < 1 | 3 | 5 | 98 | 2 | 1 |
| Fecal Coliform (CFU/100 ml) Instantaneous Maximum | 1 | 1 | 2 | 2 | 1 | < 1.0 | < 1 | 11 | 13 | 2420 | 6 | 1 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia (mg/L) Average Monthly | | 0.87 | 0.2 | 0.59 | 0.71 | 0.25 | 0.84 | | | | | |
| Ammonia (mg/L) Instantaneous Maximum | | 1.5 | 0.2 | 0.98 | 1.13 | 0.35 | 1.48 | | | | | |

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## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** .035
**Latitude** 40º 21' 9.00" **Longitude** -79º 17' 22.00"
**Wastewater Description:** Sewage Effluent

### Technology-Based Limitations

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

| Pollutant | Limit (mg/l) | SBC | Federal Regulation | State Regulation |
|---|---|---|---|---|
| $CBOD_5$ | 25 | Average Monthly | 133.102(a)(4)(i) | 92a.47(a)(1) |
| Total Suspended Solids | 30 | Average Monthly | 133.102(b)(1) | 92a.47(a)(1) |
| pH | 6.0 – 9.0 S.U. | Min – Max | 133.102(c) | 95.2(1) |
| Fecal Coliform (5/1 – 9/30) | 200 / 100 ml | Geo Mean | - | 92a.47(a)(4) |
| 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 | 0.5 | Average Monthly | - | 92a.48(b)(2) |

### Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

| Parameter | Limit (mg/l) | SBC | Model |
|---|---|---|---|
| $NH_3N$ | 6.5 | Average Monthly | WQM 7.0 |
| $CBOD_5$ | 19.0 | Average Monthly | WQM 7.0 |

Water quality modeling was performed with Derry Borough STP and Dogwood Acres STP discharging to McGee Run. Stream data was obtained through USGS Stream Stats website. The analysis showed a need for seasonal limits for carbonaceous biochemical oxygen demand and ammonia nitrogen. The previous permit had only seasonal limits for ammonia nitrogen. A review of eDMR data for Dogwood Acres shows that the plant is currently achieving the new proposed limits.

### Best Professional Judgment (BPJ) Limitations

The limits for dissolved oxygen will be 4.0 mg/l as an instantaneous minimum.

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## Anti-Backsliding

Anti-Backsliding was not used in this permit evaluation.

## Disinfection

The Average Monthly and Instantaneous Maximum Total Residual Chlorine (TRC) effluent limitations imposed in the previous NPDES permit were 1.4 mg/l and 3.3 mg/l, respectively. At that time, those values were considered BAT limitations per the SWRO's TRC Implementation for Sewage Facilities Planning Section Interim Guidance, dated June 20, 1995 for an existing minor facility having a design flow <= 0.1 mgd permitted before July 1995. An average monthly limitation of 0.5 mg/l for TRC is now a regulatory standard under §§92a.47(a)(8) and 92a.48(b). Reviews of the Discharge Monitoring Reports reveal the plant consistently achieves the proposed average monthly limit of 0.5 mg/l therefore that limit will be imposed. The application states the plant has de-chlorination.

Remodeling Total Residual Chlorine using recommended in-stream and discharge chlorine demand default values of 0.3 mg/l and 0 mg/l shows no need for water quality based TRC limits. The TRC spreadsheet output is attached to this report.

## Mass Loadings

Mass loading limits are applicable for publicly owned treatment works. Current policy requires average monthly mass loading limits be established for CBOD5 and TSS, and average weekly mass loading limits be established for CBOD5 and TSS.

Average monthly mass loading limits (lbs/day) are based on the formula: design flow (MGD) x concentration limit (mg/L) x conversion factor (8.34).

Derry Township Municipal Authority did not always own and operate the Dogwood Acres plant. The mass loadings should have been imposed when DTMA became the owner.

## Total Nitrogen and Total Phosphorus Monitoring

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). Sewage discharges with design flows > 2,000 gpd require monitoring, at a minimum, for Total Nitrogen and Total Phosphorus in new and reissued permits. Annual monitoring is acceptable.

## Monitoring Frequency Considerations

For pH, Dissolved Oxygen (DO) and Total Residual Chlorine (TRC), a monitoring frequency of 1/day has been imposed. In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required. The daily monitoring frequencies are consistent with current policy and Table 6-3 of DEP's Technical Guidance for the Development and Specification of Effluent Limitations.

