

Application Type Renewal
 Facility Type Non-Municipal
 Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0101087
 APS ID 1017786
 Authorization ID 1316934

Applicant and Facility Information

| | | | |
|---------------------------|--|------------------|---|
| Applicant Name | <u>Norman J Cutri D/B/A Twilight MHP</u> | Facility Name | <u>Twilight MHP</u> |
| Applicant Address | <u>1324 S Shore Drive Apt 601</u> <u>Erie, PA 16505-2539</u> | Facility Address | <u>Route 551</u> <u>Edinburg, PA 16116</u> |
| Applicant Contact | <u>Norman Cutri</u> | Facility Contact | <u>Norman Cutri</u> |
| Applicant Phone | <u>(814) 654-6305</u> | Facility Phone | <u>(814) 654-6305</u> |
| Client ID | <u>44992</u> | Site ID | <u>262956</u> |
| Ch 94 Load Status | <u>Not Overloaded</u> | Municipality | <u>Mahoning Township</u> |
| Connection Status | <u>No Limitations</u> | County | <u>Lawrence</u> |
| Date Application Received | <u>January 14, 2020</u> | EPA Waived? | <u>Yes</u> |
| Date Application Accepted | <u>June 30, 2020</u> | If No, Reason | <u></u> |
| Purpose of Application | <u>Renewal of an NPDES Permit for an existing discharge of treated sewage.</u> | | |

Summary of Review

No changes to discharge quantity are being proposed as part of this permit renewal.

There are changes to the TRC limits being proposed in this permit, which are addressed in the Water Quality-Based Limitations.

There are currently no open violations listed in eFacts for this permittee as of 1/27/2020.

Sludge use and disposal description and location(s): disposal of sludge with the New Castle POTW.

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 | | Jordan A. Frey, E.I.T. Jordan A. Frey, E.I.T. / Civil Engineer Trainee | January 27, 2021 |
| X | | Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager | March 1, 2021 |

| Discharge, Receiving Waters and Water Supply Information | | | |
|--|--|------------------------------|-----------------------|
| Outfall No. | <u>001</u> | Design Flow (MGD) | <u>.0175</u> |
| Latitude | <u>41° 2' 55.14"</u> | Longitude | <u>-80° 26' 5.16"</u> |
| Quad Name | <u>Edinburg</u> | Quad Code | <u>41080A4</u> |
| Wastewater Description: <u>Sewage Effluent</u> | | | |
| Receiving Waters | <u>Unnamed Tributary of Shenango River (WWF)</u> | Stream Code | <u>35853</u> |
| NHD Com ID | <u>130025482</u> | RMI | <u>0.09</u> |
| Drainage Area | <u>0.21</u> | Yield (cfs/mi ²) | <u>0.0055</u> |
| Q ₇₋₁₀ Flow (cfs) | <u>0.029</u> | Q ₇₋₁₀ Basis | <u>Default</u> |
| Elevation (ft) | <u>984</u> | Slope (ft/ft) | <u>---</u> |
| Watershed No. | <u>20-A</u> | Chapter 93 Class. | <u>WWF</u> |
| Existing Use | <u>Statewide</u> | Existing Use Qualifier | <u>---</u> |
| Exceptions to Use | <u>---</u> | Exceptions to Criteria | <u>---</u> |
| Assessment Status | <u>Attaining Use(s)</u> | | |
| Cause(s) of Impairment | <u>---</u> | | |
| Source(s) of Impairment | <u>---</u> | | |
| TMDL Status | <u>---</u> | Name | <u>---</u> |
| Background/Ambient Data | | Data Source | |
| pH (SU) | <u>7.0</u> | Default | |
| Temperature (°F) | <u>2.0</u> | Default | |
| Hardness (mg/L) | <u>100</u> | Default | |
| Other: | <u>---</u> | --- | |
| Nearest Downstream Public Water Supply Intake | <u>PA American Water Company, New Castle</u> | | |
| PWS Waters | <u>Shenango River</u> | Flow at Intake (cfs) | <u>16.2</u> |
| PWS RMI | <u>5.1</u> | Distance from Outfall (mi) | <u>5.49</u> |

Changes Since Last Permit Issuance: None.

