Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

| | | | |
|---|---|---|---|
| Application Type | **Amendment, Major** | Application No. | **PA0208914 A-1** |
| Facility Type | **Non-Municipal** | APS ID | **1106909** |
| Major / Minor | **Minor** | Authorization ID | **1472175** |

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Great Dane LLC** | Facility Name | **Great Dane LP** |
| Applicant Address | 131 Technology Circle | Facility Address | 891 Strick Road |
| | Savannah, GA 31407-3019 | | Danville, PA 17821-8084 |
| Applicant Contact | Seth Novak | Facility Contact | Seth Novak |
| Applicant Phone | (912) 871-8111 | Facility Phone | (912) 871-8111 |
| Client ID | 161501 | Site ID | 2905 |
| Ch 94 Load Status | Not Overloaded | Municipality | Limestone Township |
| Connection Status | | County | Montour |
| Date Application Received | February 7, 2024 | EPA Waived? | Yes |
| Date Application Accepted | February 21, 2024 | If No, Reason | |

Purpose of Application: The addition of a new outfall location to an existing NPDES permit.

## Summary of Review

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.

The permittee is proposing the addition of a new outfall which will discharge directly to the receiving stream (County Line Branch) in lieu of the existing discharge to a dry swale that leads to County Line Branch. In accordance with 40 CFR 122.44(l)(2)(A) which states that material and substantial alterations or additions to the permitted facility that occurred after permit issuance may justify the application of a less stringent effluent limitation. In this instance, the guidance document "Implementation Guidance for Evaluating Wastewater Discharges to Drainage Ditches and Swales" (Doc. ID 391-2000-014, April 2008) will not be applicable to any discharge from this outfall. New effluent limits will be applied to this outfall only with no proposed increase to the discharge. No modifications will be made to effluent limits for Outfall 001 and the stormwater outfalls which are not considered part of this review.

The permittee is also constructing a new treatment plant for this outfall to replace the failing Cromaglass CA-50 system. No WQM permit has been supplied for the construction of the plant or the outfall change at this time. Outfall 101 and the associated effluent limits will be added to the permit, but no construction and/or discharge will be allowed until the WQM permit is modified.

Additionally, please note that stormwater outfall 001 will be changed to outfall 008. Duplicate outfall numbers can't be utilized.

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Jonathan P. Peterman / Project Manager | December 20, 2024 |
| X | | Nicholas W. Hartranft, P.E. / Environmental Engineer Manager | December 23, 2024 |

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

| | | | |
|---|---|---|---|
| Outfall No. | 101 | Design Flow (MGD) | 0.005 |
| Latitude | 41º 4' 55" | Longitude | -76º 42' 23" |
| Quad Name | Washingtonville | Quad Code | 1032 |
| Wastewater Description: | Sewage Effluent | | |

| | | | |
|---|---|---|---|
| Receiving Waters | County Line Branch (WWF) | Stream Code | 18825 |
| NHD Com ID | 66917825 | RMI | 1.8 (at County Line Branch) |
| Drainage Area | 18.3 $mi^2$ | Yield ($cfs/mi^2$) | 0.059 |
| $Q_{7-10}$ Flow (cfs) | 1.08 | $Q_{7-10}$ Basis | USGS StreamStats |
| Elevation (ft) | 528 | Slope (ft/ft) | |
| Watershed No. | 10-D | Chapter 93 Class. | WWF |
| Existing Use | N/A | Existing Use Qualifier | N/A |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Not Assessed | | |
| Cause(s) of Impairment | | | |
| Source(s) of Impairment | | | |
| TMDL Status | Final | Name | West Branch Chilisquaque Watershed TMDL |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | Sunbury Municipal Water Authority | | |
| PWS Waters | Susquehanna River | Flow at Intake (cfs) | 1740 |
| PWS RMI | 124 | Distance from Outfall (mi) | Approx. 25 |

Changes Since Last Permit Issuance: The $Q_{7-10}$ calculations, which are attached in Appendix A, indicate that the $Q_{7-10}$ is 1.08 cfs. This is identical to what was used in the previous reviews at the point of first use.

Other Comments: None.

