pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0228966** |
| Facility Type | **Non-Municipal** | APS ID | **1082966** |
| Major / Minor | **Minor** | Authorization ID | **1430257** |

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Lake Bonin** | Facility Name | **Lake Bonin** |
| Applicant Address | 1703 Bonin Road<br>Rome, PA 18837-7728 | Facility Address | 1703 Bonin Road<br>Rome, PA 18837-7728 |
| Applicant Contact | Keith Bonin | Facility Contact | Keith Bonin |
| Applicant Phone | (570) 247-7987 | Facility Phone | (570) 247-7987 |
| Client ID | 41641 | Site ID | 668925 |
| Ch 94 Load Status | Not Overloaded | Municipality | Orwell Township |
| Connection Status | No Limitations | County | Bradford |
| Date Application Received | March 7, 2023 | EPA Waived? | Yes |
| Date Application Accepted | March 13, 2023 | If No, Reason | |

Purpose of Application: Renewal of a NPDES Permit for an existing discharge of treated sewage.

## Summary of Review

The subject facility is a sewage treatment plant serving a 292-site campground in Orwell Township, Bradford. A map of the discharge location is attached (see Attachment A).

Sludge use and disposal description and location(s): Septage is pumped as needed and disposed at other WWTPs for further processing.

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 |
|---|---|---|---|
| ✓ | | Keith C. Allison<br>Keith C. Allison / Project Manager | August 24, 2023 |
| ✓ | | N. W. H.<br>Nicholas W. Hartranft, P.E. / Environmental Engineer Manager | August 24, 2023 |

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

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.007 |
| Latitude | 41º 52' 27.50" | Longitude | -76º 16' 20.77" |
| Quad Name | Rome, PA | Quad Code | 0435 |
| Wastewater Description: | Sewage Effluent | | |
| Receiving Waters | Unnamed Tributary to Jerome Creek (CWF) | Stream Code | 30075 – UNT<br>30071 – Jerome Creek |
| NHD Com ID | 66394395 | RMI | 0.84 – UNT<br>2.61 – Jerome Creek |
| Drainage Area | 2.44 $mi^2$ @Jerome Creek | Yield ($cfs/mi^2$) | 0.013 |
| $Q_{7-10}$ Flow (cfs) | 0.031 @Jerome Creek | $Q_{7-10}$ Basis | Gage 1532000, Towanda Creek near Monroeton, PA |
| Elevation (ft) | 1345 - UNT<br>1185 – Jerome Creek | Slope (ft/ft) | 0.02135 – Jerome Creek |
| Watershed No. | 4-D | Chapter 93 Class. | CWF |
| Existing Use | N/A | Existing Use Qualifier | N/A |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Attaining Use(s) | | |
| TMDL Status | Final | Name | Johnson Creek Watershed TMDL |
| Nearest Downstream Public Water Supply Intake | Danville Municipal Water Authority | | |
| PWS Waters | Susquehanna River | Distance from Outfall (mi) | Approx. 140 |

Changes Since Last Permit Issuance: None

Other Comments: Due to the nature of the facility, discharge typically only occurs May through October.

The above-mentioned Johnson Creek Watershed TMDL addresses impairment by siltation in the Johnson Creek Watershed. The causes of impairment were primarily attributed to agriculture and road runoff. This discharge is not a significant contributor to the impairment and has not received a wasteload allocation under the TMDL. The facility has also consistently met its TSS limitations over the past permit term.

The first point of aquatic use was determined in previous reviews to be the discharge into Jerome Creek from the unnamed tributary. Inspections of the facility have not noted any apparent impacts in the receiving unnamed tributary by the discharge.

No downstream public water supply is expected to be affected by this discharge at this time with the monitoring and limitations proposed.