## Kiskiminetas River Basin

There is a TMDL for metals in the Kiskiminetas River watershed. The contribution for metals from a sewage plant of this nature is expected to be less than water quality criteria and therefore not contributing to stream impairment. Furthermore, an aggregate waste load allocation was included in the TMDL for these types of facilities. 1/year monitoring is imposed for plants rated between 0.002 mgd up to 0.499 mgd for total aluminum, total iron and total manganese.

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## Influent Monitoring

For POTWs with design flows greater than 2,000 GPD, influent $BOD_5$ and TSS monitoring must be established in the permit, and the monitoring should be consistent with the same frequency and sample type as is used for other effluent parameters

## Industrial Customers

The application states that the sewage plant does not have any industrial customers.

## E. Coli

Sewage discharges will include annual monitoring for E. Coli in new and re-issued permits for plants with design flows between 0.002 MGD and 0.05 MGD.

## Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

**Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date**.

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | Report IMAX | XXX | XXX | XXX | XXX | 1/week | Measured |
| pH (S.U.) | XXX | XXX | 6.0 Inst Min | XXX | XXX | 9.0 | 1/day | Grab |
| DO | XXX | XXX | 4.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| TRC | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 1/day | Grab |
| CBOD5 Nov 1 - Apr 30 | 7.3 | XXX | XXX | 25.0 | XXX | 50.0 | 2/month | Grab |
| CBOD5 May 1 - Oct 31 | 5.5 | XXX | XXX | 19.0 | XXX | 38.0 | 2/month | Grab |
| TSS | 8.8 | XXX | XXX | 30.0 | XXX | 60.0 | 2/month | Grab |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 2/month | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 2/month | Grab |
| Ammonia Nov 1 - Apr 30 | XXX | XXX | XXX | 19.5 | XXX | 39.0 | 2/month | Grab |
| Ammonia May 1 - Oct 31 | XXX | XXX | XXX | 6.5 | XXX | 13.0 | 2/month | Grab |

**Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| BOD5<br>Raw Sewage Influent | Report | XXX | XXX | Report | XXX | XXX | 2/month | Grab |
| TSS<br>Raw Sewage Influent | Report | XXX | XXX | Report | XXX | XXX | 2/month | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | Report<br>Daily Max | XXX | 1/year | Grab |
| Total Nitrogen | XXX | XXX | XXX | XXX | Report<br>Daily Max | XXX | 1/year | Grab |
| Total Phosphorus | XXX | XXX | XXX | XXX | Report<br>Daily Max | XXX | 1/year | Grab |
| Total Aluminum | XXX | XXX | XXX | XXX | Report<br>Daily Max | XXX | 1/year | Grab |
| Total Iron | XXX | XXX | XXX | XXX | Report<br>Daily Max | XXX | 1/year | Grab |
| Total Manganese | XXX | XXX | XXX | XXX | Report<br>Daily Max | XXX | 1/year | Grab |

Compliance Sampling Location: at outfall 001

Other Comments:

# WQM 7.0 Modeling Output

**Permit No. PA0094455**

# Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 18D | 44716 | McGEE RUN | 6.240 | 919.50 | 4.20 | 0.00000 | 0.00 | ☑ |

## Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.060 | 0.00 | 0.00 | 0.000 | 0.000 | 16.0 | 15.00 | 0.00 | 25.00 | 7.00 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

## Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Derry Boro STP | PA0020788 | 0.6500 | 0.6500 | 0.0000 | 0.000 | 20.00 | 7.00 |

## Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.10 | 0.00 | 0.70 |

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# Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 18D | 44716 | McGEE RUN | 5.500 | 900.00 | 7.30 | 0.00000 | 0.00 | ☑ |

## Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.050 | 0.00 | 0.00 | 0.000 | 0.000 | 16.0 | 15.00 | 0.00 | 25.00 | 7.00 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

## Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Dogwood Acres | PA0094455 | 0.0350 | 0.0350 | 0.0350 | 0.000 | 20.00 | 7.00 |

## Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.10 | 0.00 | 0.70 |

**Permit No. PA0094455**

# Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 18D | 44716 | McGEE RUN | 3.800 | 877.00 | 9.20 | 0.00000 | 0.00 | ☑ |

## Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.100 | 0.00 | 0.00 | 0.000 | 0.000 | 25.0 | 22.00 | 0.00 | 25.00 | 7.00 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

## Discharge Data

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

## Parameter Data

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

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# WQM 7.0 Modeling Specifications

| | | | |
|---|---|---|---|
| **Parameters** | **Both** | **Use Inputted Q1-10 and Q30-10 Flows** | ☑ |
| **WLA Method** | **Uniform Treatme** | **Use Inputted W/D Ratio** | ☑ |
| **Q1-10/Q7-10 Ratio** | **0.64** | **Use Inputted Reach Travel Times** | ☑ |
| **Q30-10/Q7-10 Ratio** | **1.36** | **Temperature Adjust Kr** | ☑ |
| **D.O. Saturation** | **85.00%** | **Use Balanced Technology** | ☑ |
| **D.O. Goal** | **6** | | |

**Permit No. PA0094455**

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

| RMI | Stream Flow (cfs) | PWS With (cfs) | Net Stream Flow (cfs) | Disc Analysis Flow (cfs) | Reach Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Reach Trav Time (days) | Analysis Temp (°C) | Analysis pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10 Flow** | | | | | | | | | | | | |
| 6.240 | 0.25 | 0.00 | 0.25 | 1.0055 | 0.00499 | .481 | 15 | 31.16 | 0.17 | 0.260 | 21.00 | 7.00 |
| 5.500 | 0.41 | 0.00 | 0.41 | 1.0597 | 0.00256 | .615 | 15 | 24.4 | 0.16 | 0.653 | 21.39 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 6.240 | 0.16 | 0.00 | 0.16 | 1.0055 | 0.00499 | NA | NA | NA | 0.17 | 0.271 | 20.69 | 7.00 |
| 5.500 | 0.26 | 0.00 | 0.26 | 1.0597 | 0.00256 | NA | NA | NA | 0.15 | 0.693 | 20.99 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 6.240 | 0.34 | 0.00 | 0.34 | 1.0055 | 0.00499 | NA | NA | NA | 0.18 | 0.250 | 21.27 | 7.00 |
| 5.500 | 0.55 | 0.00 | 0.55 | 1.0597 | 0.00256 | NA | NA | NA | 0.17 | 0.619 | 21.72 | 7.00 |

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# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

## NH3-N Acute Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 6.240 | Derry Boro STP | NA | 50 | 9.2 | 10.66 | 1 | 79 |
| 5.500 | Dogwood Acres | NA | 50 | 9 | 50 | 0 | 0 |

## NH3-N Chronic Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 6.240 | Derry Boro STP | NA | 25 | 1.75 | 2.31 | 1 | 91 |
| 5.500 | Dogwood Acres | NA | 25 | 1.69 | 14.05 | 2 | 44 |

## Dissolved Oxygen Allocations

| RMI | Discharge Name | CBOD5 | | NH3-N | | Dissolved Oxygen | | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 6.24 | Derry Boro STP | 25 | 12.14 | 2.31 | 2.31 | 3 | 6 | 2 | 40 |
| 5.50 | Dogwood Acres | 25 | 19.74 | 14.05 | 6.85 | 3 | 3 | 2 | 40 |

**Permit No. PA0094455**

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 6.240 | 0.650 | 21.002 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 15.000 | 0.481 | 31.162 | 0.174 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 10.11 | 0.697 | 1.87 | 0.756 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 6.449 | 8.458 | Tsivoglou | 6 |
| **Reach Travel Time (days)** | | | |
| 0.260 | | | |

Subreach Results

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.026 | 9.92 | 1.83 | 6.55 |
| 0.052 | 9.74 | 1.80 | 6.63 |
| 0.078 | 9.55 | 1.76 | 6.71 |
| 0.104 | 9.37 | 1.73 | 6.78 |
| 0.130 | 9.20 | 1.69 | 6.84 |
| 0.156 | 9.02 | 1.66 | 6.90 |
| 0.182 | 8.86 | 1.63 | 6.95 |
| 0.208 | 8.69 | 1.60 | 7.00 |
| 0.234 | 8.53 | 1.57 | 7.04 |
| 0.260 | 8.37 | 1.53 | 7.09 |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 5.500 | 0.685 | 21.387 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 15.000 | 0.615 | 24.399 | 0.159 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 8.11 | 0.699 | 1.58 | 0.779 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 7.058 | 4.002 | Tsivoglou | 6 |
| **Reach Travel Time (days)** | | | |
| 0.653 | | | |