**Treatment Facility Summary**

**Treatment Facility Name:** Great Dane LP

| WQM Permit No. | Issuance Date |
|---|---|
| 4715401-A1 | December 29, 2006 |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Secondary | Sequencing Batch Reactor | Hypochlorite | 0.0046 |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.0046 | 30 | Not Overloaded | | |

Other Comments: The existing treatment as permitted under WQM permit No. 4715401-A1 consists of 3,000-gallon equalization tank, Cromaglass CA-50 treatment unit, sand filter, erosion chlorinator, a chlorine contact tank, and sludge holding tank.
Note: The permittee is proposing the construction of a new treatment plant, but the details have not yet been provided to the Department.

**Chesapeake Bay 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 the existing permit per the Phase II Watershed Implementation Plan. The Total Nitrogen was found to average 82.6 mg/L and the Total Phosphorus averaged 11.4 mg/L over the past three years. Therefore, because the Total Nitrogen and Total Phosphorus in the effluent has adequately been characterized, no further monitoring for these will be required at this time consistent with the Phase III Watershed Implementation Plan.

## Existing Effluent Limitations and Monitoring Requirements

**Existing Limits – Outfall 001**

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | Report Daily Max | XXX | XXX | XXX | XXX | 5/week | Metered |
| pH (S.U.) | XXX | XXX | 6.0 Inst Min | XXX | XXX | 9.0 | 5/week | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - May 31 | XXX | XXX | XXX | 20 | XXX | 40 | 2/month | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) Jun 1 - Oct 31 | XXX | XXX | XXX | 10 | XXX | 20 | 2/month | Grab |
| Total Suspended Solids | XXX | XXX | XXX | 10 | XXX | 20 | 2/month | Grab |
| Fecal Coliform (No./100 ml) | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 2/month | Grab |
| Ammonia-Nitrogen Nov 1 - May 31 | XXX | XXX | XXX | 9 | XXX | 18 | 2/month | Grab |
| Ammonia-Nitrogen Jun 1 - Oct 31 | XXX | XXX | XXX | 3 | XXX | 6 | 2/month | Grab |
| Dissolved Oxygen | XXX | XXX | Report Inst Min | XXX | XXX | XXX | 5/week | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 5/week | Grab |

*The existing effluent limits for Outfall 001 were based on a design flow of 0.005 MGD.

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** .005
**Latitude** 41º 4' 55.00" **Longitude** -76º 42' 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) |

### Water Quality-Based Limitations

To establish whether or not water-quality based effluent limitations (WQBELs) are required, the Department models in-stream conditions. In order to determine limitations for CBOD5, ammonia-N and dissolved oxygen, the Department utilizes the WQM 7.0 v1.0b model and in order to determine limitations for toxics, the Department utilizes the Toxic Management Spreadsheet. The Toxic Management Spreadsheet will not be utilized for this review.

**WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen**
The model was run using the Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. The technology based effluent limits for $CBOD_5$ (25 mg/l) and NH3-N (25 mg/l) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (5.0 mg/L for WWF) was used for the in-stream objective for the model. The summary of the output is as follows:

| Parameter | Effluent Limit | | |
|---|---|---|---|
| | 30 Day Average | Maximum | Minimum |
| **CBOD5** | 25 | N/A | N/A |
| **Ammonia-N** | 25 | 50 | N/A |
| **Dissolved Oxygen** | N/A | N/A | 3 |

The model did not recommend water-quality based effluent limitations with regards to CBOD5, ammonia-nitrogen, and dissolved oxygen. Refer to the Appendix for the previous WQM 7.0 inputs and results. Technology based effluent limits will be applied given that this discharge is no longer to a dry stream.

### Best Professional Judgment (BPJ) Limitations

See $NH_3$-N and monitoring frequency sections below.
Comments: None.

## Anti-Backsliding

See summary review above.

## 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 the abovementioned 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) and/or BPJ.

**Proposed Limits - 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 | XXX | XXX | XXX | XXX | XXX | 5/week | Metered |
| pH (S.U.) | XXX | XXX | 6.0 Inst Min | XXX | XXX | 9.0 | 5/week | Grab |
| Total Residual Chlorine (TRC) | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 5/week | Grab |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | XXX | XXX | XXX | 25.0 | XXX | 50 | 2/month | Grab |
| Total Suspended Solids | XXX | XXX | XXX | 30.0 | 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-Nitrogen | XXX | XXX | XXX | 25 | XXX | 50 | 2/month | Grab |
| Dissolved Oxygen | XXX | XXX | Report | XXX | XXX | XXX | 5/week | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | XXX | Report | 1/year | Grab |

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.005 MGD.