**Treatment Facility Summary**

**Treatment Facility Name:** Lake Bonin

| WQM Permit No. | Issuance Date | Permit For |
|---|---|---|
| 808401 | September 16, 2008 | Authorization of initial treatment plant |
| 808401 Amendment No. 1 | March 2, 2010 | Addition of settling tank, dechlorination and aeration system for EQ tank |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Secondary | Septic Tank Sand Filter | Chlorine With Dechlorination | 0.007 |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.007 | 4.8 | Not Overloaded | | |

Changes Since Last Permit Issuance: None

Other Comments: Treatment, as approved under WQM Permit No. 0808401 A-1, includes 19 septic tanks (34,000-gallon total volume), collection system with pump station, 14,000-gallon aerated equalization tank, 2,000-gallon settling tank, dual siphon dosing tank, two 1,225 square foot sand filters, erosion chlorinator, 500-gallon contact chlorine tank, erosion dechlorinator, and 500-gallon dechlorination contact tank.

## Compliance History

**DMR Data for Outfall 001 (from June 1, 2022 to May 31, 2023)**

| Parameter | MAY-23 | APR-23 | MAR-23 | FEB-23 | JAN-23 | DEC-22 | NOV-22 | OCT-22 | SEP-22 | AUG-22 | JUL-22 | JUN-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 0.0015 | No Discharge | No Discharge | No Discharge | No Discharge | No Discharge | No Discharge | 0.0009 | 0.0014 | 0.0013 | 0.0016 | 0.0018 |
| Flow (MGD) Daily Maximum | 0.0030 | | | | | | | 0.0025 | 0.0035 | 0.0030 | 0.0035 | 0.0030 |
| pH (S.U.) Instantaneous Minimum | 7.45 | | | | | | | 7.45 | 7.42 | 7.45 | 7.41 | 7.32 |
| pH (S.U.) Instantaneous Maximum | 7.74 | | | | | | | 7.62 | 7.54 | 7.58 | 7.51 | 7.56 |
| DO (mg/L) Instantaneous Minimum | 6.45 | | | | | | | 6.56 | 6.45 | 6.42 | 6.41 | 6.44 |
| TRC (mg/L) Average Monthly | 0.05 | | | | | | | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 |
| TRC (mg/L) Instantaneous Maximum | 0.08 | | | | | | | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 |
| CBOD5 (mg/L) Average Monthly | 32.75 | | | | | | | 3 | 3 | < 3 | 34.95 | 12.15 |
| TSS (mg/L) Average Monthly | 10.6 | | | | | | | 2.34 | 3.4 | 10.20 | 20.4 | 5.4 |
| Fecal Coliform (No./100 ml) Geometric Mean | 123.9 | | | | | | | 5.06 | 1.41 | 3.22 | 186.8 | 11.13 |
| Fecal Coliform (No./100 ml) Instantaneous Maximum | 123.9 | | | | | | | 25.6 | 2 | 5.2 | 4839.20 | 123.9 |
| Ammonia (mg/L) Average Monthly | 8.66 | | | | | | | 2.75 | 4.32 | 0.24 | 32.51 | 8.64 |

**Compliance History, Cont'd**

**Effluent Violations for Outfall 001, from: July 1, 2022 To: May 31, 2023**

| Parameter | Date | SBC | DMR Value | Units | Limit Value | Units |
|---|---|---|---|---|---|---|
| CBOD5 | 07/31/22 | Avg Mo | 34.95 | mg/L | 25 | mg/L |
| Fecal Coliform | 07/31/22 | IMAX | 4839.20 | No./100 ml | 1000 | No./100 ml |
| Ammonia | 07/31/22 | Avg Mo | 32.51 | mg/L | 10 | mg/L |
| CBOD5 | 05/31/23 | Avg Mo | 32.75 | mg/L | 25 | mg/L |

**Compliance History, Cont'd**

| | |
|---|---|
| **Summary of Inspections:** | The facility has been inspected periodically by the Department over the past permit term. The most recent inspection on August 2, 2023 noted eDMR effluent violations. |
| **Other Comments:** | There are no open violations in eFACTS for Lake Bonin. |