Other Comments: This discharge should not impact downstream water supplies.

| Treatment Facility Summary | | | | |
|--|---------------------------------------|---------------------|----------------------------|-------------------------------|
| Treatment Facility Name: Twilight MHP | | | | |
| WQM Permit No. | Issuance Date | | | |
| 3773412 A-1 | December 31, 2009 | | | |
| 3773412 T-3 | June 8, 1983 | | | |
| 3773412 T-2 | December 23, 1980 | | | |
| 3773412 T-1 | October 23, 1980 | | | |
| 377341 | December 26, 1973 | | | |
| 367-S-034 | February 23, 1968 | | | |
| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
| Sewage | Secondary With Ammonia And Phosphorus | Activated Sludge | Hypochlorite | 0.0175 |
| | | | | |
| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
| 0.0175 | 35.4 | Not Overloaded | Aerobic Digestion | |

Changes Since Last Permit Issuance: None.

Other Comments: Treatment consists of 3 aeration tank bays, a clarifier tank, a sludge holding tank, a wet well, two accessible sand filters, then a chlorine contact tank w/tablet chlorinator.

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 | 0.0086 | 0.0014 | 0.0148 | 0.0084 | 0.0086 | 0.00785 | 0.0076 | 0.0084 | 0.0081 | 0.0012 | 0.0093 | 0.00085 |
| pH (S.U.) Minimum | 7.2 | 7.1 | 6.9 | 6.7 | 6.9 | 6.8 | 6.7 | 6.6 | 6.7 | 7.2 | 6.9 | 7.0 |
| pH (S.U.) Maximum | 7.6 | 7.6 | 7.4 | 7.3 | 7.2 | 7.3 | 6.9 | 7.0 | 7.0 | 7.4 | 7.3 | 7.6 |
| DO (mg/L) Minimum | 7.96 | 6.89 | 6.0 | 6.3 | 6.4 | 6.8 | 7.2 | 7.29 | 7.60 | 8.81 | 4.08 | 7.43 |
| TRC (mg/L) Average Monthly | 0.28 | 0.23 | 0.27 | 0.21 | 0.28 | 0.28 | 0.23 | 0.22 | 0.24 | 0.23 | 0.23 | 0.20 |
| CBOD5 (mg/L) Average Monthly | < 2 | < 2.04 | < 2 | < 2 | < 2 | < 4.52 | 7.85 | < 2 | < 2 | < 2.37 | < 2.19 | < 2 |
| TSS (mg/L) Average Monthly | < 5 | < 5 | < 5 | < 5 | < 5.4 | 14.4 | 6.2 | < 5 | < 5 | < 7.5 | < 5 | < 5 |
| Fecal Coliform (CFU/100 ml) Geometric Mean | < 1 | < 2 | < 1 | < 1 | < 1 | < 1 | < 2 | < 1 | < 1 | < 1 | < 1 | < 2 |
| Total Nitrogen (mg/L) Average Monthly | 17.6 | 9.32 | < 19.24 | 6.59 | < 7.9 | 20.8 | 18.4 | 24.1 | < 39.4 | < 25.05 | 15.75 | 24.45 |
| Ammonia (mg/L) Average Monthly | < 0.5 | < 0.5 | < 0.5 | 0.72 | 5.86 | 0.82 | 2.29 | < 0.6 | < 0.5 | < 2.08 | < 0.5 | < 0.715 |
| Total Phosphorus (mg/L) Average Monthly | 0.372 | 0.428 | < 0.333 | 0.470 | 2.26 | 4.54 | 2.49 | 1.07 | 0.639 | 0.608 | 0.713 | 0.529 |

Effluent Violations for Outfall 001, from: January 1, 2020 To: November 30, 2020

| Parameter | Date | SBC | DMR Value | Units | Limit Value | Units |
|------------------|----------|--------|-----------|-------|-------------|-------|
| Ammonia | 07/31/20 | Avg Mo | 5.86 | mg/L | 5.0 | mg/L |
| Total Phosphorus | 07/31/20 | Avg Mo | 2.26 | mg/L | 1.0 | mg/L |
| Total Phosphorus | 06/30/20 | Avg Mo | 1.07 | mg/L | 1.0 | mg/L |
| Total Phosphorus | 05/31/20 | Avg Mo | 2.49 | mg/L | 1.0 | mg/L |
| Total Phosphorus | 04/30/20 | Avg Mo | 4.54 | mg/L | 1.0 | mg/L |

Summary of Inspections: None

Other Comments: During previous permit cycle, there have been frequent effluent violations for Total Phosphorus and Ammonia Nitrogen.