## Effluent Limit Determination for Outfall 001

**General Information**
All of the limits proposed above are consistent with other permits issued for major wastewater treatment plants in the region. All effluent limits were then rounded down in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits.

**Flow**
Reporting of the average monthly flow is consistent with monitoring requirements for other treatment plants of this size.

**Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)**
The results of the WQM 7.0 model show that the secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ are protective of water quality and will be applied to this outfall.

**Total Suspended Solids (TSS)**
The technology based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will be applied to this outfall as well.

**pH**
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH.

**Fecal Coliforms**
The existing fecal coliform limits with I-max limits were updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5).

**Dissolved Oxygen (DO)**
Given results of the WQM 7.0 model, a discharge of effluent from this facility with a DO concentration of 3 mg/l would not result in an exceedance of water quality requirements for this stream. It is anticipated, based on similar technology, that the DO concentration in the effluent would be greater than 3.0 mg/l. Therefore, based on BPJ, only monitoring will be required for this facility.

**Ammonia-Nitrogen (NH3-N)**
The results of the WQM 7.0 model show that the technology-based effluent limits for ammonia-nitrogen are protective of water quality and appropriate.

**E. Coli**
25 PA Code § 92a.61 provide the basis of monitoring requirements for E. Coli. Yearly monitoring will be required going forward.

**Monitoring Frequencies**
The proposed monitoring frequencies are identical to the existing permit requirements. This will be re-evaluated during the permit renewal process.

## Compliance History

**WMS Query Summary** - A WMS Query was run at *Reports - Violations & Enforcements – Open Violations for Client Report* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed two open violations in the SDW program. See below. These programs will be notified of the open violations.

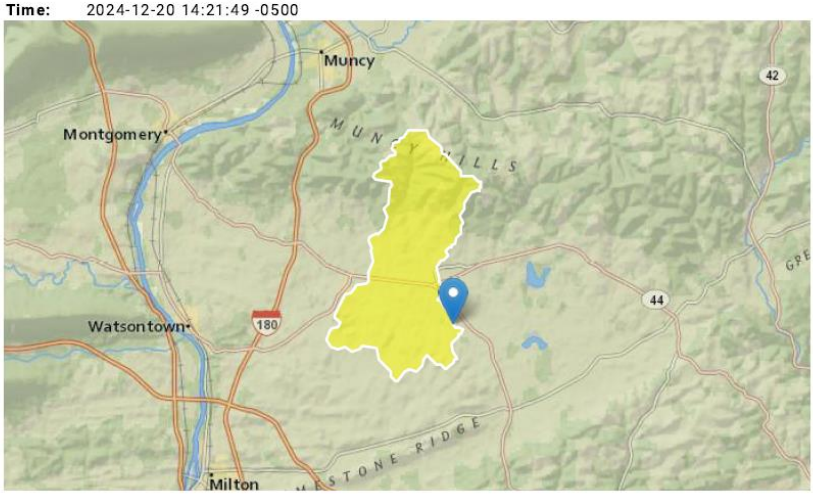
| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☒ | WQM for Windows Model (see Attachment **B**) |
| ☐ | Toxics Management Spreadsheet (see Attachment ) |
| ☒ | TRC Model Spreadsheet (see Attachment **C**) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☐ | Water Quality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

# APPENDIX A

## Q7-10 ANALYSIS AND STREAM DATA

## StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20241220192122590000
**Clicked Point (Latitude, Longitude):** 41.08516, -76.70860
**Time:** 2024-12-20 14:21:49 -0500




### Low-Flow Statistics

#### Low-Flow Statistics Parameters [Low Flow Region 2]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| CARBON | Percent Carbonate | 16.75 | percent | 0 | 99 |
| DRNAREA | Drainage Area | 18.3 | square miles | 4.93 | 1280 |
| PRECIP | Mean Annual Precipitation | 41 | inches | 35 | 50.4 |
| ROCKDEP | Depth to Rock | 4.5 | feet | 3.32 | 5.65 |
| STRDEN | Stream Density | 2.05 | miles per square mile | 0.51 | 3.1 |