## Existing 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 Daily Max | 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 | 3.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| TRC | XXX | XXX | XXX | 0.43 | XXX | 1.4 | 1/day | Grab |
| CBOD5 | XXX | XXX | XXX | 25 | XXX | 50 | 2/month | Grab |
| TSS | XXX | XXX | XXX | 30 | XXX | 60 | 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 |
| Total Nitrogen | XXX | Report Daily Max | XXX | Report Daily Max | XXX | XXX | 1/year | Grab |
| Ammonia Nov 1 - Apr 30 | XXX | XXX | XXX | 25 | XXX | 50 | 2/month | Grab |
| Ammonia May 1 - Oct 31 | XXX | XXX | XXX | 10 | XXX | 20 | 2/month | Grab |
| Total Phosphorus | XXX | Report Daily Max | XXX | Report Daily Max | XXX | XXX | 1/year | Grab |

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** 0.007
**Latitude** 41º 52' 28.00" **Longitude** -76º 16' 23.00"
**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) |
| | 40 | 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) |
| | 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) |
| 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) |

Comments: The above limitations are applicable and included in the existing permit except for weekly average TSS and CBOD5 limits which are not necessary for the this small non-POTW and it has a more stringent WQ-based TRC limit.

### Water Quality-Based Limitations

#### DO, CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen ($NH_3$-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of $NH_3$-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and $NH_3$-N. WQM7.0 modeling was performed in two reaches for the discharge to the UNT to Jerome Creek and from the UNT to Jerome Creek and showed that no limitations are necessary beyond the technology-based secondary treatment limits listed above and a $NH_3$-N of 10 mg/L. See Attachment B.

#### Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet from the previous review (see Attachment C) show that the existing Water Quality-based limit of 0.43 mg/l is adequate to protect the receiving stream.

#### Toxics Management

No further "Reasonable Potential Analysis" was performed to determine additional parameters as candidates for limitations or monitoring for this minor WWTP with no industrial influent.

#### Chesapeake Bay/Nutrient Requirements

According to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is an existing Phase 5 Chesapeake Bay sewage discharger that is not expanding, and as such requires no nutrient loading limits. Annual nutrient monitoring was included in current permit. The average Total Nitrogen concentration over the past permit term was 34.7 mg/L and the Average Phosphorus concentration was 2.8 mg/L. Because the nutrient load has been adequately characterized no additional nutrient monitoring will be required at this time consistent with the Phase III WIP Wastewater Supplement.

**Dry Stream Discharge**
Because the discharge is existing and there have been no noted effects on the intermittent unnamed tributary to Jerome Creek directly receiving the discharge the additional discharge requirements from the Department's *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers* including the Advanced Treatment Requirements will not be required at this time.

**Best Professional Judgment (BPJ) Limitations**

Comments: None needed beyond the Technology and Water Quality-Based limits noted above.

**e. Coli**
Annual e. coli monitoring will be required at this time due to recent changes to Chapter 93 of the Departments regulations and Department policy.

**Anti-Backsliding**

No proposed limitations are less stringent than the existing consistent with anti-backsliding provisions of the Clean Water Act and 40 CFR 122.44(I).