Permit No. PA0101087

Development of Effluent Limitations

| | |
|---|--|
| Outfall No. <u>001</u> | Design Flow (MGD) <u>.0175</u> |
| Latitude <u>41° 2' 54.56"</u> | Longitude <u>-80° 26' 5.36"</u> |
| Wastewater Description: <u>Sewage Effluent</u> | |

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: None.

Water Quality-Based Limitations

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

| Parameter | Limit (mg/l) | SBC | Model |
|---------------------------|--------------|-----------------------|-----------------------|
| Ammonia Nov 1 - Apr 30 | 6.0 | Avg. Monthly | WQM 7.0, version 1.0b |
| Ammonia May 1 – Oct 31 | 2.0 | Avg. Monthly | WQM 7.0, version 1.0b |
| Dissolved Oxygen | 5.0 | Avg. Monthly | WQM 7.0, version 1.0b |
| TRC | 0.02 | Avg. Monthly | TRC Spreadsheet |
| TRC | 0.06 | Instantaneous Maximum | TRC Spreadsheet |

Comments: Based on reporting data, it does not appear the facility can meet the TRC limits, therefore a three-year compliance schedule is included in the draft permit.

Best Professional Judgment (BPJ) Limitations

Comments: None.

Anti-Backsliding

N/A

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: April 1, 2024 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 | | |
| TRC | XXX | XXX | XXX | 0.02 | XXX | 0.06 | 1/day | Grab |

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: These TRC limitations will apply **after** the proposed 3-year compliance schedule period, per the Effective Period dates 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 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 March 31, 2024.

| 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 | | |
| TRC | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 1/day | Grab |

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: These TRC limitations will apply **before** the proposed 3-year compliance schedule period, per the Effective Period dates 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 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 | XXX | 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 | 5.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| CBOD5 | XXX | XXX | XXX | 25 | XXX | 50 | 2/month | 8-Hr Composite |
| TSS | XXX | XXX | XXX | 30 | XXX | 60 | 2/month | 8-Hr Composite |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 1/week | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 1/week | Grab |
| Total Nitrogen | XXX | XXX | XXX | Report | XXX | XXX | 2/month | 8-Hr Composite |
| Ammonia Nov 1 - Apr 30 | XXX | XXX | XXX | 6.0 | XXX | 12 | 2/month | 8-Hr Composite |
| Ammonia May 1 - Oct 31 | XXX | XXX | XXX | 2.0 | XXX | 4 | 2/month | 8-Hr Composite |
| Total Phosphorus | XXX | XXX | XXX | 1.0 | XXX | 2 | 2/month | 8-Hr Composite |

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: None.

Twilight MHP TRC Spreadsheet

| TRC EVALUATION | | | | |
|---|---|-------------------------------|-----|--------------------------------------|
| Input appropriate values in A3:A9 and D3:D9 | | | | |
| 0.002 | = Q stream (cfs) | | 0.5 | = CV Daily |
| 0.0175 | = 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 |
| TRC | 1.3.2.iii | WLA_afc = 0.043 | | 1.3.2.iii |
| PENTOXSD TRG | 5.1a | LTAMULT_afc = 0.373 | | 5.1c |
| PENTOXSD TRG | 5.1b | LTA_afc = 0.016 | | 5.1d |
| | | | | WLA_cfc = 0.034 |
| | | | | LTAMULT_cfc = 0.581 |
| | | | | LTA_cfc = 0.020 |
| Source | Effluent Limit Calculations | | | |
| PENTOXSD TRG | 5.1f | AML_MULT = 1.231 | | |
| PENTOXSD TRG | 5.1g | AVG_MON_LIMIT (mg/l) = 0.020 | | AFC |
| | | INST_MAX_LIMIT (mg/l) = 0.064 | | |
| WLA_afc | $(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$ | | | |
| LTAMULT_afc | $EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$ | | | |
| LTA_afc | wla_afc * LTAMULT_afc | | | |
| WLA_cfc | $(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$ | | | |
| LTAMULT_cfc | $EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$ | | | |
| LTA_cfc | wla_cfc * LTAMULT_cfc | | | |
| AML_MULT | $EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$ | | | |
| 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. PA0101087