#### Low-Flow Statistics Flow Report [Low Flow Region 2]

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

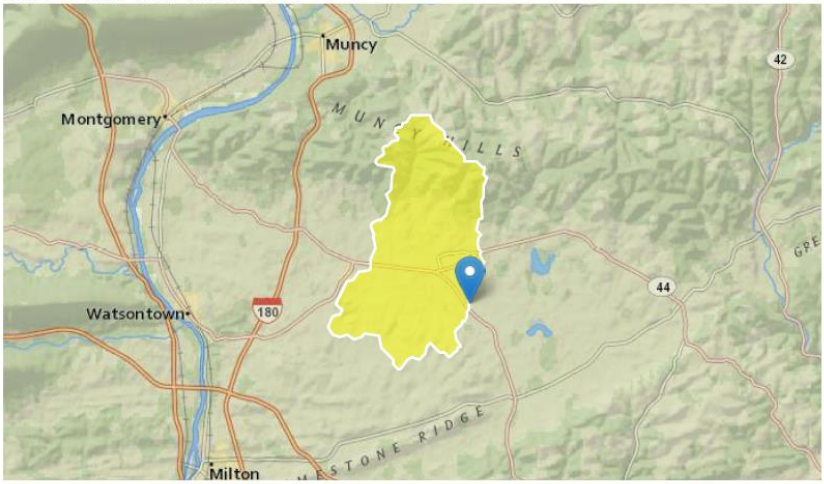
| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 2.18 | ft^3/s | 38 | 38 |
| 30 Day 2 Year Low Flow | 2.86 | ft^3/s | 33 | 33 |
| 7 Day 10 Year Low Flow | 1.07 | ft^3/s | 51 | 51 |
| 30 Day 10 Year Low Flow | 1.41 | ft^3/s | 46 | 46 |
| 90 Day 10 Year Low Flow | 2.06 | ft^3/s | 36 | 36 |

*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/)**

## StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20241220192505112000
**Clicked Point (Latitude, Longitude):** 41.08876, -76.70137
**Time:** 2024-12-20 14:25:30 -0500




### Low-Flow Statistics

#### Low-Flow Statistics Parameters [Low Flow Region 2]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| CARBON | Percent Carbonate | 14.42 | percent | 0 | 99 |
| DRNAREA | Drainage Area | 21.2 | square miles | 4.93 | 1280 |
| PRECIP | Mean Annual Precipitation | 41 | inches | 35 | 50.4 |
| ROCKDEP | Depth to Rock | 4.5 | feet | 3.32 | 5.65 |
| STRDEN | Stream Density | 2.07 | miles per square mile | 0.51 | 3.1 |

#### Low-Flow Statistics Flow Report [Low Flow Region 2]

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

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 2.46 | ft^3/s | 38 | 38 |
| 30 Day 2 Year Low Flow | 3.25 | ft^3/s | 33 | 33 |
| 7 Day 10 Year Low Flow | 1.21 | ft^3/s | 51 | 51 |
| 30 Day 10 Year Low Flow | 1.6 | ft^3/s | 46 | 46 |
| 90 Day 10 Year Low Flow | 2.35 | ft^3/s | 36 | 36 |

*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/)**

# APPENDIX B

## WQM 7.0 MODEL INPUT/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 |
|---|---|---|---|---|---|---|---|---|
| 10D | 18825 | COUNTY LINE BRANCH | **1.080** | 528.00 | 18.30 | 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 | 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 |
|---|---|---|---|---|---|---|---|
| Great Dane LLC | PA0208914 | 0.0050 | 0.0050 | 0.0050 | 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 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10D | 18825 | COUNTY LINE BRANCH |

| 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** | | | | | | | | | | | | |
| 1.080 | 1.83 | 0.00 | 1.83 | .0077 | 0.00163 | .587 | 22.06 | 37.6 | 0.14 | 0.250 | 20.02 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 1.080 | 1.78 | 0.00 | 1.78 | .0077 | 0.00163 | NA | NA | NA | 0.14 | 0.254 | 20.02 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 1.080 | 2.20 | 0.00 | 2.20 | .0077 | 0.00163 | NA | NA | NA | 0.16 | 0.225 | 20.02 | 7.00 |

# 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 | 0.97 | Use Inputted Reach Travel Times | ☐ |
| Q30-10/Q7-10 Ratio | 1.2 | Temperature Adjust Kr | ☑ |
| D.O. Saturation | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 5 | | |