Subreach Results

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.065 | 7.73 | 1.50 | 6.67 |
| 0.131 | 7.36 | 1.43 | 6.40 |
| 0.196 | 7.01 | 1.36 | 6.24 |
| 0.261 | 6.68 | 1.29 | 6.15 |
| 0.327 | 6.36 | 1.22 | 6.11 |
| 0.392 | 6.06 | 1.16 | 6.12 |
| 0.457 | 5.77 | 1.11 | 6.15 |
| 0.523 | 5.50 | 1.05 | 6.21 |
| 0.588 | 5.24 | 1.00 | 6.28 |
| 0.653 | 4.99 | 0.95 | 6.36 |

**Permit No. PA0094455**



# WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 6.240 | Derry Boro STP | PA0020788 | 0.650 | CBOD5 | 12.14 | | |
| | | | | NH3-N | 2.31 | 4.62 | |
| | | | | Dissolved Oxygen | | | 6 |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 5.500 | Dogwood Acres | PA0094455 | 0.035 | CBOD5 | 19.74 | | |
| | | | | NH3-N | 6.85 | 13.7 | |
| | | | | Dissolved Oxygen | | | 3 |

**Permit No. PA0094455**

## WQM 7.0 Cold Season Output

### Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 18D | 44716 | McGEE RUN | 6.240 | 919.50 | 4.20 | 0.00000 | 0.00 | ☑ |

**Stream Data**

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.120 | 0.00 | 0.00 | 0.000 | 0.000 | 16.0 | 15.00 | 0.00 | 5.00 | 7.00 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

**Discharge Data**

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Derry Boro STP | PA0020788 | 0.6500 | 0.6500 | 0.0000 | 0.000 | 15.00 | 7.00 |

**Parameter Data**

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.10 | 0.00 | 0.70 |

## Permit No. PA0094455

**Permit No. PA0094455**

# Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 18D | 44716 | McGEE RUN | 5.500 | 900.00 | 7.30 | 0.00000 | 0.00 | ☑ |

## Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.100 | 0.00 | 0.00 | 0.000 | 0.000 | 16.0 | 15.00 | 0.00 | 5.00 | 7.00 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

## Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Dogwood Acres | PA0094455 | 0.0350 | 0.0350 | 0.0350 | 0.000 | 15.00 | 7.00 |

## Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.10 | 0.00 | 0.70 |

**Permit No. PA0094455**

# Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 18D | 44716 | McGEE RUN | 3.800 | 877.00 | 9.20 | 0.00000 | 0.00 | ☑ |

## Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.200 | 0.00 | 0.00 | 0.000 | 0.000 | 25.0 | 22.00 | 0.00 | 5.00 | 7.00 | 0.00 | 0.00 |
| Q1-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| Q30-10 | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

## Discharge Data

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

## Parameter Data

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

**Permit No. PA0094455**

# WQM 7.0 Modeling Specifications

| | | | |
|---|---|---|---|
| **Parameters** | **Both** | **Use Inputted Q1-10 and Q30-10 Flows** | ☑ |
| **WLA Method** | **Uniform Treatme** | **Use Inputted W/D Ratio** | ☑ |
| **Q1-10/Q7-10 Ratio** | **0.64** | **Use Inputted Reach Travel Times** | ☑ |
| **Q30-10/Q7-10 Ratio** | **1.36** | **Temperature Adjust Kr** | ☑ |
| **D.O. Saturation** | **85.00%** | **Use Balanced Technology** | ☑ |
| **D.O. Goal** | **6** | | |