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 |
|-----------|-------------|------------------------------|-------|----------------|-----------------------|---------------|----------------------|-------------------------------------|
| 20A | 35853 | Trib 35853 of Shenango River | 0.260 | 994.00 | 0.29 | 0.00000 | 0.00 | <input checked="" type="checkbox"/> |

Stream Data

| Design Cond. | LFY | Trib Flow | Stream Flow | Rch Trav Time | Rch Velocity | WD Ratio | Rch Width | Rch Depth | Tributary Temp | pH | Stream Temp | pH |
|--------------|--------|-----------|-------------|---------------|--------------|----------|-----------|-----------|----------------|------|-------------|------|
| | (cfsm) | (cfs) | (cfs) | (days) | (fps) | | (ft) | (ft) | (°C) | | (°C) | |
| Q7-10 | 0.008 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 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 |
|--------------|---------------|--------------------------|---------------------------|------------------------|----------------|----------------|---------|
| Twilight MHP | PA0101087a | 0.0175 | 0.0175 | 0.0175 | 0.000 | 20.00 | 7.10 |

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 | 4.00 | 7.54 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.05 | 0.00 | 0.70 |

Permit No. PA0101087

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 |
|-----------|-------------|------------------------------|-------|----------------|-----------------------|---------------|----------------------|-------------------------------------|
| 20A | 35853 | Trib 35853 of Shenango River | 0.160 | 968.00 | 1.22 | 0.00000 | 0.00 | <input checked="" type="checkbox"/> |

Stream Data

| Design Cond. | LFY | Trib Flow | Stream Flow | Rch Trav Time | Rch Velocity | WD Ratio | Rch Width | Rch Depth | Tributary Temp | pH | Stream Temp | pH |
|--------------|--------|-----------|-------------|---------------|--------------|----------|-----------|-----------|----------------|------|-------------|------|
| | (cfsm) | (cfs) | (cfs) | (days) | (fps) | | (ft) | (ft) | (°C) | | (°C) | |
| Q7-10 | 0.008 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 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 | 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 | | | |

Permit No. PA0101087

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 |
|-----------|-------------|------------------------------|-------|----------------|-----------------------|---------------|----------------------|-------------------------------------|
| 20A | 35853 | Trib 35853 of Shenango River | 0.001 | 958.00 | 1.76 | 0.00000 | 0.00 | <input checked="" type="checkbox"/> |

Stream Data

| Design Cond. | LFY | Trib Flow | Stream Flow | Rch Trav Time | Rch Velocity | WD Ratio | Rch Width | Rch Depth | Tributary Temp | pH | Stream Temp | pH |
|--------------|--------|-----------|-------------|---------------|--------------|----------|-----------|-----------|----------------|------|-------------|------|
| | (cfsm) | (cfs) | (cfs) | (days) | (fps) | | (ft) | (ft) | (°C) | | (°C) | |
| Q7-10 | 0.008 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 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 | 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 | | | |