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10D | 18825 | COUNTY LINE BRANCH |

## 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 |
|---|---|---|---|---|---|---|---|
| 1.080 | Great Dane LLC | 16.73 | 50 | 16.73 | 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 |
|---|---|---|---|---|---|---|---|
| 1.080 | Great Dane LLC | 1.88 | 25 | 1.88 | 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) | | |
| 1.08 | Great Dane LLC | 25 | 25 | 25 | 25 | 3 | 3 | 0 | 0 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10D | 18825 | COUNTY LINE BRANCH |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 1.080 | 0.005 | 20.021 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 22.058 | 0.587 | 37.598 | 0.142 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 2.10 | 0.063 | 0.11 | 0.701 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 8.221 | 2.204 | Tsivoglou | 5 |
| **Reach Travel Time (days)** | | | |
| 0.250 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.025 | 2.09 | 0.10 | 8.24 |
| 0.050 | 2.09 | 0.10 | 8.24 |
| 0.075 | 2.09 | 0.10 | 8.24 |
| 0.100 | 2.08 | 0.10 | 8.24 |
| 0.125 | 2.08 | 0.10 | 8.24 |
| 0.150 | 2.08 | 0.09 | 8.24 |
| 0.175 | 2.07 | 0.09 | 8.24 |
| 0.200 | 2.07 | 0.09 | 8.24 |
| 0.225 | 2.07 | 0.09 | 8.24 |
| 0.250 | 2.06 | 0.09 | 8.24 |

# WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 10D | 18825 | COUNTY LINE BRANCH |

| 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) |
|---|---|---|---|---|---|---|---|
| 1.080 | Great Dane LLC | PA0208914 | 0.005 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 3 |