**Permit No. PA0094455**

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

| RMI | Stream Flow (cfs) | PWS With (cfs) | Net Stream Flow (cfs) | Disc Analysis Flow (cfs) | Reach Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Reach Trav Time (days) | Analysis Temp (ºC) | Analysis pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10 Flow** | | | | | | | | | | | | |
| 6.240 | 0.50 | 0.00 | 0.50 | 1.0055 | 0.00499 | .522 | 15 | 28.76 | 0.19 | 0.234 | 11.66 | 7.00 |
| 5.500 | 0.81 | 0.00 | 0.81 | 1.0597 | 0.00256 | .685 | 15 | 21.91 | 0.18 | 0.569 | 10.66 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 6.240 | 0.32 | 0.00 | 0.32 | 1.0055 | 0.00499 | NA | NA | NA | 0.18 | 0.252 | 12.57 | 7.00 |
| 5.500 | 0.52 | 0.00 | 0.52 | 1.0597 | 0.00256 | NA | NA | NA | 0.17 | 0.626 | 11.70 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 6.240 | 0.69 | 0.00 | 0.69 | 1.0055 | 0.00499 | NA | NA | NA | 0.21 | 0.220 | 10.95 | 7.00 |
| 5.500 | 1.11 | 0.00 | 1.11 | 1.0597 | 0.00256 | NA | NA | NA | 0.20 | 0.525 | 9.89 | 7.00 |

**Permit No. PA0094455**

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

## NH3-N Acute Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 6.240 | Derry Boro STP | NA | 50 | 16.86 | 22.24 | 1 | 56 |
| 5.500 | Dogwood Acres | NA | 50 | 18.03 | 50 | 0 | 0 |

## NH3-N Chronic Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 6.240 | Derry Boro STP | NA | 25 | 3.79 | 6.3 | 1 | 75 |
| 5.500 | Dogwood Acres | NA | 25 | 4.08 | 25 | 0 | 0 |

## Dissolved Oxygen Allocations

| RMI | Discharge Name | CBOD5 | | NH3-N | | Dissolved Oxygen | | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 6.24 | Derry Boro STP | 25 | 25 | 6.3 | 6.3 | 3 | 5 | 0 | 0 |
| 5.50 | Dogwood Acres | 25 | 25 | 25 | 25 | 3 | 3 | 0 | 0 |

**Permit No. PA0094455**

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (ºC) | Analysis pH |
|---|---|---|---|
| 6.240 | 0.650 | 11.661 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 15.000 | 0.522 | 28.756 | 0.193 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 17.32 | 1.435 | 4.23 | 0.368 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 6.083 | 7.507 | Tsivoglou | 6 |
| **Reach Travel Time (days)** | | | |
| 0.234 | | | |

Subreach Results

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.023 | 16.93 | 4.20 | 6.16 |
| 0.047 | 16.54 | 4.16 | 6.24 |
| 0.070 | 16.17 | 4.12 | 6.32 |
| 0.094 | 15.80 | 4.09 | 6.39 |
| 0.117 | 15.44 | 4.05 | 6.47 |
| 0.141 | 15.09 | 4.02 | 6.55 |
| 0.164 | 14.75 | 3.98 | 6.63 |
| 0.188 | 14.42 | 3.95 | 6.71 |
| 0.211 | 14.09 | 3.92 | 6.78 |
| 0.234 | 13.77 | 3.88 | 6.86 |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (ºC) | Analysis pH |
|---|---|---|---|
| 5.500 | 0.685 | 10.656 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 15.000 | 0.685 | 21.907 | 0.182 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 12.15 | 1.360 | 3.87 | 0.341 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 6.977 | 3.559 | Tsivoglou | 6 |
| **Reach Travel Time (days)** | | | |
| 0.569 | | | |

Subreach Results

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.057 | 11.55 | 3.79 | 6.62 |
| 0.114 | 10.98 | 3.72 | 6.37 |
| 0.171 | 10.44 | 3.65 | 6.20 |
| 0.228 | 9.93 | 3.58 | 6.12 |
| 0.285 | 9.44 | 3.51 | 6.08 |
| 0.342 | 8.98 | 3.44 | 6.09 |
| 0.399 | 8.53 | 3.38 | 6.14 |
| 0.456 | 8.12 | 3.31 | 6.21 |
| 0.513 | 7.72 | 3.25 | 6.30 |
| 0.569 | 7.34 | 3.18 | 6.41 |

**Permit No. PA0094455**



# WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 18D | 44716 | McGEE RUN |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 6.240 | Derry Boro STP | PA0020788 | 0.650 | CBOD5 | 25 | | |
| | | | | NH3-N | 6.3 | 12.6 | |
| | | | | Dissolved Oxygen | | | 5 |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 5.500 | Dogwood Acres | PA0094455 | 0.035 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 3 |