Permit No. PA0101087

WQM 7.0 Hydrodynamic Outputs

| <u>SWP Basin</u> | | <u>Stream Code</u> | | | | <u>Stream Name</u> | | | | | | |
|--------------------|-------------|--------------------|-----------------|--------------------|-------------|------------------------------|-------|-----------|----------|-----------------|---------------|-------------|
| 20A | | 35853 | | | | Trib 35853 of Shenango River | | | | | | |
| RMI | Stream Flow | PWS With | Net Stream Flow | Disc Analysis Flow | Reach Slope | Depth | Width | W/D Ratio | Velocity | Reach Trav Time | Analysis Temp | Analysis pH |
| | (cfs) | (cfs) | (cfs) | (cfs) | (ft/ft) | (ft) | (ft) | | (fps) | (days) | (°C) | |
| Q7-10 Flow | | | | | | | | | | | | |
| 0.260 | 0.00 | 0.00 | 0.00 | .0271 | 0.04924 | .301 | 2.11 | 7.03 | 0.05 | 0.132 | 20.39 | 7.09 |
| 0.160 | 0.01 | 0.00 | 0.01 | .0271 | 0.01191 | .296 | 3.65 | 12.34 | 0.03 | 0.286 | 21.32 | 7.07 |
| Q1-10 Flow | | | | | | | | | | | | |
| 0.260 | 0.00 | 0.00 | 0.00 | .0271 | 0.04924 | NA | NA | NA | 0.05 | 0.134 | 20.26 | 7.09 |
| 0.160 | 0.01 | 0.00 | 0.01 | .0271 | 0.01191 | NA | NA | NA | 0.03 | 0.302 | 20.94 | 7.08 |
| Q30-10 Flow | | | | | | | | | | | | |
| 0.260 | 0.00 | 0.00 | 0.00 | .0271 | 0.04924 | NA | NA | NA | 0.05 | 0.130 | 20.52 | 7.09 |
| 0.160 | 0.01 | 0.00 | 0.01 | .0271 | 0.01191 | NA | NA | NA | 0.04 | 0.271 | 21.64 | 7.06 |

Permit No. PA0101087

WQM 7.0 Modeling Specifications

| | | | |
|--------------------|--------|-------------------------------------|-------------------------------------|
| Parameters | Both | Use Inputted Q1-10 and Q30-10 Flows | <input checked="" type="checkbox"/> |
| WLA Method | EMPR | Use Inputted W/D Ratio | <input type="checkbox"/> |
| Q1-10/Q7-10 Ratio | 0.64 | Use Inputted Reach Travel Times | <input type="checkbox"/> |
| Q30-10/Q7-10 Ratio | 1.36 | Temperature Adjust Kr | <input checked="" type="checkbox"/> |
| D.O. Saturation | 90.00% | Use Balanced Technology | <input checked="" type="checkbox"/> |
| D.O. Goal | 5 | | |

Permit No. PA0101087

WQM 7.0 Wasteload Allocations

| | | |
|------------------|--------------------|------------------------------|
| <u>SWP Basin</u> | <u>Stream Code</u> | <u>Stream Name</u> |
| 20A | 35853 | Trib 35853 of Shenango River |

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 |
|-------|----------------|---------------------------------|---------------------------|---------------------------------|---------------------------|-------------------|----------------------|
| 0.260 | Twilight MHP | 8.86 | 9.34 | 8.86 | 9.34 | 0 | 0 |
| 0.160 | | NA | NA | 8.53 | NA | NA | NA |

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 |
|-------|----------------|---------------------------------|---------------------------|---------------------------------|---------------------------|-------------------|----------------------|
| 0.260 | Twilight MHP | 1.75 | 1.95 | 1.75 | 1.95 | 0 | 0 |
| 0.160 | | NA | NA | 1.64 | NA | NA | NA |

Dissolved Oxygen Allocations

| RMI | Discharge Name | <u>CBOD5</u> | | <u>NH3-N</u> | | <u>Dissolved Oxygen</u> | | Critical Reach | Percent Reduction |
|------|----------------|--------------------|--------------------|--------------------|--------------------|-------------------------|--------------------|-------------------|----------------------|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 0.26 | Twilight MHP | 25 | 25 | 1.95 | 1.95 | 5 | 5 | 0 | 0 |
| 0.16 | | NA | NA | NA | NA | NA | NA | NA | NA |