## 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 Daily Max | 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 | 3.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| TRC | XXX | XXX | XXX | 0.43 | XXX | 1.4 | 1/day | Grab |
| CBOD5 | XXX | XXX | XXX | 25 | XXX | 50 | 2/month | Grab |
| TSS | XXX | XXX | XXX | 30 | XXX | 60 | 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 | 25 | XXX | 50 | 2/month | Grab |
| Ammonia May 1 - Oct 31 | XXX | XXX | XXX | 10 | XXX | 20 | 2/month | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | Report Daily Max | XXX | 1/Year | Grab |

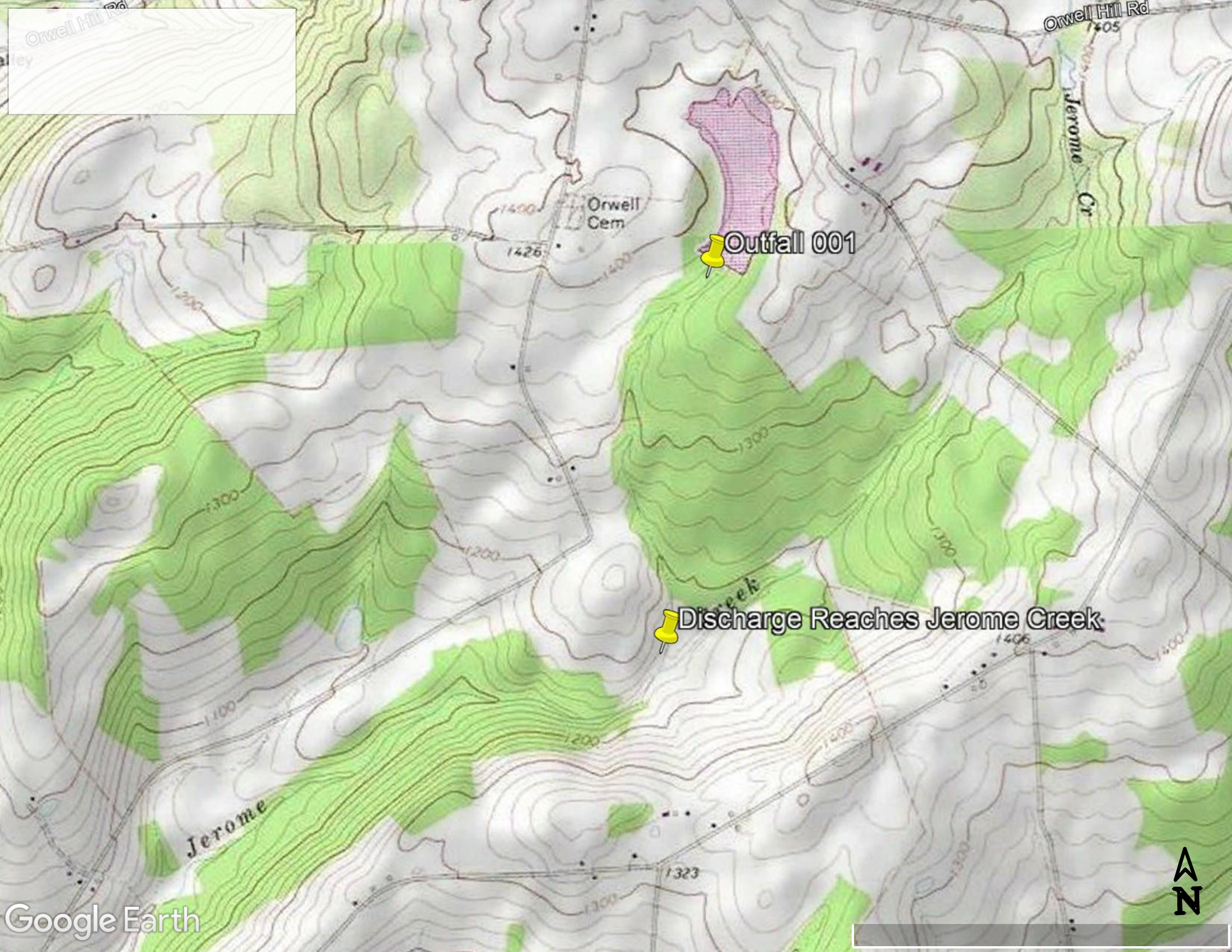
Compliance Sampling Location: Outfall 001

Other Comments: Total Nitrogen and Total Phosphorus monitoring have been removed as mentioned above. E. Coli monitoring is new as also mentioned above.