**Permit No. PA0094455**

# TRC Spreadsheet Output

**Permit No. PA0094455**

# TRC_CALC_pa0094455

| | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 2 | TRC EVALUATION | | | Enter Facility Name in E3 | | |
| 3 | Input appropriate values in B4:B8 and E4:E7 | | | Dogwood Acres MHP | | |
| 4 | 0.343 | = Q stream (cfs) | | 0.5 | = CV Daily | |
| 5 | 0.035 | = Q discharge (MGD) | | 0.5 | = CV Hourly | |
| 6 | 4 | = no. samples | | 1 | = AFC_Partial Mix Factor | |
| 7 | 0.3 | = Chlorine Demand of Stream | | 1 | = CFC_Partial Mix Factor | |
| 8 | | = Chlorine Demand of Discharge | | | = AFC_Criteria Compliance Time (min) | |
| 9 | 0.5 | = BAT/BPJ Value | | | = CFC_Criteria Compliance Time (min) | |
| | | = % Factor of Safety (FOS) | | | =Decay Coefficient (K) | |
| 10 | Source | Reference | AFC Calculations | | Reference | CFC Calculations |
| 11 | TRC | 1.3.2.iii | WLA afc = 2.040 | | 1.3.2.iii | WLA cfc = 1.981 |
| 12 | PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | | 5.1c | LTAMULT cfc = 0.581 |
| 13 | PENTOXSD TRG | 5.1b | LTA_afc= 0.760 | | 5.1d | LTA_cfc = 1.152 |
| 14 | | | | | | |
| 15 | Source | | Effluent Limit Calculations | | | |
| 16 | PENTOXSD TRG | 5.1f | AML MULT = 1.720 | | | |
| 17 | PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.500 | | BAT/BPJ | |
| 18 | | | INST MAX LIMIT (mg/l) = 1.170 | | | |