Permit No. PA0101087

WQM 7.0 D.O.Simulation

| <u>SWP Basin</u> | <u>Stream Code</u> | <u>Stream Name</u> | | | |
|---------------------------------|-----------------------------------|----------------------------------|--------------|-----------------------------|--|
| 20A | 35853 | Trib 35853 of Shenango River | | | |
| <hr/> | | | | | |
| <u>RMI</u> | <u>Total Discharge Flow (mgd)</u> | <u>Analysis Temperature (°C)</u> | | <u>Analysis pH</u> | |
| 0.260 | 0.018 | 20.395 | | 7.091 | |
| <u>Reach Width (ft)</u> | <u>Reach Depth (ft)</u> | <u>Reach WDRatio</u> | | <u>Reach Velocity (fps)</u> | |
| 2.113 | 0.301 | 7.027 | | 0.046 | |
| <u>Reach CBOD5 (mg/L)</u> | <u>Reach Kc (1/days)</u> | <u>Reach NH3-N (mg/L)</u> | | <u>Reach Kn (1/days)</u> | |
| 23.18 | 1.489 | 1.80 | | 0.722 | |
| <u>Reach DO (mg/L)</u> | <u>Reach Kr (1/days)</u> | <u>Kr Equation</u> | | <u>Reach DO Goal (mg/L)</u> | |
| 5.200 | 25.816 | Owens | | 5 | |
| <u>Reach Travel Time (days)</u> | | | | | |
| 0.132 | | | | | |
| Subreach Results | | | | | |
| | <u>TravTime</u> | <u>CBOD5</u> | <u>NH3-N</u> | <u>D.O.</u> | |
| | (days) | (mg/L) | (mg/L) | (mg/L) | |
| | 0.013 | 22.73 | 1.78 | 5.67 | |
| | 0.026 | 22.27 | 1.77 | 6.02 | |
| | 0.040 | 21.83 | 1.75 | 6.28 | |
| | 0.053 | 21.40 | 1.73 | 6.48 | |
| | 0.066 | 20.98 | 1.72 | 6.63 | |
| | 0.079 | 20.56 | 1.70 | 6.75 | |
| | 0.092 | 20.15 | 1.68 | 6.85 | |
| | 0.106 | 19.75 | 1.67 | 6.93 | |
| | 0.119 | 19.36 | 1.65 | 6.99 | |
| | 0.132 | 18.98 | 1.64 | 7.05 | |
| <hr/> | | | | | |
| <u>RMI</u> | <u>Total Discharge Flow (mgd)</u> | <u>Analysis Temperature (°C)</u> | | <u>Analysis pH</u> | |
| 0.160 | 0.018 | 21.325 | | 7.071 | |
| <u>Reach Width (ft)</u> | <u>Reach Depth (ft)</u> | <u>Reach WDRatio</u> | | <u>Reach Velocity (fps)</u> | |
| 3.655 | 0.296 | 12.340 | | 0.034 | |
| <u>Reach CBOD5 (mg/L)</u> | <u>Reach Kc (1/days)</u> | <u>Reach NH3-N (mg/L)</u> | | <u>Reach Kn (1/days)</u> | |
| 15.55 | 1.436 | 1.30 | | 0.775 | |
| <u>Reach DO (mg/L)</u> | <u>Reach Kr (1/days)</u> | <u>Kr Equation</u> | | <u>Reach DO Goal (mg/L)</u> | |
| 7.292 | 22.081 | Owens | | 5 | |
| <u>Reach Travel Time (days)</u> | | | | | |
| 0.286 | | | | | |
| Subreach Results | | | | | |
| | <u>TravTime</u> | <u>CBOD5</u> | <u>NH3-N</u> | <u>D.O.</u> | |
| | (days) | (mg/L) | (mg/L) | (mg/L) | |
| | 0.029 | 14.89 | 1.27 | 7.23 | |
| | 0.057 | 14.25 | 1.25 | 7.23 | |
| | 0.086 | 13.64 | 1.22 | 7.26 | |
| | 0.114 | 13.06 | 1.19 | 7.31 | |
| | 0.143 | 12.50 | 1.17 | 7.36 | |
| | 0.171 | 11.97 | 1.14 | 7.42 | |
| | 0.200 | 11.46 | 1.12 | 7.48 | |
| | 0.228 | 10.97 | 1.09 | 7.54 | |
| | 0.257 | 10.50 | 1.07 | 7.59 | |
| | 0.286 | 10.06 | 1.04 | 7.64 | |

Permit No. PA0101087

WQM 7.0 Effluent Limits

| <u>SWP Basin</u> | | <u>Stream Code</u> | | <u>Stream Name</u> | | | |
|------------------|--------------|--------------------|-----------------|------------------------------|--------------------------------|----------------------------|----------------------------|
| 20A | | 35853 | | Trib 35853 of Shenango River | | | |
| 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) |
| 0.260 | Twilight MHP | PA0101087a | 0.018 | CBOD5 | 25 | | |
| | | | | NH3-N | 1.95 | 3.9 | |
| | | | | Dissolved Oxygen | | | 5 |