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☒ | WQM for Windows Model (see Attachment **B**) |
| ☐ | Toxics Management Spreadsheet (see Attachment ) |
| ☒ | TRC Model Spreadsheet (see Attachment **C**) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☒ | Water Quality Toxics Management Strategy, 361-0100-003, 4/06. |
| ☒ | Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97. |
| ☐ | Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98. |
| ☒ | Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96. |
| ☐ | Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97. |
| ☐ | Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97. |
| ☐ | Pennsylvania CSO Policy, 385-2000-011, 9/08. |
| ☐ | Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03. |
| ☐ | Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97. |
| ☒ | Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97. |
| ☒ | Implementation Guidance Design Conditions, 391-2000-006, 9/97. |
| ☐ | Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004. |
| ☐ | Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997. |
| ☐ | Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99. |
| ☐ | Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004. |
| ☒ | Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97. |
| ☐ | Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008. |
| ☒ | Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994. |
| ☐ | Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09. |
| ☐ | Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97. |
| ☐ | Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97. |
| ☐ | Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99. |
| ☐ | Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999. |
| ☒ | Design Stream Flows, 391-2000-023, 9/98. |
| ☐ | Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98. |
| ☐ | Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97. |
| ☒ | Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07. |
| ☒ | SOP: Establishing Effluent Limitations for Individual Sewage Permits, rev. 03/24/2021 |
| ☐ | Other: |

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model


Orwell Hill Rd
Jerome Cr
Orwell Cem
Outfall 001
Discharge Reaches Jerome Creek
Jerome
1426
1323
N
Google Earth

# 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 |
|---|---|---|---|---|---|---|---|---|
| 04D | 30075 | Trib 30075 to Jerome Creek | **0.840** | 1345.00 | 0.45 | 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** | 0.013 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 20.00 | 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 |
|---|---|---|---|---|---|---|---|
| Lake Bonin | PA0228966-1 | 0.0070 | 0.0000 | 0.0000 | 0.000 | 25.00 | 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 | 10.00 | 0.00 | 0.00 | 0.70 |

# 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 |
|---|---|---|---|---|---|---|---|---|
| 04D | 30075 | Trib 30075 to Jerome Creek | **0.001** | 1185.00 | 0.80 | 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** | 0.013 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 20.00 | 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 | 25.00 | 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 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 04D | 30075 | Trib 30075 to Jerome Creek |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (ºC) | Analysis pH |
|---|---|---|---|
| 0.840 | 0.007 | 23.246 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 2.111 | 0.265 | 7.963 | 0.030 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 16.93 | 1.070 | 6.49 | 0.899 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 4.839 | 25.975 | Owens | 6 |
| **Reach Travel Time (days)** | | | |
| 1.720 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.172 | 13.68 | 5.56 | 6.68 |
| 0.344 | 11.05 | 4.77 | 7.02 |
| 0.516 | 8.92 | 4.08 | 7.29 |
| 0.688 | 7.21 | 3.50 | 7.52 |
| 0.860 | 5.82 | 3.00 | 7.71 |
| 1.032 | 4.70 | 2.57 | 7.77 |
| 1.204 | 3.80 | 2.20 | 7.77 |
| 1.376 | 3.07 | 1.89 | 7.77 |
| 1.548 | 2.48 | 1.62 | 7.77 |
| 1.720 | 2.00 | 1.38 | 7.77 |

# Input Data WQM 7.0

| Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|
| 30071 | JEROME CREEK | **2.610** | 1185.00 | 2.44 | 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** | 0.013 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 20.00 | 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 |
|---|---|---|---|---|---|---|---|
| Lake Bonin | PA0228966 | 0.0070 | 0.0000 | 0.0000 | 0.000 | 25.00 | 7.00 |