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

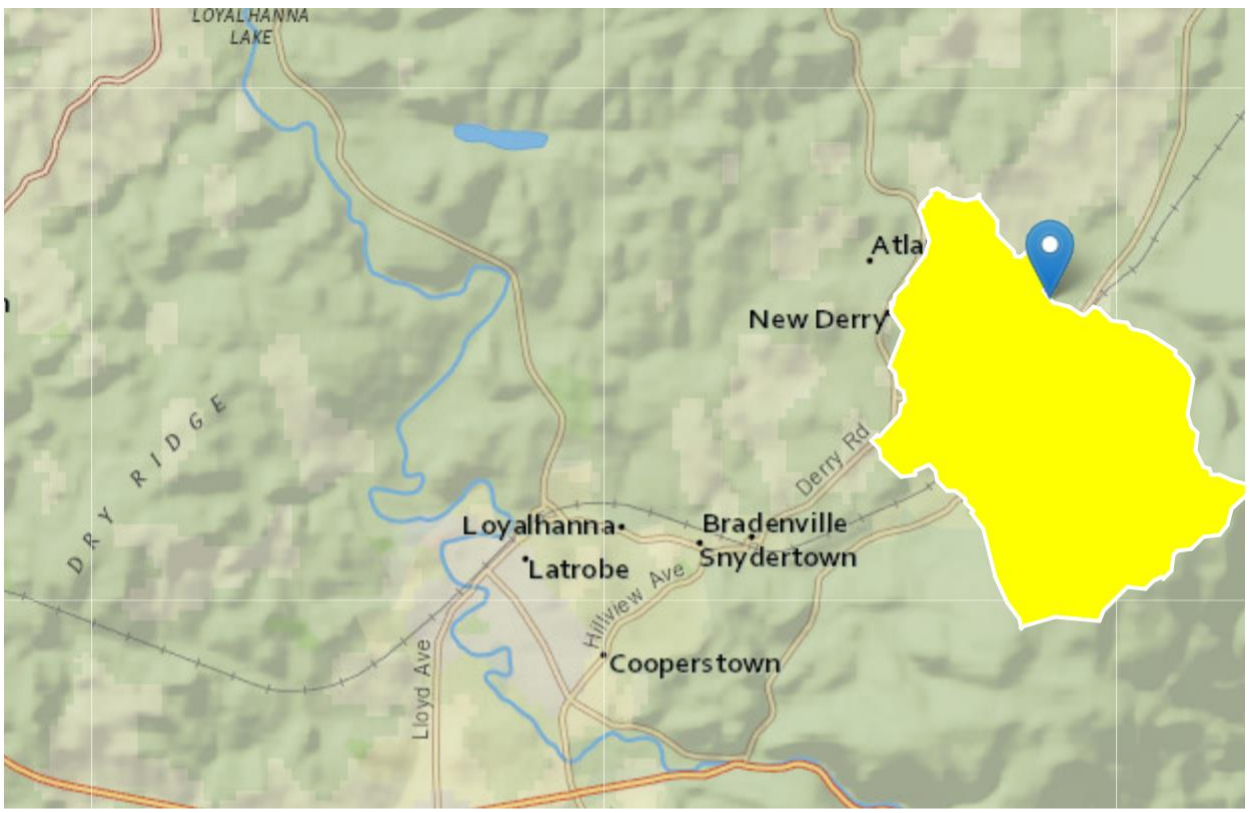
**Permit No. PA0094455**

# STREAM STATS BASIN REPORT

**Permit No. PA0094455**

# StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20210119175935691000
**Clicked Point (Latitude, Longitude):** 40.35240, -79.28902
**Time:** 2021-01-19 12:59:53 -0500




**Basin Characteristics**

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 7.25 | square miles |
| ELEV | Mean Basin Elevation | 1489 | feet |
| PRECIP | Mean Annual Precipitation | 44 | inches |
| FOREST | Percentage of area covered by forest | 64.9109 | percent |

**Permit No. PA0094455**

## StreamStats

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| URBAN | Percentage of basin with urban development | 13.9833 | percent |
| CARBON | Percentage of area of carbonate rock | 0 | percent |

### Low-Flow Statistics Parameters[Low Flow Region 3]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 7.25 | square miles | 2.33 | 1720 |
| ELEV | Mean Basin Elevation | 1489 | feet | 898 | 2700 |
| PRECIP | Mean Annual Precipitation | 44 | inches | 38.7 | 47.9 |

### Low-Flow Statistics Flow Report[Low Flow Region 3]

**PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)**

| Statistic | Value | Unit | SE | SEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 0.774 | ft^3/s | 43 | 43 |
| 30 Day 2 Year Low Flow | 1.12 | ft^3/s | 38 | 38 |
| 7 Day 10 Year Low Flow | 0.345 | ft^3/s | 54 | 54 |
| 30 Day 10 Year Low Flow | 0.484 | ft^3/s | 49 | 49 |
| 90 Day 10 Year Low Flow | 0.712 | ft^3/s | 41 | 41 |

***Low-Flow Statistics Citations***

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

**Permit No. PA0094455**

### Annual Flow Statistics Parameters[Statewide Mean and Base Flow]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 7.25 | square miles | 2.26 | 1720 |
| ELEV | Mean Basin Elevation | 1489 | feet | 130 | 2700 |
| PRECIP | Mean Annual Precipitation | 44 | inches | 33.1 | 50.4 |
| FOREST | Percent Forest | 64.9109 | percent | 5.1 | 100 |
| URBAN | Percent Urban | 13.9833 | percent | 0 | 89 |

### Annual Flow Statistics Flow Report[Statewide Mean and Base Flow]

**PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)**

| Statistic | Value | Unit | SE | SEp |
|---|---|---|---|---|
| Mean Annual Flow | 12.6 | ft^3/s | 12 | 12 |

***Annual Flow Statistics Citations***

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

### Base Flow Statistics Parameters[Statewide Mean and Base Flow]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 7.25 | square miles | 2.26 | 1720 |
| PRECIP | Mean Annual Precipitation | 44 | inches | 33.1 | 50.4 |
| CARBON | Percent Carbonate | 0 | percent | 0 | 99 |
| FOREST | Percent Forest | 64.9109 | percent | 5.1 | 100 |
| URBAN | Percent Urban | 13.9833 | percent | 0 | 89 |

**Permit No. PA0094455**

## Base Flow Statistics Flow Report[Statewide Mean and Base Flow]

**PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)**

| Statistic | Value | Unit | SE | SEp |
|---|---|---|---|---|
| Base Flow 10 Year Recurrence Interval | 4.71 | ft^3/s | 21 | 21 |
| Base Flow 25 Year Recurrence Interval | 4.2 | ft^3/s | 21 | 21 |
| Base Flow 50 Year Recurrence Interval | 3.91 | ft^3/s | 23 | 23 |

### *Base Flow Statistics Citations*

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



**Application Version: 4.4.0**