# APPENDIX C

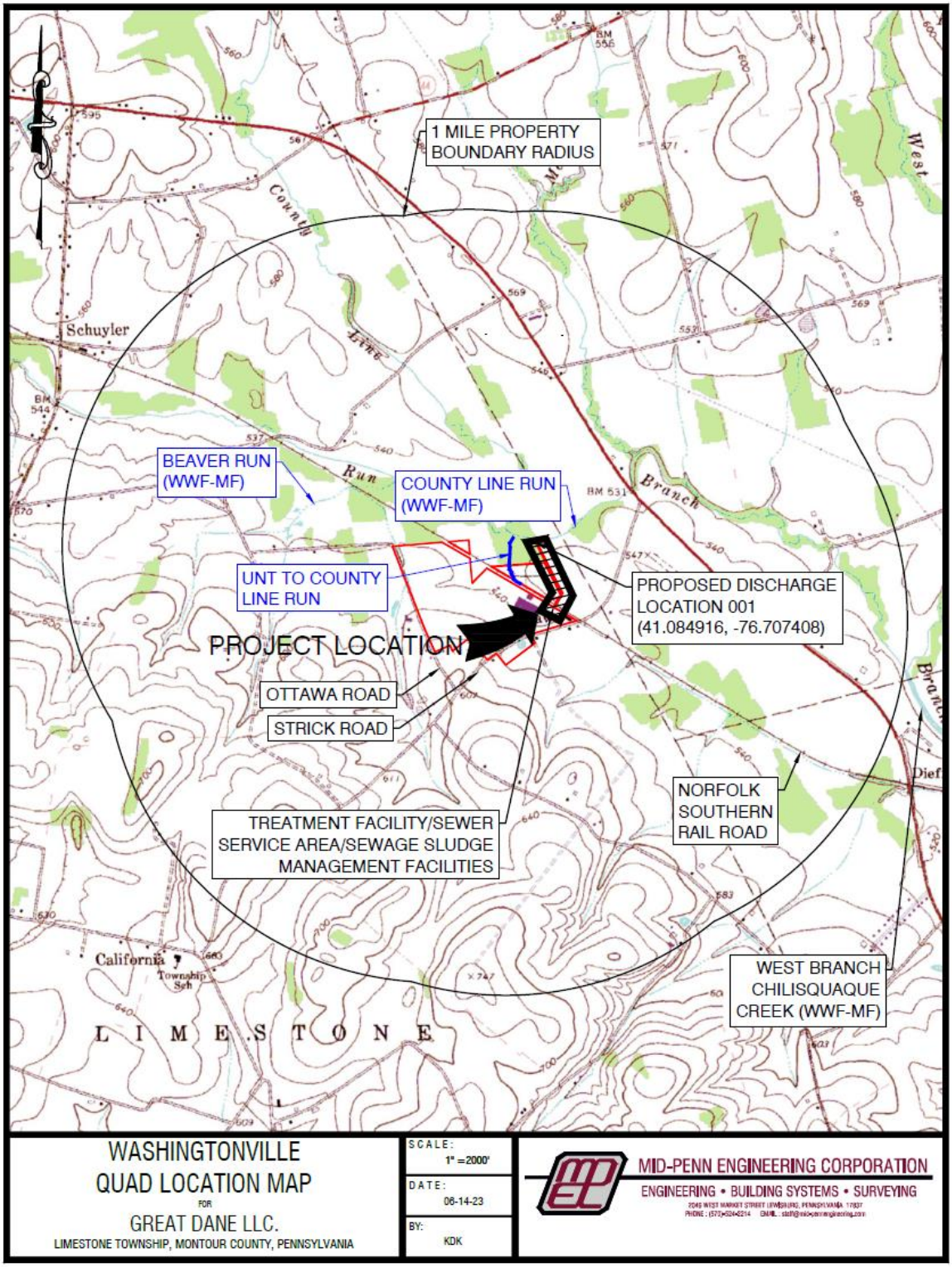
TRC ANALYSIS

| 1A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 2 | **TRC EVALUATION** | | | **Great Dane LLC PA0208914** | | |
| 3 | Input appropriate values in B4:B8 and E4:E7 | | | | | |
| 4 | 1.08 | = Q stream (cfs) | | 0.6 | = CV Daily | |
| 5 | 0.005 | = Q discharge (MGD) | | 0.6 | = CV Hourly | |
| 6 | 30 | = no. samples | | 1 | = AFC_Partial Mix Factor | |
| 7 | 0.3 | = Chlorine Demand of Stream | | 1 | = CFC_Partial Mix Factor | |
| 8 | 0 | = Chlorine Demand of Discharge | | 15 | = AFC_Criteria Compliance Time (min) | |
| 9 | 0.6 | = BAT/BPJ Value | | 720 | = CFC_Criteria Compliance Time (min) | |
| | 0 | = % Factor of Safety (FOS) | | 0 | =Decay Coefficient (K) | |
| 10 | Source | Reference | AFC Calculations | | Reference | CFC Calculations |
| 11 | TRC | 1.3.2.III | WLA afc = 44.669 | | 1.3.2.III | WLA cfc = 43.434 |
| 12 | PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | | 5.1c | LTAMULT cfc = 0.581 |
| 13 | PENTOXSD TRG | 5.1b | LTA_afc= 16.604 | | 5.1d | LTA_cfc = 25.261 |
| 14 | | | | | | |
| 15 | Source | | Effluent Limit Calculations | | | |
| 16 | PENTOXSD TRG | 5.1f | AML MULT = 1.231 | | | |
| 17 | PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.500 | | BAT/BPJ | |
| 18 | | | 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 | 1.6*((av_mon_limit/AML_MULT)/LTAMULT_afc) |

# APPENDIX D

## FACILITY MAP AND DIAGRAM


1 MILE PROPERTY BOUNDARY RADIUS
BEAVER RUN (WWF-MF)
COUNTY LINE RUN (WWF-MF)
UNT TO COUNTY LINE RUN
PROPOSED DISCHARGE LOCATION 001 (41.084916, -76.707408)
PROJECT LOCATION
OTTAWA ROAD
STRICK ROAD
TREATMENT FACILITY/SEWER SERVICE AREA/SEWAGE SLUDGE MANAGEMENT FACILITIES
NORFOLK SOUTHERN RAIL ROAD
WEST BRANCH CHILISQUAQUE CREEK (WWF-MF)
Schuyler
California Township
L I M E S T O N E
WASHINGTONVILLE QUAD LOCATION MAP
FOR
GREAT DANE LLC.
LIMESTONE TOWNSHIP, MONTOUR COUNTY, PENNSYLVANIA
SCALE: 1" = 2000'
DATE: 06-14-23
BY: KDK
MID-PENN ENGINEERING CORPORATION
ENGINEERING • BUILDING SYSTEMS • SURVEYING