**Parameter Data**

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 2.00 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 7.77 | 8.24 | 0.00 | 0.00 |
| NH3-N | 1.38 | 0.00 | 0.00 | 0.70 |

# Input Data WQM 7.0

| Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|
| 30071 | JEROME CREEK | **0.100** | 902.00 | 5.10 | 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** | 0.013 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 20.00 | 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 | 25.00 | 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 |

# WQM 7.0 Modeling Specifications

| | | | |
|---|---|---|---|
| Parameters | Both | Use Inputted Q1-10 and Q30-10 Flows | ☑ |
| WLA Method | EMPR | 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 | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 6 | | |

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 04D | 30071 | JEROME CREEK |

## 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 |
|---|---|---|---|---|---|---|---|
| 2.610 | Lake Bonin | 14.51 | 2.76 | 14.51 | 2.76 | 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 |
|---|---|---|---|---|---|---|---|
| 2.610 | Lake Bonin | 1.77 | 1.38 | 1.77 | 1.38 | 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) | | |
| 2.61 | Lake Bonin | 2 | 2 | 1.38 | 1.38 | 7.77 | 7.77 | 0 | 0 |

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 04D | 30071 | JEROME CREEK |

| 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** | | | | | | | | | | | | |
| 2.610 | 0.03 | 0.00 | 0.03 | .0108 | 0.02135 | .31 | 4.13 | 13.33 | 0.03 | 4.614 | 21.27 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 2.610 | 0.02 | 0.00 | 0.02 | .0108 | 0.02135 | NA | NA | NA | 0.03 | 5.497 | 21.74 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 2.610 | 0.04 | 0.00 | 0.04 | .0108 | 0.02135 | NA | NA | NA | 0.04 | 4.039 | 21.00 | 7.00 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 04D | 30071 | JEROME CREEK |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (ºC) | Analysis pH |
|---|---|---|---|
| 2.610 | 0.007 | 21.273 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 4.131 | 0.310 | 13.334 | 0.033 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 2.00 | 0.000 | 0.35 | 0.772 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 8.123 | 19.978 | Owens | 6 |
| **Reach Travel Time (days)** | | | |
| 4.614 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.461 | 2.00 | 0.25 | 8.05 |
| 0.923 | 2.00 | 0.17 | 8.05 |
| 1.384 | 2.00 | 0.12 | 8.05 |
| 1.846 | 2.00 | 0.08 | 8.05 |
| 2.307 | 2.00 | 0.06 | 8.05 |
| 2.769 | 2.00 | 0.04 | 8.05 |
| 3.230 | 2.00 | 0.03 | 8.05 |
| 3.691 | 2.00 | 0.02 | 8.05 |
| 4.153 | 2.00 | 0.01 | 8.05 |
| 4.614 | 2.00 | 0.01 | 8.05 |

| 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) |
|---|---|---|---|---|---|---|---|
| 2.610 | Lake Bonin | PA0228966 | 0.007 | CBOD5 | 2 | | |
| | | | | NH3-N | 1.38 | 2.76 | |
| | | | | Dissolved Oxygen | | | 7.77 |

# TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

| | | | |
|---|---|---|---|
| 0.031 | = Q stream (cfs) | 0.5 | = CV Daily |
| 0.007 | = Q discharge (MGD) | 0.5 | = CV Hourly |
| 30 | = no. samples | 1 | = 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 = 0.932 | 1.3.2.iii | WLA cfc = 0.901 |
| PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | 5.1c | LTAMULT cfc = 0.581 |
| PENTOXSD TRG | 5.1b | LTA_afc= 0.347 | 5.1d | LTA_cfc = 0.524 |

| Source | | Effluent Limit Calculations | |
|---|---|---|---|
| PENTOXSD TRG | 5.1f | AML MULT = 1.231 | |
| PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.428 | AFC |
| | | INST MAX LIMIT (mg/l) = 1.398 | |

| | |
|---|---|
| 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) |